

Individual Responses to Stress and Burnout: Workplace Issues for Australian Nurses and Midwives

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List of Papers

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Abstract

The presentation of this quantitative research looks at the relationship between nurses' and midwives' individual responses and organisational factors concerning stress and burnout in the workplace. This research aims to understand and assess the associations and relationships between nurses' and midwives' individual responses and factors causing stress and burnout in the workplace. This might enable nurses and midwives to reduce the impact of negative consequences of stress and burnout in conjunction with ethical and professional changes within nursing work practices. A questionnaire was developed and administered to nurses and midwives working in healthcare organisations in Australia to document their awareness of their individual responses to workplace issues and factors leading to stress and burnout.

The majority of this study's respondents were dealing with moderate levels of stress and burnout and showed moderate levels of self-imposed work pressure and motivation which related to work behaviours. The three factors linked with stress for this study; being the work environment, psychosocial effects, and job dissatisfaction were all positively associated with exhaustion, the factor linked with burnout. Important factors linked with stress and burnout included time-related issues, excessive workloads, low morale as well as powerlessness. According to this research, organisational support could be improved so that nurses and midwives can support their colleagues.

Nurses and midwives with higher levels of education were less likely to place unreasonable expectations on themselves in relation to work behaviours. Generally, they placed unnecessary stress upon themselves with no apparent time stressor. Working longer hours was responsible for deleterious effects of stress and burnout. Older and more educated nurses and midwives experienced less stress and burnout than younger ones. Accident and emergency nurses were a higher risk specialty compared to all other areas of practice. Even though some nurses and midwives were experiencing long-term effects of stress, the majority of them enjoy their work and perceive they were suited to their work. Addressing issues pertaining to stress and

burnout can influence positively on the challenge of recruiting and retaining a dedicated nursing and midwifery workforce.

Certifications

I certify that the substance of this thesis has not already been submitted for any degree and is not currently being submitted for any other degree or qualification.

I certify that any help received in preparing this thesis, and all sources used, have been acknowledged in this thesis.

A handwritten signature in black ink, appearing to read "V. Skinner".

Virginia Skinner

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Chapter 1

INTRODUCTION

Stress and burnout are familiar occurrences for nurses and midwives working in clinical areas. This research endeavours to understand and assess the associations and relationships between nurses' and midwives' individual responses and factors causing stress and burnout in the workplace. The focus of this study is to determine stressors in the work environment and to attempt to document how individuals within the nursing and midwifery profession currently deal with stress and burnout. This research attempts to demonstrate how each individual reacts in a specific situation, their work behaviours and how much pressure they place upon themselves. Stress and burnout encompass occupational and individual stressors which might lead to ill health.

1. Major aim of study

Assessment of the associations and relationships between nurses' and midwives' individual responses were explored as well as factors causing stress and burnout in the workplace experienced by the surveyed population. This was done by developing and administering a reliable and valid questionnaire to assess stress, burnout and individual responses to workplace issues. This research demonstrates how the sample population reacted to specific work situations and documents relevant stress and burnout levels including symptoms experienced by the respondents.

2. Significance of study

One of the benefits of enquiring into these areas is that it provides an opportunity to encourage health professional accountability in order to reduce stress and burnout. The questionnaire can be used to help people examine their own behaviour in the workplace with the possibility of change (Furnham, 1992). It is hoped to highlight

behaviours as they occur in the daily work life of nurses and midwives in their dealings with stress (Duke, 1986).

The questionnaire was intended to identify important occupational stress sources, which can be modified to avoid deleterious health-related consequences (Vagg & Spielberger, 1999). As a result of this research and findings, nurses and midwives will become more aware of their own limitations and choose areas of nursing and midwifery they believe most suitable. This will enable them to make reasonable choices regarding avenues of communication and options or areas in which they aspire to work.

Nurses and midwives will become aware of their own limitations so that they protect themselves against unnecessary stressors to prevent future ill health if they are aware of their own vulnerability to sickness, stress, depression or a variety of other work-related problems. The benefits of this enquiry will encourage the profession to assess intelligently and accurately the workplace stress and burnout of its members. This research will also provide information so that interventions can be streamlined to alleviate specific areas of stress, reducing occupational hazards in conjunction with necessary ethical and professional changes within nursing work practices. Additionally, this research hopes to provide informative career counselling strategies for the guidance of policy makers, in co-ordination with what nurses and midwives view as reasonable workloads. The findings of this study will assist nurses and midwives to become aware of their own possible individual responses and factors leading to stress and burnout within their work environment, enabling them to make appropriate and informed choices about work, the workplace and professional development.

3. Objectives of the study

Specifically, this research asks – Ultimately, what are the factors linked with stress? What are the factors linked with burnout? Are there nurses and midwives with different pressure and motivation levels relating to work behaviours? Do nurses and midwives place unreasonable expectations on themselves? Are there associations

between stress, burnout and individual responses? Are there particular groups of nurses and midwives who are experiencing stress and burnout and does stress relate to environmental, organisational, psychosocial issues and job dissatisfaction? Are there particular demographics which increase or decrease the likelihood of issues of stress, burnout, high pressure and motivation levels? For example, does being younger, working longer hours, being more educated or living alone increase the likelihood of deleterious effects of stress, burnout and individual responses to the workplace? Are there higher risk workplaces or practice specialties more or less vulnerable to stress and burnout?

Given the present critical shortage of nurses and midwives, it is imperative to explore how both nurses and midwives perceive their jobs, so that strategies might be identified to enhance the quality of their working lives and improve retention (Barrett & Yates, 2002). This could have a powerful effect on the already critical national nursing shortage but it might also have an effect on the retention of nurses and midwives, reducing the numbers leaving the profession. Critical nursing and midwifery shortages necessitate investigation of possible factors linked with stress and burnout (Engelbrecht, 2006). A thorough investigation of resources and cases in a certain setting might provide information to treat and prevent future stress and burnout. This study helps to understand specific circumstances involving stress and burnout in a specific health professional group.

4. Overview of thesis

This thesis is specifically designed as a quantitative study of experiences of individual responses to stress and burnout as well as many different workplace issues, as applied to nurses and midwives, in order to forecast, define and prescribe better solutions and management in the healthcare arena. The questionnaire developed for this study was distributed to nurses and midwives throughout metropolitan areas of Australia including Sydney, Perth, Hobart and Brisbane. The conceptual framework for the study included three essential themes including stress, burnout and individual responses as well as incorporating the five subscales identified by factor analysis, namely work environment, psychosocial effects of stress, job satisfaction, exhaustion,

and pressure and motivation. As this study was exploratory and included a convenience sample of 562 nurses and midwives, ability to generalise is limited (Mackin & Sinclair, 1998; Schneider, Elliott, LoBiondo-Wood & Haber, 2003). All data were based on self-assessment and there was no substantiation of data to confirm and validate number of hours worked as used in triangulation methods.

Chapter 2 will review key issues emerging in the literature on individual responses to stress and burnout, focusing on individual reactions and situational factors. This information will provide a supporting framework as a background for the study. Chapter 3 outlines the research design and questionnaire development. It describes in detail how the subscales which guide the data analysis were developed. Chapter 4 provides results and analysis of the data, Chapter 5 discusses the data and Chapter 6 concludes and discusses implications for nursing and midwifery practice, the health care workplace and possible directions for future research.

Chapter 2

REVIEW OF THE LITERATURE

Reviewing current and relevant literature is of paramount importance, as it provides the contextual framework for this research study. Numerous and varied examples of data drawn from literature on stress, burnout and individual responses to workplace issues have been compiled to form a reference guide and provide an exposition of an in-depth understanding of these topics. Investigation of stress and how stress is managed is recommended in the health care arena (Delvaux, Razavi & Farvacques, 1988). Cordes and Dougherty (1993) have shown that burnout has been costly in the helping professions. Their findings show that up to the 1990s, little work had been done to establish issues associated with burnout. They believe that stress and burnout deserves more attention by studying workplace policy and workload issues in healthcare organisations. Beaudoin and Edgar (2003) recommend studying nurses' work and the stressors which prevent them from working effectively and efficiently. Taylor and Barling (2004) state that stress experienced by nurses is a phenomenon which requires further research and analysis. A poor understanding exists regarding generalisability of past research into stress and burnout in the helping professions (Cordes & Dougherty, 1993).

Generally, behaviour is typified by how much vitality and energy someone has before they become worn out or tired (Williams & Cooper, 1998). This stress and burnout study on nurses and midwives then relates to individual responses as work behaviours measured by self-imposed work pressure and motivation levels. Pervin (1978) reports that patterns of behaviour are a reflection between external and internal characteristics or interaction between the situation and person. He reports that this interactional view is acquiring popularity among psychologists. Some behaviours are situation determined and others are more person determined. Pervin (1978) suggests that research is about understanding the situation and person forces which account for patterns of change and stability in behaviour; defining critical variables of the situation and person; and understanding the processes by which each one is related to

the other. He suggests pursuing how situation and person interact with each other. Shaw (1999) recommends considering interaction between person and situation variables.

A review of the literature found no studies in Australia that examined stress levels in nurses and midwives in the same study or group. This might be because nursing and midwifery are separate entities, particularly with the introduction of direct midwifery. This study combined the two groups in the same study to try and gain a broader understanding of what is relevant for each group and to ascertain any unique differences and individual responses to their experience of stress and burnout. Approximately half of this study group were nurses and the other half were midwives. Areas of predominant practice were compared as they were not mutually exclusive groups of nurses and midwives. Comparison of stress levels is pertinent and informative for these caring professions as it will suggest some planning and management for different areas and issues of stress which might need attention. Paine (1982) reports how stress and burnout have become an integral and unavoidable component of work and are considered pertinent to other types of occupations. Beyond nursing and midwifery, stress and burnout have become an all-encompassing workplace problem of the current times.

1. Definitions of stress, burnout and individual responses to workplace issues

1.1. Definition of stress

Overall, there are three primary theories which explain the idea of stress. The first is Seyle's (1956), which defines stress as a human's response to noxious or disturbing environments (Mackin & Sinclair, 1998). The second, Lazarus's (1966) theory, emphasises an individual or situational interaction which causes a stress state. The third, Cox's (1988) theory depicts that stress is part of a dynamic and complex system of interaction between a human and the environment.

Cohen, Kessler and Gordon (1997) have shown how stress has been variously defined in the literature and how inconsistent these definitions have been. They define stress as a process whereby

...environmental demands exceed or tax the adaptive capability of a human, resulting in biological and psychological changes that may cause risk for disease. Therefore, stress is a general process by which environmental demands produce outcomes which are deleterious to health (Cohen, Kessler & Gordon, 1997, p. 3).

Their definition is most like Cox's (1988) theory, depicting stress as a dynamic process between a human and the environment. Cohen, Kessler and Gordon (1997) break down the stress process into three different components. The first one is environmental stressors, demands or events, which are objective components. The second one is an individual's subjective perceptions or appraisals of stress. The third component includes stress responses which are biological or behavioural.

Kushnir, Cohen and Kitai (2000) note that opportunities for training and learning should reduce stress and burnout. They showed that stress was defined as the ratio of work demands to resources available to each individual for managing these demands. If the demands exceeded the resources available, an individual would more than likely experience a certain amount of stress. Their study involved enquiry into physicians' job stress and found that incentives such as professional update developments reduced job dissatisfaction. They discovered that physicians' well-being is improved by reducing occupational stress.

Comcare Australia (1997) defines stress as occurring when employees fail to adjust to changes and demands in a work environment. Australian research on occupational stress has acknowledged organisational variables which are likely to cause employee distress. These variables include the organisational climate involving appraisal and recognition, supportive leadership, professional interaction, excessive work demands and role clarity. Comcare Australia (1997) reports that international research has investigated psychosocial factors contributing to human stress, many focusing on

relationships between occupational issues and stress. Comcare (1997) reports that an individual response will differ depending upon the extent to which a person perceives a scenario to be threatening, the expectation someone has of dealing with the threat, and actions available to someone dealing with the threat. Comcare (1997) notes that while coping mechanisms and personality variables impact upon stress, the employer cannot always or directly control these issues for their employees.

Arnold, Cooper and Robertson (1995) define stress as a force pushing physical or psychological factors beyond the coping ability of an individual, causing strain and stress. A variety of symptoms might occur including behavioural or physical symptoms and other ailments. Behavioural symptoms include an inability to cope, disinterest in life and other people, recurrent or constant fear of disease, fear of being a failure, self-hatred, feeling neglected and dreading the future, difficulty in concentrating and making decisions and intense fear of enclosed or open spaces. Physical symptoms include loss of appetite, frequent indigestion, craving for food, diarrhoea or constipation, constant tiredness, insomnia, nervous twitches, headaches, nail-biting, muscle spasms and cramps, breathlessness without exertion, nausea, fainting spells and frequent crying. Other ailments include heart attack, high blood pressure, allergies, hay fever, peptic ulcers, colitis, menstrual difficulties, skin disorders, hyperthyroidism and diabetes.

Stress can be an ill-defined term, attempting to define a multivariate, complex and multilevel phenomenon (Cottrell, 2001). Motowildo, Packard and Manning (1986) say stress is an emotional, unpleasant experience associated with symptoms of fear, dread, irritation, anxiety, grief, sadness, anger, annoyance and depression. Quick, Dalton, Nelson and Jonathon (1985) have defined stress in a more positive light. Stress is a natural response to organisational and personal demands; and, interestingly, the individual has no say or conscious control over stress.

Keil (2004) has described ‘stress’ as a metaphor for all and any difficulties of life. Her conceptual analysis aimed to develop a general consensus for the meaning of ‘coping’ and ‘stress’. Stress is generally a measure of a force which causes damage to a structure. In ordinary usage stress operates on levels of emotions, but is not an

emotion in itself, unlike anxiety or anger. For example, she claimed that ‘coping’ and ‘stress’ are terms which have been used widely in nursing and their significance and meaning have varied over time. Bohle and Quinlan (2000) report that stress is not a particular illness but a process of continuing interactions which might affect health. They recognise that psychological stress might affect the onset of disease. Another variation is a negative reaction to stress being ‘strain’ (Payne, 2001). McVicar (2003) defines ‘eustress’ as a term commonly applied to positive responses of stress and ‘distress’ describing negative aspects. McVicar (2003) describes stress as a continuum, ranging from eustress to mild, moderate or severe distress and will depend on individuals’ stress perceptions.

1.2. Definition of burnout

Maslach and Jackson (1981) conceptualise burnout as a continuous variable. There are three components which include depersonalisation; nurses attending to patients without any emotional feeling and distancing themselves from clients and colleagues; emotional exhaustion; and a sense of reduced personal accomplishment indicative of feelings of low morale. It might range from low to high levels. They report that burnout is not a synonym for job dissatisfaction. They assert that assessing burnout among human service workers such as nurses will have a practical benefit of suggesting modification to job design, training and recruitment, which might alleviate this significant problem.

Burnard (1991) describes burnout as the condition of being under considerable stress for extended periods. He reports many characteristics of burnout. Loss of motivation might occur. People developing negative attitudes towards other people and the job are other signs. A sense of humour is lost and a sense of a limited choice of options is evident. A loss of exercising choice concerning work issues is also a sign of burnout.

Maslach, Schaufeli and Leiter (2001) have defined burnout as a reaction to chronic interpersonal and emotional overload and have shown, for example, that lack of support has been linked to burnout and that burnout is rated higher for nurses not involved in decision-making. Their participants perceive too much work in the available time. They have also investigated the absence of job resources. They have

shown that lack of autonomy correlates well with burnout and change only occurs when both the individual and the setting are integrated.

Cordes and Dougherty (1993) searched the literature relating to burnout. They note that the first stage of burnout is emotional exhaustion; the second stage, depersonalisation; and the final stage, a reduced sense of personal accomplishment. Cordes and Dougherty (1993) found that the client role in service-provider interactions has been known to contribute to burnout. They noted that patient interactions which were more frequent or direct, or patients' problems which were chronic, were related to high levels of burnout. They discovered that role overload and role conflict are also associated with burnout and the strain or problem is frequently compounded by excessively heavy client loads. As the number of clients increases, demands on employees' personal resources also increase. If the demands are continuous, as opposed to intermittent, vulnerability to burnout might become evident, especially if there are no rewards. They found that role conflict might occur when job expectations conflict with one's personal beliefs or values. Burnout is a major cause concerning the shortage of experienced nurses (Sundin-Huard & Fahy, 1999).

1.3. Definition of individual responses to workplace issues

Individuals have unique life histories, personalities, behaviour patterns, experiences and demographic characteristics, all of which are instrumental in determining each individual's response to stress. Sources of occupational pressure induce variable reactions from different people. Some find it easier to cope than others, adapting their behaviour to meet the environmental challenge. Alternatively, some people are unable to deal with the stress-provoking situation. Many factors are associated with these differences, including being ill-equipped to function in a particular area, motivational differences, personality, personal insight into weaknesses and fluctuations in abilities (Cooper, 1982). Some people thrive on stress, while other people wilt under mental and physical strain (Paton, 2003).

Pervin (1975) reports that people express themselves in accordance with situations. It is the environmental stimulus which provokes a reaction or behaviour from the individual. Furnham (2001) emphasises the three factors interacting in the workplace:

the task the individual is performing; the individual's personality, motivation and ability; and the environment surrounding the individual. He shows how focusing on task outcomes and personality yet ignoring cultural, structural, or situational and individual differences in abilities or traits can lead to misinterpretations of data.

2. Work stress theories

There are three work theories which deal with different aspects related to stress. These three theories are the Effort-Reward Imbalance or Expectancy Theory of Motivation (Vroom, 1964); the Demand-Control Model which stems from Karasek's (1979) Theory and the Person-Fit Theory (Mansfield, Yu, McCool, Vicary & Packard 1989).

The Effort-Reward Imbalance or Expectancy Theory of Motivation is based on employees' beliefs that their efforts will lead the way to performance, and lead to rewards (Vroom, 1964). These rewards might either be negative or positive (Lindner, 1998).

Karasek's (1979) theory is that most harmful reactions to psychological stress occur when psychological demands are high and workers' freedom to make decisions is low. This Demand-Control Model invokes a stress response to psychological and social environments. 'Stress' and overload occur when information processing loads are too high for an individual's information processing abilities (Karasek, 1979).

Mansfield et al. (1989) recommend a promising approach to reduce job dissatisfaction among nurses by providing a descriptive guide to various clinical settings before nurses begin employment. Nurses could then make more appropriate choices for their clinical work according to personal preferences and strengths, enhancing job satisfaction and reducing stress and burnout. To promote this 'good fit' between the nurse and the work setting, nurses' work could be classified in many unique dimensions enabling nurses and employers to make informed decisions about work assignments. This information will potentially assist in prevention or reduction of staff turnover and burnout (Mansfield et al., 1989).

2.1. Effort-Reward Theory

Vroom's (1964) Expectancy Theory of Motivation is defined by expecting that one's efforts will result in attainment of performance goals. If expectancy is high, individuals believe they can control the outcome and motivation remains high. If an individual believes the outcome to be unattainable, motivation is low (Scholl, 2002). This effort-reward imbalance is defined by increased efforts and low rewards leading to stress responses in vulnerable people (Heine, 2006).

Furnham (1992) comments how few theories have been developed to account exclusively for work motivation, nearly all being concerned with general motivation theories for work applicable to all persons, neglecting individual differences. The Motivational Expectancy Theory purports to demonstrate that motivation is an outcome of three different beliefs (Vroom, 1964). One is that expectancy is the belief that an individual's efforts will result in accomplishments. Another is that an individual's performance will reap rewards. The final one is that motivation parallels the value of rewards to the individual (Furnham, 1992).

This theory shows that motivation is a function of all of these three components. High motivation levels will result when these three components are all present. The theory shows that motivation is only one part of many determinants of work performance. It assumes that skills, ability and personality also contribute to an individual's work performance. Some individuals are more suited to their work than others because of their special abilities or skills and the unique characteristics they bring to the job. This theory also shows that people's role perceptions will influence work performance. Poor performance might result from role misunderstanding. The theory also shows that perceived unlimited opportunities in the workplace will increase performance levels (Furnham, 1992).

If the reward is positive, the employee will most likely be highly motivated. If the reward is negative, the employee will not be motivated. Intrinsic or motivator factors, such as recognition and achievement, produce job satisfaction. Extrinsic factors, such as job security and pay, produce job satisfaction (Lindner, 1998). Stimuli or stressors are most often required to motivate people's capabilities (Schultz & Schultz, 1997).

Bakker, Killmer, Siegrist and Schaufeli (2000) showed that nurses experiencing an Effort-Reward Imbalance suffered more distress and lower self-esteem than those nurses who did not set their goals too high.

2.2. Demand-Control Theory

Karasek (1979) was a most influential researcher who studied job control and its association with job demands, known as the Demand-Control Model. According to Karasek (1979), lack of autonomy and decision-making combine with stressors or workload to produce ill health and psychological strain. If the individual cannot overcome the stressors, unresolved tension will occur as psychological strain. Karasek (1979) linked this with burnout.

Karasek's (1979) Demand-Control Model predicts that job situations with low control and low demand reduce motivation which leads to 'learned helplessness'. This can evolve from a sequence of jobs rejecting a worker's initiatives. However, most work situations have high demands, which also can be harmful. The hypothesis is that jobs high in demands and low in social support and control carry high risks of illness (Karasek, 1979).

Spillane and Spillane (1996) have shown that the combination of low job control and high job demands leads to deleterious psychological and physical consequences. De Jonge, Dollard, Dormann, LeBlanc and Houtman's (2000) study showed that jobs having low control and high demands in health care were more conducive to poor health such as psychosomatic health complaints and emotional exhaustion. They also showed that active jobs with high control and high demands produce job satisfaction and job challenge. They found that the type of job demands (physical demands, workload or emotional demands) which are considered challenging or potentially stressful should be reviewed before implementing an intervention. They showed that emotional demands are the most important for the human service workforce when considering any intervention.

An important factor influencing the stress response is control (Dumas, 2001). In a German study,

nurses perceived their degree of control as instrumental in enabling them to cope with stress and burnout (Lambert & Lambert, 2001, p. 170).

Ganster (1989) defined control as the ability to exert influence over the environment, making the environment less threatening or more rewarding. Locus of control is a concept developed by Rotter (1982). This theory follows four assumptions. One is that predicting human behaviour requires an understanding of people's interactions with their environments. Another is that personality is learned. Personality is not specifically determined at any particular age of development, but might be changed if people are willing to learn. The third assumption is that personality has a unity. The environment and experiences interact with each other to form a whole unit. The environment has no meaning without the person and the person must not be separated from their environment. The fourth assumption is that human motivation is directed by goals.

Rotter (1982) showed that drive-reduction theories could not, on their own, explain human behaviour. Humans are not motivated by seeking pleasures or reducing drives. Humans are motivated by expectancies that certain behaviours will move them closer to personal goals. The hypothesis of Rotter's (1982) research is that humans who believe they can control their fate will behave differently, depending on the situation, from those who believe their future is ruled by powerful others, luck or chance. Owning your locus of control is essential for individuals to remain healthy (Jonsson & Segesten, 2004).

Pelly (2004) noted that stressed health care workers are providing insurers with claims. They are blaming high job demands, low job control and poor support. Many nurses have little independent control and must answer to other health professionals, regulatory agencies and administrators (Gaithersburg & Roach, 1994). Karasek (1979) highlights that job stress occurs when there is little control. Job control equates to nurses' control over tasks and the conduct of their working day. When nurses have a small degree of perceived control, stress is inappropriately directed into a coping mechanism, resulting in a prolonged physiological reaction, causing anxiety, fatigue,

physical illness and depression (Karasek & Theorell, 1990). When supportive relationships do not exist among colleagues, restraint, control and rigid rules are followed (Sidran, 1999).

Taylor, White and Muncer (1999) noted that losing control over one's own professional work specifically relates to powerlessness and this leads to frustration. They showed that nurses perceived they were powerless in regard to medical staff and managers, but it is not so clear whether a sense of powerlessness was due to the nurses' characteristics or more the organisational structure. If employees are unable to exert control over demands placed upon them, this increases their stress levels (Harris, 2001). Toohey (1996) noted that nurses and midwives are often 'alienated' and unable to participate in decisions resulting in limited control over their work. This alienation then manifests as stress / illness.

Sidran (1999) showed that many survivors of stress and burnout can only see two options: be controlled or control others. Nurses who start endorsing the 'be controlled or control' belief endure power struggles with their personal lives and clients. Experiences of empathy, creativity and connection will be impossible. Sidran (1999) showed how nurses are frequently expected to have responsibility for people, things and situations over which they have limited control and there is often too little support and too few resources for these difficult tasks. Sidran's (1999) research suggests that some nurses cope with stressors surrounding issues of control and adopt an unrealistically invincible and empowered stance (presenting an illusion of having control when they actually do not). Sidran's (1999) research shows how nurses need to identify reasonable expectations about control, looking at what they can control and what is out of their control. Clegg (2001) showed how nurses are at the frontline of service delivery, continually dealing with crisis situations and responsibilities with limited control over workload or work environment. Research from previous studies suggests 'primary nursing' (full responsibility for a patient's care rather than a team-based model) is linked with higher autonomy levels than other types of nursing (Makinen, Kivimaki, Elovainio & Virtanen, 2003).

Nurses who demand control and perfection in themselves create unrealistic expectations and demands on others that cannot possibly be met in reality (Young, 1974). This leads to stress, frustration and burnout (Balevre, 2001). Weekes, Peterson and Stanton (2001) found that part-time workers experience fewer medical problems and less stress than fulltime workers. Also most part-time workers believe they are more in control and satisfied with a balance between family and work life. Nurses in Webb and Pontin's (1996) primary nursing study reported having more confidence and control over what they do with increased responsibility for client care. These nurses considered continuity of care was better and that nurses knew their clients' needs. Being able to make decisions and use their own initiative enabled the nurses to prioritise their care and to use their skills more effectively. They were more interested in their work as they were able to plan care and patient needs in advance (Webb & Pontin, 1996).

Laschinger, Heather, Finegan, Shamian and Almost (2001a) note that decision latitude refers to nurses' control over their daily tasks. It has two main parts: 1) skill discretion (to what degree the work involves learning new tasks, encourages creativity, lacks repetitiveness, includes a variety of practice and develops the nurse's unique abilities), and 2) the decision authority (the nurse's ability to make decisions about the job and how the nurse influences the company policy and work group). They have shown that when nurses are constrained by poor control, motivation cannot be channelled appropriately into a coping response, causing a greater psychological reaction, persisting for a long period of time. Their research shows that active jobs have increased psychological demands but increased decision latitude. These demanding jobs encompass tasks over which nurses feel they have a measure of control, having the ability to use all their available skills. They show that their energy is transformed into operation through problem solving, which results in little psychological strain. When nurses have poor control over workload demands, this increases performance strain.

In Laschinger et al's (2001a) study, nurses experiencing high psychological work stress with poor control were markedly less empowered, less satisfied, and less committed than those with decreased job strain levels. Nurses having high

psychological demands and increased levels of control were more likely to be psychologically empowered; their confidence was higher in job-performance abilities, their work was meaningful, they believed they could make an impact and they reported better autonomy. They experienced more structural empowerment; they reported having better access to information, resources, support, and opportunities to grow and learn in their job. Their study's results show that an increase of control over work, despite high psychological demands, will make nurses more satisfied in their jobs and more committed at an organisational level, therefore more unlikely to leave their organisation. Laschinger et al's (2001a) study showed that, despite these approaches, there are factors continuing to threaten nurses' control over their work. They showed that although nurses provide input into important decisions affecting their practice (setting quality standards, scheduling and staffing levels), many still consider management to have the final word for these decisions. They note that managerial interventions which increase nurses' uncertainties concerning job control might reduce nurses' ability to respond more effectively to extensive changes in present healthcare work environments.

Deci and Ryan's (1987) research showed that events which are typically controlling (pressuring one towards specific outcomes) affect creativity negatively and events which are autonomous (promoting choice) for an individual promote creativity. Controlling events induce negative emotional tones. They discovered that behaviour which is autonomous has been linked to more creativity, greater interest, a better emotional tone, better conceptual learning, more cognitive flexibility and more positive behaviour change than behaviour which is controlling. They also found that people can pressure themselves in the same way they are pressured by external proceedings, and controlling themselves in this way is similar to being externally controlled. Carver and Scheier (1981) describe control as the sequencing implicit in a set of instructions, each instruction being executed prior to the next instruction being attempted. The former task needs to be completed before control is transferred to the next task.

2.3. Person-Fit Theory

The Person-Fit Theory suggests that tension arising from a mismatch between an individual nurse and workplace results in burnout and job dissatisfaction (Mansfield et al., 1989). Mansfield et al. (1989) have developed an Index to reduce stress and burnout which arises when nurses encounter conditions that conflict with their work styles, personalities and basic values. A nurse thriving on work pressure might prefer a highly technical environment to a personalised, caring setting. Presently, nurses' placements do not take account of differences in temperaments, values and personalities which might be enhanced in one clinical setting or another. Nurse administrators might, in using their Index, be able to allocate more satisfying and stable job placements (Mansfield et al., 1989).

If a nurse or midwife thrives on pressure, and / or prefers a technical environment rather than a personalised setting, he / she would be more likely fulfilled in a coronary care, neonatal care or emergency unit. Presently, nurses' placement into different clinical areas occurs in no logical way (Mansfield et al., 1989). Mansfield et al's (1989) Job Content Index gives guidelines for nurses selecting different clinical areas. They assert this strategy, coupled with appropriate rewards and adequate staffing, should result in lower stress, better morale, better cost savings for institutions and reduced staff turnover. Jamal and Baba (2000) conceptualise job stress as an individual's reaction to a work environment which they consider threatening. This portrays a poor fit between the work environment and the individual's interest and abilities, in what would seem to be extreme demands and inability of the individual to handle a particular situation.

Furnham (1992) reports that the Person-Fit Theory has consequences in work-related behaviour. He adds that the better the match between an individual's needs and environmental attributes, the more likely the potential for an individual's satisfaction and performance. He states the importance of organisational / environmental factors and the person-environment fit. He also highlights the importance of individual differences. Flowers (2004) recommends determining nurses' hardiness levels and needs for training as less hardy nurses might then be directed towards less stressful environments.

Maslach, Schaufeli and Leiter (2001) have shown that recent research on burnout has developed theoretical frameworks integrating both situational and individual factors, rather than dealing with them separately. Research has shown that organisational and situational factors have a more important influence over burnout than individual characteristics (Maslach, Schaufeli & Leiter, 2001). There is a history within psychology explaining human behaviour and the interaction of the environment and the person. Many interactional models view environment and person as independent entities, characterising them so that a degree of fit can be assessed between environment and person. Maslach, Schaufeli and Leiter (2001) note how it was assumed that better job-person fit predicted less stress and better adjustment. The greater the mismatch between job and person, the greater the chance of burnout. This model seems appropriate for understanding burnout.

Maslach, Schaufeli and Leiter (2001) report that mismatches in control indicate individuals having insufficient control over resources needed to achieve their work or having insufficient authority to pursue work in a most effective manner. They have identified that individuals overwhelmed by high responsibility levels experience a crisis concerning control and workload. The mismatch occurs if responsibility exceeds one's authority. They note how it is deeply distressing for nurses and midwives to feel responsible for producing results which they want while lacking an ability to influence those results.

Maslach, Schaufeli and Leiter's (2001) model proposes that there are six areas of work life which have relationships with burnout, including control, workload, community, fairness, values and reward. They view a mismatch in levels of control and work responsibilities as being related to the reduced personal accomplishment component of burnout. They report that individuals who are inundated by their responsibility level might experience a crisis in the areas of control and workload. They identify a mismatch in workload levels and the wrong type of work, result in people seeming to lack the skills for a particular type of work. They relate workload to the exhaustion component of burnout. They report another mismatch involves people losing connection with other colleagues in the workplace as people thrive in the work 'community'. They note that a serious mismatch between person and job

includes fairness which confirms people's self-worth and communicates respect. They identify values as another component of mismatch between person and job if people are constrained by their work to do things not in accordance with their values. They report reward as another component as if social or financial rewards are insufficient; other rewards such as valuing workers is critical to a good person / work match.

Atkinson (1988) shows that improving job-person fit could be the individual's or the organisation's responsibility. She suggests that good selection procedures could increase the chance of achieving good job-person fit. She suggests that an employment analysis should include what personal qualities and skills are required. She suggests that each individual should look at the work involved and the particular skills they need to apply. Furnham (1992) suggests that some jobs might be more suitable for a particular individual than others. He reports that the job-person fit concept has been popular in research areas focusing on occupational choice and work problems such as stress.

Furnham (2001) reports that researchers have now become aware of the many ways individuals differ in their work performance. He suggests how important it is to examine an individual's traits and abilities at selection which can help predict aspects of one's professional career. He reports that individuals adapt to the job. Usually out of necessity, they adopt a working style suited to the job requirements, usually soon after they commence employment. They suggest that individuals also change aspects of the work they perform. They personalise aspects of their work and change their social and physical environments. For example, employees with the same office arrange their own working spaces to suit their individual preferences (Furnham, 2001).

3. Instruments used to detect stress

It is impossible for any single tool to assess all sources of work stress encountered in many occupational settings as this would require an exceptionally lengthy instrument (Vagg & Spielberger, 1999). In recent years, the number of tools which have been developed by nurses that assess the workplace are on the increase (Rattray & Jones,

2007). Hurrell, Nelson and Simmons (1998) reported that choosing a tool to measure stress poses a perplexing challenge. Edwards and Burnard (2003) report that there are several established reliable and valid measures for measuring stress outcomes and stressors but investigators feel there is a need to continue to develop new instruments.

Hurrell, Nelson and Simmons (1998) report that objective measures of stress in people's jobs are difficult to obtain. They predict that self-report measures of stress will probably dominate job-stress research. They particularly note that developing valid and reliable measures of the complex phenomena of violence and harassment in the workplace represents a big measurement challenge. They recommend development of new and improved tools to assess stress in the workplace. Furnham (1992) wonders why a set menu should be used when an a-la-carte menu of questions could be developed specifically for a profession's needs. He adds that even though it is time consuming it is ultimately more cost effective and useful to develop a tool for each particular profession.

Behaviour is researched by investigators primarily using measurements or observations and there have been various tools and instruments used previously in the literature to assess stress (Pervin, 1975). The Maslach (1986) Burnout Inventory primarily studied the three dimensions of burnout in nurses and is portrayed as the gold standard for measuring burnout. These included depersonalisation, emotional exhaustion and reduced personal accomplishment. It is a general measure which assesses burnout for human service professions, measuring chronic stress, not specific and organisational stressors as such (Nolan, 1995). Coffey (2000) states that the measure could be too sensitive and might be reporting higher burnout levels than are actually evident.

Stordeur, D'Hoore and Vandenberghe (2001) used the Nursing Stress Scale which was developed by Gray-Toft and Anderson (1981) specifically to assess three sources of stress, namely, physical, psychological and social. This questionnaire was deemed inadequate for this study as it did not examine work behaviour as pressure and motivation levels. The Nurse Stress Index developed by Hingley and Cooper (1986) was originally designed specifically for nurses in management and was lengthy,

consisting of 140 items. McGowan (2003) used the shortened 30 item questionnaire with nurses developed by Hingley and Cooper (1986) but did not pursue aspects of burnout.

Goldberg (1978) designed the General Health Questionnaire-12 which detected psychological indicators of ill health. It was used in occupational and community settings for health professionals. The questionnaire's main purpose was to evaluate psychiatric morbidity. Rahe and Tolles' (2002) Brief Stress and Coping Inventory assesses people with fibromyalgia for stress and coping. They assessed how they dealt with fibromyalgia and how it affected their lives on a daily basis.

Williams and Cooper (1998) developed the Pressure Management Indicator which is used by employees across organisations. It was developed from the Occupational Stress Indicator (Cooper, Sloan & Williams, 1988) and not developed for nurses and midwives specifically. It was developed for a business environment and assesses how much control the individual is able to exert over their life and ways in which they cope with stress (Goodfellow, Varnam, Rees & Shelly, 1997).

Williams and Cooper (1998) categorise variables of stress as sources of pressure, individual differences and effects. They recommend the assessment of individual differences and stress outcomes. They report that appraisal should be recognised as a key role with stress and that self-report questionnaires are appropriate when measuring work stress. Their questionnaire was developed by confirmatory factor analysis. The Pressure Management Indicator assesses physical well-being, sources of pressure, interpersonal and coping support, type 'A' behaviour and influence and control (Cottrell, 2001).

4. Sources of stress

4.1. Demographics

Individual differences such as age have an effect on the association between strains and stressors on probation officers (O'Donnell & Stephens, 2001). The registered nurse workforce has shown a flat trend of stress and burnout for those under 30 years

of age from 1999 to 2001 (Workforce Planning NSW Health, 1999-2003). The average age of nurses and midwives working nationally in 2004 was 43.2 years (Australian Institute of Health and Welfare, 2006). Maslach, Schaufeli and Leiter (2001) report that individual characteristics such as formal education or age have been linked to burnout in nurses. They state that age has been the one demographic variable that has been consistently linked with burnout, with trends showing the younger the person the more likely they are to burn out.

Burnout more often occurs earlier in nurses' careers (Maslach, Schaufeli & Leiter, 2001). Research has revealed that more experienced, older employees experience less burnout than younger employees (Cordes & Dougherty, 1993). Individuals probably gain competency and skill through experiences linked to ageing, helping them to deal with stress (Younger, Marsh & Grap, 1995).

Marshall (1980) and Slater's (1993) research suggests stress could change in different specialty areas. Working in intensive care areas of nursing is frequently perceived as stressful (Goodfellow et al., 1997). Goodfellow et al's (1997) study found that hours worked and age had no impact on stress experienced by nurses and doctors in an intensive care unit.

In the general population, women have reported higher stress levels stemming from work factors than their male counterparts (Davidson, 1983). One of the possible factors influencing nurses and midwives who are leaving the profession is that it is a predominantly female workforce. Nurses and midwives in childbearing years retire from the workforce (Doiron, Hall & Jones, 2008). Nurses often leave to have families and never return (Deary, Watson & Hogston, 2003).

For nurses and midwives in NSW, the highest retention rate (83.3%) pertains to those aged between 40 to 55 years (Doiron, Hall & Jones, 2008). Goodin (2003) notes that those nurses with the most experience, being middle-aged women, who are dominating the workforce will retire from the profession at a time when demands are the highest. Curtis, Ball and Kirkham's (2006a) study showed that 49.5 per cent of

midwives who left the profession were less than 40 years of age, representing a considerable loss of midwifery working years to the profession.

Kent and Lavery (2007) found that nurses with tertiary qualifications experience higher emotional exhaustion than hospital based nurses. Hope, Kelleher and O'Connor's (1998) study found that qualified nurses reported significantly higher levels of stress compared to student nurses. Student nurses in their study used significantly more coping strategies than qualified nurses. However, those that continued professional education for more than ten days over two years experienced lower levels of burnout. Similarly, Jenkins and Elliott (2004) found that qualified nurses reported higher stress levels relating to workload than nursing assistants.

4.2. Environmental working conditions

Most healthcare providers have known at least one person who has experienced workplace stress (Lambert, Lambert & Yamase, 2003). Valid measurement of work environments has assumed importance in occupational health disciplines in order to evaluate stress and management interventions (Jones & Johnston, 2000). AbuAlRub's (2004) study showed that working in environments with decreased levels of stress and increased levels of social supports resulted in increased rates of nurse retention. They recommend that nurse managers and nurse administrators set examples so co-workers' support will be an inherent characteristic within the workplace. Shiu (1998) suggests nursing management adopt an approach to building a healthy working environment, rather than focusing on individuals' stress management. This is a more preventative approach, rather than reacting or treatment following a critical incident.

Nursing is a broad profession with nurses performing several roles in various areas of practice (Chrisopoulos & Waters, 2003). Olofsson, Bengtsson and Brink (2003) highlighted issues relating to increased workload requirements and demanding work tasks. They identified high work demands as difficult to address. Nurses in their study could not influence the work situation which caused them to feel hopeless. As such, they emphasise the importance of unions and employers overseeing workload levels. Goodin (2003) found that nurses reported experiencing excessive workloads and an inability to complete tasks. However, Gillespie and Melby (2003) report that nurses

have often regarded stress as their personal responsibility, with less focus on changing the work environment.

Certain factors are already known to impact on workplace stress such as working conditions, external pressures and physical aspects of the working environment. Nurses have described working environments as unpredictable and accidental, emphasising the importance of a safe physical work environment (Billeter-Koponen & Freden, 2005; Levin, Hewitt & Misner, 1998). Interventions such as targeting work environments and involving managers and working team members represent first steps for improving workers' health (Lavoie-Tremblay, Bourbonnais, Viens, Vezina, Durand & Rochette, 2005). It is essential that nursing organisations introduce guidelines, procedures and policies which assist managers to implement change and appropriately manage stress levels within their workplace environments (Harris, 2001).

Canadian nurses in Beaudoin and Edgar's (2003) study stated that they could not keep up at the speed they were working. Nolan (1995) comments that increasing workloads and lack of resources might mean nurses are working longer hours. Van der Hulst and Geurts (2001) note that overtime is likely to occur with excessive workloads. They note that, eventually, insufficient recovery might cause increased fatigue and influence health and well-being.

Gonsalves (2003) reports that work is now more challenging because of managers' demands to work faster. Cooper (video recording, 2007) now directs a company which manages workplace stress and the outcomes have been shown to have significant reduction of sick leave especially in the police force. Organisations should be mindful of their obligation and responsibility to facilitate their employees' professional and personal growth by addressing stress reactions. Healthy discussions might help understand and identify stress in the workplace so solutions to stress and burnout problems are achieved (Ootim, 2001). Normal meetings of nurses and midwives during the course of their day are an important aspect of the working environment (Billeter-Koponen & Freden, 2005).

Jenkins (1996) conducted some qualitative research with nurses working in Wales and found that daily ‘hassles’ were sometimes more stressful than bigger issues, and especially when in a hurry. Chang, Hancock, Johnson, Daly and Jackson (2005) identified work environment factors as key areas causing role stress in nursing. Role stress might be defined as the consequence of disparity between an individual’s perception of the characteristics of a specific role and what is actually being achieved by the individual currently performing the specific role (Lambert & Lambert, 2001). Role stress, specifically work overload, is reported as a main reason for nurses and midwives leaving the workforce (Chang et al., 2005).

Nursing is perceived to be an extremely stressful vocation (Wheeler & Riding, 1994). As nursing is historically known as a stressful occupation, McGrath, Reid and Boore (2003) note that most nurses and midwives would expect a challenge or at least some type of stress in their working environments. They found that by far one of the most commonly reported stressors for nurses was insufficient time to perform their work and provide quality care. Nearly half of their respondents mentioned meeting imposed deadlines as stressful. Nurses and midwives are susceptible to systemic workplace stress which includes pressures such as inadequate numbers of staff, heavy workloads and inadequate organisational support (Bergen & Fisher, 2003). Deery (2005) shows that sometimes bureaucratic pressures of working in large hospitals and health services can exaggerate the importance of the system rather than that of the nurses’ and midwives’ contributions.

It seems that the workload, rather than the task per se, is the precipitating factor which is exhausting for nurses and midwives (Severinsson, 2003). As the nurse in Severinsson’s (2003) study states:

If you had a couple of families where there was a terminally-ill older member, for example you would have to spend extra time, you couldn’t just get up and go ... there was no one else to refer them to, so it was you or nobody
(Severinsson, 2003, p. 62).

Nurses will not stay in or return to the workforce unless workloads are perceived as reasonable (Achterstraat, 2007).

In 1997, the Australian Council of Trade Unions listed increased workload as one of the most stressful conditions for health workers (42%). The Australian Council of Trade Unions (1997) claimed that increased workload accounted for 25 per cent of stressful conditions across all industries. The Australian Council of Trade Unions' (1997) report showed that nurses identified difficulty in obtaining pay for overtime when finishing work late due to excessive workloads and often no meal breaks. The priority of high-quality services pushes nurses and midwives to work in difficult and complex circumstances (Deery, 2005). According to Deery, (2005) nursing and midwifery are about human relationships. Development of coping and interpersonal skills is necessary in dealing with the stressful nature of the work. Zapf, Seifert, Schmutte, Mertini and Holz (2001) conceptualise emotional responses to work as multidimensional constructs posing various demands on healthcare professionals.

Engelbrecht (2006) conducted a qualitative study on midwives in Denmark and revealed that the midwife is not often able to recover, stepping from one demanding and active environment into others. She reports that midwifery is a job which demands mental, emotional and physical availability. Wheeler and Riding's (1994) study on occupational stress in nurses and midwives, found that excessive workloads were very stressful. They found that staff shortages, workload and insufficient time for completion of tasks were the three main stressors. This highlights the impact of time pressure as a major stressor. Kushnir, Rabin and Azulai (1997) also identified excessive workload as a reason that paediatric oncology nurses held their staff meetings outside of work hours. These nurses believed that the norm was to finish their work shift two to three hours after the specified shift time and a nurse leaving prior to this time or on time was not a 'good' nurse. Therefore, a nurse should not leave at the completion of the shift. They should stay on as required, taking extra special responsibilities.

Nurses' work is being done with a small number of staff and the pace of this work is increasing (Billeter-Koponen & Freden, 2005). Nurses are now asked to see more

clients in a shorter time period (Penson, Dignan, Canellos, Picard & Lynch, 2000). Greenglass and Burke (2001) note that workload has been the most consistent and significant predictor of stress in nurses and has contributed to cynicism, depression and anxiety. They recommend that if the detrimental effects of increased workloads are identified to hospital administrators, they might redesign education programmes to ameliorate stress in nurses. Greenglass and Burke (2001) recommend hospitals reduce stressful outcomes for nurses by implementing strict policies to limit excessive workloads, and if workloads are managed appropriately nurses should experience less anxiety and depression and in turn find greater job satisfaction. The three areas determining job satisfaction include 1) organisational procedures and policies; 2) aspects concerning overall workload, feedback, autonomy, skill variety; and 3) the work environment's physical nature and personal characteristics including general life satisfaction, self-esteem and ability to withstand stress (Furnham, 1992).

Action plans targeting psychosocial work environments represent first steps to improve workers' health. To retain and attract nurses it will be essential to maintain and create healthy and stable work environments (Lavoie-Tremblay et al., 2005). Efforts to improve work environments are critical to sustain a strong nursing workforce for the future (Laschinger & Finegan, 2005). Bohle and Quinlan (2000) report that attempts to remove or reduce stressors from the work environment are rare and interventions usually amount to increasing employee tolerance to deleterious job characteristics. However, Achterstraat (2007) recommended the use of a workload tool to determine nursing numbers required for general wards and workloads have since been improved in wards where the tool has been introduced.

Since the questionnaire developed for this study was distributed in 2005, excessive workloads have been identified as a high priority issue. The NSW Nurses Association (2007a) has initiated a workloads breakthrough for nurses in emergency departments, community health and mental health. These guidelines allow nurses' input into workload assessment and attempt to provide them with the power to address these workload issues. The NSW Nurses Association (2007a) states that it is unacceptable for nurses in emergency departments, mental health services and community health to endure heavy, ongoing workloads.

The following principles have been developed by NSW Nurses Association and NSW Health (2008a) (2008b) for emergency department and inpatient mental health managers in the evaluation of nursing or staffing levels and for the ‘Reasonable Workload Committees’ to assess and manage identified workload issues. To determine the nursing productive fulltime equivalent required: 1) the previous 12 months activity are to be used as a baseline unless there has been a significant change in activity or introduction of a new model of care; 2) the previous year’s fulltime equivalent utilised is to be compared, professional judgement together with anecdotal information on workload issues; 3) local factors affecting workload for example, physical layout of unit, availability of support, staff etc. Extra factors to be considered for mental health units include: 1) patients with a dual diagnosis; 2) the number of inpatients requiring: one staff or more to one patient; close observation; sighting at regular intervals and nearer to going home; 3) clinical risk assessment of patient including aggressive and suicidal behaviour, vulnerability, age and co-morbidities. To determine the nursing non-productive fulltime equivalent required: 1) no less than two weeks (ten days) leave relief per fulltime equivalent for sick / family and community service leave and mandatory education; 2) annual leave relief; 3) assess impact on staff for Workers’ Compensation / Return to Work Programmes on fulltime equivalent required; 4) long service leave and maternity leave and relief is not considered part of the funded fulltime equivalent (NSW Nurses Association & NSW Health, 2008a, 2008b). These strategies are only recently being evaluated for acceptability and effectiveness.

Stressful and unsafe nurse workloads are an important issue and development of appropriate guidelines are efforts to underpin nurses’ legal rights to reasonable workloads. These guidelines which have arisen from The Nursing Practice and Process Development Survey (NSW Health Department, 2002-2003) are being initiated and evaluated. The Nursing Practice and Process Development Survey (NSW Health Department, 2002-2003) was undertaken to ascertain nurses’ and midwives’ opinions concerning possible improvement in staffing levels, resources and occupational health and safety issues. The Ministerial Standing Committee is presently reviewing the outcomes and solutions that are currently being implemented in the workforce areas of nursing and midwifery. One of the most important issues

arising from this survey was the awareness and documentation of excessive workloads as factors which influence provision of quality care for patients. Nurses and midwives are encouraged to follow the suggested reporting guidelines if they believe that they are working under these circumstances. Recommendations from the NSW survey have been partially adopted. These recommendations are designed to assist staff in skill development and knowledge, coupled with flexibility in an era of rapidly changing healthcare systems, and showcasing educators and nursing unit managers with excellent management and leadership skills. Outcomes of the 2002 to 2003 (NSW Health Department) study follow.

This Nursing Practice and Process Development Survey (NSW Health Department, 2002-2003) instigated seven steps in public hospitals and six steps in private hospitals to address excessive workloads. For public hospitals this involves nurses and midwives identifying workload issues in the unit, ward or health service. The next step is raising the issue with the manager. If the issue is then not resolved, the worker is to consult the representative from a ‘Reasonable Workloads Committee’. This committee then makes recommendations to management and if still not resolved the NSW Nurses Association is contacted. If the matter is not resolved with the Area Health Service, the Association commences dispute proceedings in the NSW Industrial Relations Commission. The process is similar in private hospitals (NSW Health Department, 2002-2003).

Recently workloads have been addressed at Coffs Harbour Base Hospital in the areas of the emergency department and operating theatre. Admissions to hospital increased by 50 per cent in July 2007 compared to the previous year, seeing 33,000 patients within that year. Extra staff have been sought via the NSW Nurses Association’s ‘Reasonable Workloads Committee’. Extra positions in the emergency department and operating theatres have been approved in hopes that unnecessary pressure on nurses can be relieved. It has been reported that this strategy has made a significant difference to Coffs Harbour nurses. Coffs Harbour nurses sought an extra ten positions for areas with the highest staff shortages via the ‘Reasonable Workloads Committee’ (NSW Nurses Association, 2007b).

Workload has been a major issue for mental health nurses at Morisset Hospital in NSW with a new approach following much lobbying to prevent patient overcrowding and nurse understaffing. This hospital banned new admissions as nurses expressed concern and frustration about patients' welfare. Currently, caps are in place, controlling the number of patient admissions. If these patient caps are exceeded, an extra nurse is now employed on each shift. It would seem that unacceptable workloads for nurses are in some instances finally being assessed (NSW Nurses Association, 2007c).

Excessive workloads also relate to staffing levels. Recently, midwives at Royal Prince Alfred maternity unit (NSW Nurses Association, 2007d) report experiencing high rates of stress and burnout from severe workloads. They have expressed concerns regarding patient safety and standards of care. Midwives at Royal Prince Alfred maternity unit (NSW Nurses Association, 2007d) were staffing 60 full beds for the night shift with just eight midwives, which was one-third of staffing for the day shift. The midwives described that even when birth rates had increased from 4,200 to 5,043 births in the past year, staffing was not increased. Workload was also increased by rising Caesarean rates, with 94 more Caesareans in the space of three months compared to the same period a year ago. Many staff were working regular overtime due to staff shortages and burnout rates and stress levels were reported as high. A few of the midwives also required stress leave and some midwives left because they could not deal with the excessive workloads anymore. Those staff who stayed were reporting exhaustion and that they could not work any longer (NSW Nurses Association, 2007d).

Royal Prince Alfred midwives (NSW Nurses Association, 2007d) had sought help by a 'Reasonable Workloads Committee' by sourcing more staff for their maternity unit. This action allowed patient numbers to be capped, removing enrolled nurse trainees from the ward, trialling a nursing unit manager position, reorganising antenatal clinics and improving security. Royal Prince Alfred midwives (NSW Nurses Association, 2007d) finally called an extraordinary meeting to increase staffing. Staffing has now increased, including clinical midwives, ward assistants and ward clerks, another midwifery educator and expanded role of a clinical midwifery consultant. These

midwives are reported as determined in pursuing their claims and committed to achieving quality patient care and a better workload. They are now reporting success following a two-year campaign to lobby for more staff and have recently seen significant staffing increases.

Recent research by the NSW Nurses Association (2008c) has shown that nursing unit managers reported that more support was crucial to reduce workloads and burnout and to retain nurses and midwives in the profession. Midwifery managers received no extra resources and staff to cope with the increased birth rate. Responsibility for administration and management has been directed towards nursing unit managers who lack adequate administrative and clerical support (NSW Nurses Association, 2008c). NSW Nurses Association (2008c) has found that nursing unit managers are obliged to do significant numbers of hours of unpaid overtime work to complete their administrative workload. Nurses and clients are disadvantaged because nursing unit managers lack the time to exercise their high-level skills, mentoring and supervising other colleagues including nurses and midwives to implement best practice (NSW Nurses Association, 2008c). Workloads for managers, including clinical care in addition to leadership, organisation and administration duties, could be an issue worth pursuing in future research.

A recent anecdotal report from a nursing unit manager at Bathurst Base Hospital's emergency department concluded that she felt overwhelmed by her workload. She stated that she spent three-quarters of an hour to one hour before and following each shift attending to unpaid administrative work and frequently worked paid clinical overtime covering last-minute shortfalls in rosters. Last year her overtime tallied 109 paid clinical hours. She stated that she was rarely consulted on statewide rollouts of projects affecting her unit (NSW Nurses Association, 2008d).

In another anecdotal report, a nursing unit manager at Mona Vale Hospital stated that staff reductions are having severe impacts on nursing, allied health and medical staff, as well as patients. She stated that these staff struggle to deliver quality patient care. She describes spending much of her time in direct patient care (as opposed to managing the unit) as there are insufficient nurses to complete the workloads. A key

responsibility of her nursing unit manager position is to ensure her unit stays up-to-date with nursing practice changes, but this suffers due to her direct patient care workload. She stated that nursing unit managers try to protect colleagues but the workload is so excessive that they are rarely able to do this anymore (NSW Nurses Association, 2008e).

Cottrell (2001) found workload to be a major stressor for mental health nurses. Morgan, Semchuk, Stewart and D'Arcy (2002) also identified workload issues to be the most significant concern for aged care nursing staff in their study. They mailed survey questionnaires to all registered nurses, nurses aides, and activity workers in aged care facilities. The self-reported scales assessing the social and psychological structure of work environments found sources of stress involved insufficient skills, workload and managing dementia in the aged care facility. Heavy workloads prevented nurses spending more quality time and care with dementia residents.

Dementia care experts reiterate the need for recreation facilitated by nurses to improve quality of life for persons with dementia (Morgan et al. 2002). In Morgan et al's (2002) study nurses felt anxious and 'rushed' about their ability keeping up with work demands. Perceptions of having to work quickly, having insufficient time, and excessive demands were evident in their feedback. Nurses in their study reported rushing residents' care often resulting in residents becoming aggressive or agitated. Insufficient time also contributed to psychological demands affecting all staff. Overall, insufficient time for both physical and psychosocial care diminished residents' quality of life and dignity. Combined with these high job demands, these aged care nurses perceived their work environments to yield low control, reporting fewer opportunities for decision-making. Training was identified as a particular strategy for reducing stress in staff caring for residents with dementia.

Greenglass and Burke (2001) identified workload as the most consistent and significant predictor of stress in their study with hospital nurses. Barrett and Yates (2002) also found that workloads are likely to cause emotional exhaustion and job dissatisfaction for nurses. They note that determining appropriate, sustainable workloads for nurses and midwives will be a continuing challenge. They recommend

that any solution should include a review of how nursing and midwifery care is delivered, be that primary patient allocation or team models of care.

In Boey's (1996) research, Singapore had been experiencing a nursing shortage resulting in work overload. In fact, work overload and staff shortages were reported as the most stressful experiences among Singaporean nurses. The nurses noted stress sources included work overload, inadequate staffing, feelings of incompetence, awareness of high levels of responsibility, lack of support and interpersonal conflicts. Harris (2001) found that the nature of nurses' work means they are exposed to more stress compared to other employees, experiencing role ambiguity, significant work demands and role conflict. Williamson and Dodds (1999) found that potential conflict between clients and nurses and their relatives, especially involving disputes about the extent and nature of care delivered, is another source of stress.

Barrett and Yates' (2002) research considered factors affecting quality of oncology / haematology nurses' work, which affected their choice to remain in nursing or in a particular specialty. They found that 8.2 per cent had a high intention of leaving nursing in the not too distant future. A further 39.5 per cent indicated uncertainty about their intent to leave the specialty. The ramifications of this actually occurring would have negative outcomes in social and economic terms.

Muscroft and Hicks (1998) suggest that quality of care might be diminished when nurses are stressed. Their small study compared general and psychiatric nurses' responses on the likelihood of their using counselling at work in dealing with their problems. They reported that some nurses would rarely want their supervisor to know that they were requiring counselling because that might be identified as a professional weakness. They found that the general nurses experienced more stress than their colleague psychiatric nurses. The psychiatric nurses were also more likely to engage in workplace counselling services. These results were quite different from previous similar studies. O'Connor and Jeavons (2002) have shown that, generally, Australians are not likely to divulge personal information, especially in a work setting, for fear of being labelled as 'not coping', possibly jeopardising job security.

Krausz and Koslowsky (1995) note that levels of stress will vary depending on the kind of department where the nurse works. On the other hand they report that intensive care unit nurses are more likely to accept greater job opportunities such as responsibility, autonomy and involvement. Based on these results that intensive care units might provide better enriched work environments, nurses might demonstrate lower levels of stress and better work attitudes.

Hall (2001) undertook a study to determine the severity and extent of burnout in a nurse population in New Zealand. It also assessed socio-demographic characteristics in relation to burnout and explored relationships between employment variables and nurses' experience of burnout. Eleven hundred and thirty four respondents (38% return rate) showed that 32.9 per cent show advanced burnout phases, which is similar to other worldwide studies. Indicators of behaviours of burnout were 'keeping distant from people' and 'removing themselves from social support networks'. They were unable to deal with stressors and apathetic about solving problems. There was a strong correlation between age group and burnout, more than half of those over 40 years of age being in advanced stages of burnout. The study's findings present a different picture to previous studies, where a younger population of nurses consistently reported high burnout levels. Patterns of burnout were not different across various specialty work settings. Another result was Nolan's (1995) study, showing stress levels to be higher with increased seniority. Burnout can impair quality of care for clients as well as having detrimental consequences for the personal lives of the carers (Penson et al., 2000).

Phillips (1995) has shown that nursing stress is extensive because concerns with work overload, job stability and security, lack of support, self-esteem, safety issues and money and family are often complex and difficult to resolve. Garrett and McDaniel (2001) report that as hospitals deal with changes in external environments, such as available resources or changing regulations, this can create uncertainty in the internal environment, and the variations and uncertainty might, in turn, affect nurses. They show that a high level of uncertainty in the environment influences nurses to perceive that their contributions to both organisational outcomes and client care seem under-recognised. They have shown that caring for more clients in less time and with fewer

available resources produces decreased patient satisfaction, reduced staff morale, staff behavioural changes and increased healthcare costs. According to Garrett and McDaniel (2001) this results in negative consequences, leading to burnout.

Ng, Koh, Chan, Ong, Chia and Ong (1999) found that nurses are required to respond to rapidly changing health environments. Ng et al's (1999) study found that for medical and surgical nurses, 54 per cent of the amount of stress occurring in their daily lives was caused by their jobs. The main sources of stress included work overload, death experience, emotional demands of families and patients, poor communication among staff and a changing work environment. Some nurses working fulltime also attended to housework and cared for children. Their study concluded that nurses working in different nursing units experience varying levels of stress.

Mackin and Sinclair's (1998) study showed that insufficient time to attend to patient care duties caused high levels of stress. Mackin and Sinclair (1998) note that stress requiring treatment has been shown to affect nurses and midwives, ranging from skin disorders, headaches, migraines and minor surgery. Maslach, Schaufeli and Leiter (2001) indicate that burnout research has established that high expectations of healthcare consumers coupled with nurses working hard, beyond what would be considered reasonable, leads to eventual cynicism and exhaustion, particularly when the increased exertion does not lead to the expected results. Their research has reported that as cynicism persists, workers' feelings of inefficacy increases, so further studies are necessary to explore this issue. They support the notion of burnout being a prolonged response to long-term job stressors. Their alternative argument shows that mentally healthy people are more adept at coping with chronic stressors, therefore not as likely to suffer burnout.

Laschinger et al. (2001a) explored relationships between psychological and structural empowerment, work satisfaction, and job strain. Their final sample consisted of 404 (72%) usable questionnaires (194 males, 210 females) for nurses working fulltime (58%) or part-time (42%). These demographics were not representative of nurses practising in the country. The results showed that structural empowerment had a positive, direct effect on psychological empowerment, which in turn had a positive,

direct effect on satisfaction with work and a negative direct effect on strain at work. They found that increased workloads, increased job uncertainty and higher patient acuity in healthcare environments have a dramatic impact on nurses' experiences of work. They highlighted how job demands are psychological stressors in the working environment: how hard and how fast one performs necessary tasks, time limits to perform certain tasks, increased amount of work, conflicting demands, interruption of tasks and the hectic pace of the job. Another issue highlighted that employers have adopted policies restricting nurses from varied aspects of client care; nurses' roles have been devalued by substituting nursing positions with less qualified care providers. They found nurses with high job strain were less satisfied, less committed and less empowered with their jobs. Their results suggest that managerial interventions which increase nurses' feelings of control might increase nurses' positive responsiveness to healthcare work environments. Fagin, Brown, Bartlett, Leary and Carson (1995) also found a sizeable proportion (>60%) of their sample of psychiatric nurses were dissatisfied with their work environments.

Job satisfaction is regarded as an intrinsic reward for nurses and might counterbalance stress (McGowan, 2001). Retaining experienced and qualified nursing and midwifery staff has become a challenge in the current work environment (Edwards & Burnard, 2003). It is essential to examine factors influencing nurses' job satisfaction. Current nursing workforce trends suggest shortages are causing problems with quality patient care (Barrett & Yates, 2002).

Even though the sample was small (N=129), Healy and McKay's (2000) study showed that reducing environmental stressors like perceived inadequate staffing levels and workload might be more appropriate than interventions like education or improvement in individual coping strategies and stress management. Workplace issues influencing staff retention might include flexibility of work hours, pay rates, incentives towards further education and study and scholarships for worthwhile research projects. They found that improving working conditions for nurses and midwives will not only decrease stress levels but encourage nurses and midwives to continue in their profession. Individual stress management might be helpful, but it will provide only temporary relief for nurses and midwives. Providing preventative

strategies such as a healthy working environment and excellent resources and support instead of managing the stress effects might be the answer (Healy & McKay, 2000). Weekes, Peterson and Stanton (2001) identified that working harder and longer is what they called work intensification. It involves doing more tasks with less resources and is achieved by increasing workloads of employees or decreasing staff numbers doing the same work. Following identification of the stressors, methods must be considered to reduce them (Weekes, Peterson & Stanton, 2001).

Carson, Bartlett, Leary, Gallagher and Senapati-Sharma (1993) found that emergency nurses report their exposure to violence as extremely high. Another stressful factor they identified was experiencing too many interruptions. A recent study conducted at Macquarie University (Carstairs & Trenoska, 2002) on 100 nurses in Sydney hospitals found abuse and violence from patients and colleagues accounted for the majority of nurses' stress. The study suggests that nurses should not have to endure this abuse in their working environments. Their study attempted to represent that many more nurses are continually dealing with this issue. McKenna, Smith, Poole and Coverdale (2003) have shown that horizontal violence usually involves psychological harassment which creates hostility. This might lead to deleterious psychological effects contributing to hostility in the working environment. This hostility might be an effect of ongoing stress, impacting negatively on nurse and midwife retention in the workforce.

In Fagin et al's (1995) study, nurses thought that changes in health services were a source of stress and work overload was a huge stressor for nurses in geriatric and medical wards. Gray-Toft and Anderson (1981) identified three major sources of stress: inadequate educational preparation, dealing with death issues and work overload. Carson, Bartlett and Croucher's (1991) study found that community psychiatric nurses identified some of the most stressful aspects of their job as working with violent clients and having no community facilities to which to refer patients. They noted that as community services are overloaded, the nurse might take on more than their role expects of them.

In O'Donnell's (1996) research, time pressures / deadlines and work overload were considered major stressors, while violence and shift working were considered less so. Managers identified their major stressors as long hours, time pressures / deadlines, poor communications and role conflict. Hummelvoll and Severinsson (2001) reinforce the issue of inadequate time in their study with psychiatric nurses who report lack of time to talk with clients leaves them with a guilty conscience. They show that even though the nurses in their study would have liked more contact with patients' families, this was not possible due to insufficient time. Nolan's (1995) research on mental health nurses' stress revealed major stressors which included: difficulties with clients, overly heavy workload, interpersonal conflict, organisational structure, professional self-doubt, under-resourcing and home / work conflict. Clinton, Moyle, Weir and Edwards (1995) found nurses were stressed about aged residents' disruptive behaviour. These stressors are comparable to other stressors identified in the literature.

Billeter-Koponen and Freden's (2005) study found that 43 per cent of nurses intended to leave their current employment within 12 months. Healy and McKay (2000) found that even though most nurses in their study reported being satisfied in their present positions, 67 per cent had thought about leaving the nursing profession. Environmental stressors, including low staffing levels and excessive workloads, accounted for this (Healy & McKay, 2000).

In McGrath, Reid and Boore's (2003) study, 33 per cent of nurses supported a reduction in workload as a factor to alleviate stress. They revealed that nurses experienced insufficient time to complete their work. Taylor and Barling (2004) in their research reflect how stress affects mental health nurses in the work environment. Participants commented how they felt rushed, many times forgetting to drink or urinate and not writing reports properly.

There is a tendency among nurses and midwives to assume that being pressurised by stress equals a sign of weakness; however, proper debriefing and mutual support during crisis periods might be effective for addressing stress (Mackin & Sinclair, 1998). WorkCover Authority of NSW (2000) suggests addressing this pertinent issue

of stress and burnout in the workforce, and fostering a supportive work environment through clinical supervision. Clinical supervision is a supportive, confidential and formal process which encourages exploration and reflection of work practices. Clinical supervision allows for professional development and competence in employees and has been believed to improve client care. Clinical supervision can foster a more industrious and stable workforce (WorkCover Authority of NSW, 2000).

Clinical supervision has been routine for psychologists and now is steadily penetrating into nurse and midwife arenas. Williamson and Dodds (1999) note that clinical supervision has conventionally been seen as educational rather than supportive for staff. Clinical supervision can be an effective means of nursing and midwifery support and involves moving beyond acknowledging stress and burnout in the workplace (Deery, 2005). Being positive towards clinical supervision and feeling supported by supervisors might mean lower burnout levels (Edwards, Burnard, Hannigan, Cooper, Adams, Juggessur, Fothergil & Coyle 2006). Further research is recommended on clinical supervision effects and its association with reducing burnout (Koivula, Paunonen & Laippala, 2000).

4.3. Organisational factors

Stress is a collective issue and requires a collective response to change the system (Salvage, 2003). Harris (2001) highlights that stress might affect an organisation's stability and cause significant harm. If the organisation does not address and recognise this, it could lead to increased absenteeism, impaired productivity, high staff turnover, increased accident rates, unsafe behaviour and a negative health and safety culture in general. She found that conflicting organisational demands lead to confusion, also that over-demanding and inflexible schedules can increase work pressures. She concluded that prolonged conflict between nurses, including racial or sexual harassment, or bullying, could cause harmful stress levels. Harris (2001) found that organisations that are changing or growing rapidly might transfer pressures to individual nurses, with little consideration of their preparedness for these changes. She reports that some employers foster a friendly culture, assisting nurses to adapt to new changes and to learn while practising. In Ekstedt and Fagerberg's (2005) study some people

experiencing burnout described unstructured organisations as a characteristic feature in their work situation.

McGowan's (2001) study on self-reported stress and its effects on nurses showed that organisational support contributed greatly towards job satisfaction. Regardless of the amount of organisational support received, nurses' perceptions of this situation will ultimately affect job satisfaction (McGowan, 2001). Even though the sample was small ($N=72$), he found that the most prominent negative influence on job satisfaction was lack of support from the organisation. McGowan (2001) recommends valuable research could be conducted on the role of control nurses perceive they have over their work and if variability in control contributes to stress levels. Beaudoin and Edgar (2003) found that job satisfaction correlated positively with communication from supervisors in recognition of the nurses' work.

Barling's (2001) study has shown that over the past 25 years, mental health nurses' job satisfaction has decreased. Mental health nurses felt that this particular area was more stressful and dangerous than it had been in the past. Visiting unsafe areas and dealing with suicidal clients were not rare duties. Mental health nurses identified many stressors which are precursors to burnout. The themes which emerged from Barling's (2001) study are related to the role of the nurses and organisational issues. The themes included lack of support, suicidal and violent patients, lack of education and professional development, lack of resources and facilities for patient care and inadequate numbers of expert staff. Staff perceived they had no control over such things as decision-making and morale was identified as low.

Barling (2001) reports that the supportive infrastructure previously provided by large psychiatric hospitals is no longer available to mental health nurses and patients. Organisational decisions are being approved and implemented by managers who seem to have little understanding of mental health issues. Large community client loads lead to professional burnout and frustration. The significant degree of burnout for this mental health workforce has implications for client quality care according to Barling (2001).

According to Curtis, Ball and Kirkham's (2006a) study, one of the main reasons why 81 per cent of midwives had left their profession was job dissatisfaction. Midwives in Curtis, Ball and Kirkham's (2006a) study reported that regular working hours, improved pay and better working conditions elsewhere influenced their decision to leave midwifery. These midwives found alternative work in educational settings or in the community. The majority of these midwives no longer worked shift work. Job satisfaction factors which were critical to these midwives who had left the profession, were flexibility, support and autonomy. The midwives who continued to work shifts now worked predictable, fixed shifts, suiting their individual requirements. Managers in Curtis, Ball and Kirkham's (2006b) study described making difficult decisions about needs of individual midwives, in relation to flexible working patterns.

In the recent Scoping Study on Australian mental health nurses, Clinton and Hazelton (2000) identified widespread dissatisfaction. Nurses believed their expertise was not taken into account. They reported that there has been an increased number of patients with challenging and aggressive behaviours and drug problems. The study identified these trends to be of concern and reflected changes in the population profile of clients.

Barrett and Yates' (2002) research indicated that oncology / haematology nurses were dissatisfied with their pay. Nurses believed they were not reasonably paid for the type of work they did. Nurses recognised that continued employment and job security was high but regarded opportunities for career promotion as unsatisfactory. Nurses were also dissatisfied about gaining funding and leave for courses, the quality of work they undertook and professional support.

Nursing management is in a position to strengthen and support new recruits and more experienced staff (Shiu, 1998). Sundin-Huard and Fahy (1999) shows that if the nursing profession does not have organisational support this often leads to moral distress and outrage. Toohey (1996) noted that the organisational culture and structure in which nurses find themselves determines their behaviour and the quality of their work. He noted that the demands which nurses face might be negative or positive depending upon the individual's response to the demands. He highlighted that when people describe situations as 'stressful', stress illness might result from organisational

problems. The illness might be treated but organisational issues ignored. Furnham (1992) explains that work-related behaviours are not solely within the individual's control and are often influenced by organisational factors.

Levin, Hewitt and Misner (1998) have shown that workplace physical and verbal assaults are common, affecting nurses' professional and personal lives. They indicated that nurses expressed vulnerability, unpredictability and fear related to their work situation. Their results show that emergency nurses in their working lifetime, have high exposures to workplace violence, and emergency department stress levels are rising due to an emphasis on client satisfaction, which contributes to a risk for violence. Customer-friendly environments often seem to put nursing staff safety second. Not knowing who might be assaultive keeps nurses in an 'on guard' mode. They perceived security guards to be more effective in controlling and preventing violent situations when they wore a uniform and when specially educated in hospital security. The guards usually wore a 'customer friendly' jacket and tie. The nurses considered the security guards' behaviour and attitudes important factors contributing to a decreased risk of violence.

Taylor, White and Muncer (1999) researched causes of stress in English nurses. The main causes were: multiple conflicting demands and roles, inadequate support due to lack of personnel and resources, relatives' and clients' behaviour, low staffing levels, client suffering, powerlessness regarding decisions, incompetence and attitude of staff, interruptions, doctors' and managers' behaviour and shift rotation patterns. Other common stressful issues were pressures to prioritise work over personal life, untidy colleagues and excessive background noise. The data strongly show a specific picture of nursing / midwifery located within a complex and demanding health industry setting. They have presented a picture of a work-force stretched to what they perceived as unreasonable limits as other powerful professional groups reduce the nurses' opportunities to alter working conditions.

In another development Snelgrove (1998) reported that 122 nurses working in hospitals were reporting high levels of stress and lower job satisfaction as compared with two other groups (that is, 122 district nurses and 38 community psychiatric

nurses). Each occupational group found lack of resources, organisational issues and administrative tasks more stressful than client-centred issues such as difficult cases, clients' emotional problems and socially deprived clients. Key stressors included the work / home interface for hospital nurses, tedious routine for community nurses and lack of time for home visits for district nurses.

Ryan and Quayle's (1999) study showed that psychiatric nurses reported high stress levels related to organisational rather than intrinsic factors of the job itself. Lambert and Lambert (2001) undertook a literature review worldwide and found that in Switzerland ethical conflicts about role ambiguity, team conflicts, appropriate client care, organisational deficits and workload were identified as major stressors for nurses and physicians. In Germany oncology nurses identified interpersonal difficulties as causing physical distress. Age, as well as institution size and trainees' presence, were associated with stress levels.

Makinen et al. (2003) found that stress caused by increased levels of responsibility occurred more often in large wards with a high proportion of permanent staff than in smaller wards with a large number of temporary staff. They found problems with interpersonal relationships were more likely to occur in medical, not surgical wards. They also found that high responsibility levels were associated with work overload. Role expansion in nursing was also associated with higher levels of stress.

Yonge, Krahn, Trojan, Reid and Haase's (2002) study indicated acting in the role of preceptors to be a stressful experience because of increased workloads and lack of time. They noted that attempting to educate a novice when the preceptor has an unreasonable workload is unfair to both parties. Although the teaching of students by clinical specialists is necessary, it requires energy, patience and time in an increasingly complex and busy work environment. While many students have almost completed their programmes and have advanced skills, levels of expertise vary greatly, contributing to preceptors' stress.

Forman and Davis (2002) identified workplace stress as a key problem. The majority of nurses identified their managers as a major source of stress. Their study found that

this source of stress was greater than heavy client loads. They believe that the nursing profession and the media have failed to promote nursing as a desirable livelihood, vital to the well-being and health of the nation. Spooner-Lane and Patton (2008) found that supervisor support reduced depersonalisation and improved levels of personal accomplishment in relation to burnout. Wright (2003) described a nurse who received little support from the employer and ultimately left the job. Sherer's (1993) results identified poor staffing actually contributed most to serious illnesses and stress among nurses.

Jenkins and Elliott (2004) found that mental health nurses had high support levels from colleagues. They found that work colleagues provide more support for dealing with workplace problems than practical assistance for work tasks. They also found that work colleagues were more supportive than supervisors or ward managers. Fagin et al. (1995) also found that the majority (88.9%) of psychiatric nurses could discuss work problems with colleagues to alleviate work-related stress. Crabbe, Bowley, Boffard, Alexander and Klein (2004) found that most emergency unit nurses relied upon their colleagues' support following traumatic incidences. Crabbe et al. (2004) found that when nurses and midwives are working in close proximity and experiencing stressful events together, they perhaps develop close relations with their workmates. They often even debrief together about a certain critical incident that they would not be comfortable discussing with a superior.

In contrast, Hope, Kelleher and O'Connor's (1998) study of hospital nurses identified relationships with supervisors, management and colleagues as primary sources of stress, expecting these relationships to be a source of support that were highly valued as important functions of the work environment. Many identified the workplace as the highest source of stress. Many nurses and midwives might not acknowledge their own stress, as if they did they would be seen as weak or incompetent (Dimond, 2004; Ootim, 2001; Prag, 2003).

Mackin and Sinclair's (1998) narratives reveal lack of communication among midwives regarding decision-making as a source of stress. Their study led to improvements in communication and development of social activities in the unit

under study. They found that if midwives work with each other as a team, a companionship and trust develops among them, reducing stress levels. It might also reduce the time it takes to complete a task individually, when the team unites on that specific task. Lack of respect from relatives and unsatisfactory conditions created by medical colleagues were other significant stress issues.

4.4. Shift work and occupational health and safety aspects

Kundi, Koller, Stefan, Lehner, Kaindlstorfer and Rottenbacher's (1995) study showed that nurses working eight hour shifts preferred these to 12 hour shifts. The 12 hour shifts had adverse effects on leisure and social time, with nurses wishing to abolish 12 hour shifts. Nurses in Iskra-Golec, Folkard, Marek and Noworol's (1996) study experienced more cognitive anxiety and chronic fatigue when working 12 hour shifts compared to eight hour shifts. They reported worse sleep quality and were more tired following sleep, even though they had slept longer. Frequent fatigue has also been associated with depression (Gale, 1998; Gorter, Albrecht, Hoogstraten & Eijkman, 1999; National Institute of Mental Health, 2004 cited in Rada & Johnson-Leong, 2004:791). Even though their study of nurses working longer hours had more time off between shifts to recover, this was insufficient to counteract adverse effects of extended working days. Emotional exhaustion was more pronounced when working longer shifts. They suggested that poorer sleep quality could be a contributing factor towards emotional exhaustion for those nurses working longer shifts. Josten, Ng-A-Tham and Thierry (2003) concluded in their nurse study that 12 hour shifts can be detrimental for health, fatigue and performance and that older nurses have reported longer shifts as more physically demanding due to the increased workload.

Prolonged work hours can result in fatigue, impaired memory and the reduction in response speed and level of control (Smith, 1995). Iskra-Golec, Marek and Noworol's (1995) results show that there are certain individual factors which counteract or strengthen each other in relation to the stressors of shift work intolerance. Neurotic, extroverted and flexible shift workers might not suffer as much from disturbed sleep and impaired health. They recommend further examination of these traits among suitably chosen individuals.

Schmieder and Smith (1996) report that nurses are at high risk for stress-related illnesses. They report that working unusual hours during the night and day is stressful, both psychologically and physiologically. They have shown that nurses working shift work are more likely to experience gastrointestinal disorders and cardiovascular disease. They summarise that shift workers need to adapt socially and biologically to adverse environmental conditions, but often lack support to assist in their adaptation. They note that sleep at an inappropriate circadian phase will be shallower, fragmented and less restful. Changes in sleeping patterns resulting from working at night, lead to impairments of judgement irrespective of previous hours of sleep. A worker who is sleepy will exhibit responses which will be inappropriate or slow, and attention will wander (Smith, 1995).

Barton, Spelton, Totterdell, Smith, Folkard and Costa (1995a) reported that shift work had been demonstrated as a type of stress, resulting in strain. They report how disturbed sleep results in chronic fatigue and irritability. They highlight two deleterious effects of shift work, being cardiovascular disease and digestive disorders. Digestive symptoms include heartburn, constipation, ulcers, flatulence, stomach pain and loss of appetite. Barton et al. (1995a) also report how social life effects can be harmful, resulting in poor social interactions and difficulty maintaining social hobbies and activities such as sport and musical societies. They report how shift workers might be alienated from the community, as most community activities occur on weekends and evenings.

Shift work might impact negatively on health habits and cause adverse health outcomes including smoking, poor dietary intake and being overweight (Zhao & Turner, 2008). There is a condition known as Shiftwork Sleep Disorder in which shift workers experience excessive sleepiness, insomnia, a lack of energy, reduced concentration, irritability and headaches which increase over time. These risk factors are prevalent in shift workers who work a rotating roster system, the majority of whom are nurses and midwives working in NSW public hospitals (NSW Nurses Association, 2008f). Specifically, nurses and midwives are reluctant to work night shift but it is an unavoidable part of shift work. There is less education and clinical

support for junior nurses on night shift compared to day duty and rarely any clerical support (NSW Nurses Association, 2008g).

Typically, nurses usually work the shifts assigned to them, which might not be their choice. This in itself could be a cause of depression (Skipper, Jung & Coffey, 1990). Morrow, McElroy and Elliott (1994) found that 55.6 per cent of their hospital nurse sample worked shifts they did not choose. Skipper, Jung and Coffey (1990) report that nurses on rotating shifts are more likely to experience stress at work due to disturbance of circadian cycles. They report that shift work disrupts family routines, limiting the time the nurse spends with their family by placing them on a different time schedule. They also report how shift work interferes with opportunities for social activities. Totterdell, Spelton, Barton, Smith and Folkard's (1995) study showed that morning shift was associated with a reduction in calmness and cheerfulness, and an increase in irritability, back pain and work worries at home. They found that satisfaction with social and home life was reduced by shift work.

Lushington, Lushington and Dawson's (1997) study showed that mentally demanding activities were factors contributing to workload, being greater than both time pressure and emotional stress. Nurses perceived day duty to be more time pressured, mentally demanding and physical than night work. Anecdotal reports from nurses in their study exposed that sleep deprivation was highest following late / early shift combinations. This contributed to lowering their psychological well-being. Williamson and Dodds (1999) found that shift work might place pressures on a nurse's family and home life, being disruptive and tiring for the body. Their research also showed that a significant stress factor was potential conflict between patients, nurses and relatives, particularly regarding the extent and nature of care delivered.

Bohle and Quinlan (2000) indicate that shift workers tend to experience more health problems compared with their counterparts on day work. Harulow (2000) notes how an abundance of research shows how shift work has damaging effects on the health of nurses who undertake it. He notes how long-term shift work is associated with a higher risk of cardiovascular problems. Fitzpatrick, While and Roberts' (1999) study found that nurses who work rotating shifts experience greater stress than those who

work fixed day, night and afternoon shifts. This stress is related to disturbance of circadian rhythms from irregular working hours. They show how night work also results in disturbances to appetite, sleep, energy and concentration, also in feelings of helplessness and irritability. They concluded that physical and mental tiredness resulted in working longer hours and diminished nurses' overall performance.

Spelton, Totterdell, Barton and Folkard's (1995) study found that rotating-shift nurses experience more work-home conflict. Nurses working permanent night duty rate themselves more alert than night rotating-shift nurses. Their study found that older age groups correlated to reduced amounts of sleep and a higher level of alertness. Nurses with more domestic commitments experienced less sleep, lower levels of alertness and more sleep difficulties. Barton, Spelton, Totterdell, Smith and Folkard's (1995b) study revealed that permanent night nurses experienced better quality sleep, better physical and psychological health, less domestic and social disruption, less chronic fatigue and better attitudes towards shift work than rotating night nurses.

In Greenwood, Rich and James's (1995) study, sleep duration decreased following night duty compared with day duty. Most common measures used to promote sleep were blocking out the light and noise and regulating the temperature. Their study reported high alcohol consumption levels following day shift. All these issues are factors resulting in nurses' stress levels. Barak, Achiron, Kimh, Lampl, Gilad, Elizur and Sarova-pinhas' (1996) study in Israel, found that 39.7 per cent of their participants reported stress at work and this correlated with smoking. They found smoking was widespread in shift workers, particularly nurses reporting stress. They considered shift workers a high-risk population for diseases associated with smoking.

Kawachi, Colditz, Stampfer, Willett, Manson, Speizer and Hennekens' (1995) study reported how shift work disrupted nurses' normal biological and social diurnal rhythms. They found that nurse shift workers were more likely to be currently smoking and have a higher body mass index than those who did not ever do shift work. They were also less likely to be married. Their results conclude that working six years or more of shift work increases the risk of coronary heart disease in women.

Zhao and Turner (2008) found in their literature review that shift workers adopted adverse lifestyle behaviours such as smoking and consumed less healthy diets.

Gold, Rogacz, Bock, Tosteson, Baum, Speizer and Czeisler (1992) attended a hospital survey on sleep, shift work, and accidents occurring among 635 nurses in Massachusetts. Night and rotating nurses reported less hours of sleep compared to evening / day nurses. Some night nurses even fell asleep while driving their car to or from their workplace. Their results demonstrate that disturbance of circadian phases and sleep deprivation during rotating shifts are associated with lapses of attention, leading to increased error rates on specific tasks. They discuss how this poses a problem for hospital policymakers. They conclude that staffing needs of hospitals and nurses' family responsibilities might limit altering hospital schedules so that nurses' health and patient safety are improved.

5. Results of stress

5.1. Emotional and physical wellbeing

O'Donnell (1996) surveyed nurses and results indicated that a broad range of psychosocial issues are responsible for extensive stress throughout nursing. Dorz, Novara, Sica and Sanavio (2003) state that health caregivers are at risk of developing work-related disorders. A stressful workplace can become a breeding ground for health problems (Lambert, Lambert & Yamase, 2003). Soderfeldt, Soderfeldt, Ohlson, Theorell and Jones (2000) recommend that people should distinguish between quantitative pressure and emotional pressure when analysing human work. Work with people contains emotional exertions which differ from other forms of workload.

The costs from psychosocial illnesses are a challenge for nurses and midwives trying to return to normality in everyday life (Ekstedt & Fagerberg, 2005). According to Billeter-Koponen and Freden (2005), workplace demands and expectations for nurses are far more likely to be psychological than physical. Healy and McKay (2000) also reiterate that even though individuals might not experience physical symptoms, they might still experience anxiety, fatigue and feelings of unhappiness. It might also

depend on how long the nurse or midwife has been experiencing stress before physical symptoms appear.

Kushnir, Rabin and Azulai's (1997) research showed paediatric oncology nurses suffer extreme stress from the death of patients with whom they have developed close relationships. Losses such as these in this particular type of nursing are inevitable. Jezuit (2002) has reported a paucity of research on nurse suffering and nurses have defined suffering as frustration, stress, anger, helplessness, excessive obligations and sadness. She noted that suffering can diminish or threaten an individual's professional or personal values and has been linked to powerlessness. Jezuit (2002) found that nurses who did not discuss their emotions often experience grief well beyond the time of the incident. Stanley and Goddard (2002) also found that workers experienced helplessness and disempowerment in their work with child protection.

Stressors which were related to Sherman's (2000) study of AIDS nurses resulted from 'bombardment of senses' as these nurses cared for clients with draining wounds or copious diarrhoea. The sights and smells demanded a controlled reaction so clients would not be offended. Nurses consistently found the greatest emotional stress was watching young people die. One nurse reported watching young men disintegrate. On any day, five patients could die. Another nurse reported her greatest stress to be coping with extreme sadness, depression and loss experienced by families (Sherman, 2003).

Frequently mothers were seen with their daughters and sons. Kissing their heads, holding their hands, brushing their hair were mothers' acts of love. Watching mothers cry revealed their suffering and the pain they were experiencing. Nurses' own unresolved personal losses made it difficult to provide support for families following clients' deaths. Nurses also experienced emotional stress from being unable to establish relationships with clients. Nurses were also aware of stress experienced by family members concerning contagion and nurses were 'protective' of their own family by not discussing any work experiences at home (Sherman, 2000).

Manifestations of stress take many forms including headaches, increased anxiety, poor time management and feelings of helplessness (Cohen-Katz, Wiley, Capuano, Baker & Shapiro, 2005; Steadman, 2003). The high demands of an occupation, feelings of powerlessness and low levels of control are linked to health problems. A major factor of occupational stress for nurses and midwives is lack of autonomy (McGrath, Reid & Boore, 2003). Kant, Bultman, Schroer, Beurskens and Van Amelsvoort (2003) found that the prevalence for fatigue in the health care sector was 17.6 per cent.

Research continually reveals that stress might also manifest as back pains, impatience, fatigue, emotional outbursts, over-eating, fits of anger and over-reacting (Singh, 2002). Stress might lead to general illness, sleep disturbance and severe depression (Ryan & Quayle, 1999). A third of the oncology caregivers in Penson et al's (2000) study claimed to be depressed when asked about their stress levels. Overwhelming fatigue was described by nurses in Ekstedt and Fagerberg's (2005) study. The fatigue experienced by their participants was totally mentally and physically exhausting. Their fatigue affected their work performance and limited activities of daily living. They experienced insomnia as a psychological manifestation of stress at some stage. They studied nurses who had already experienced burnout, hence the impact of sleeplessness in their study. They were unable to relax, experiencing significant anxiety, especially at night. They emphasise the significance of recognising early signs of burnout such as sleeplessness.

The Australian Council of Trade Unions (1997) surveyed stress levels in Australian workplaces and reported continual tiredness and headaches to be the most frequent symptoms. The majority (60%) of employees from the Australian Council of Trade Unions (1997) survey reported feeling depressed or experienced sleeplessness in relation to work. Four factors have been associated with increased risks of claims for stress-related conditions. These are trauma (defined as harassment, physical assault and abuse), forced relocation, conflict with supervisors and conflict with peers (Toohey, 1996). Interestingly, all of these four factors are associated with colleagues in the workplace.

O'Donnell and Stephens (2001) have established that 'stressed' employees have increased sick leave, decreased productivity and more work-related accidents. Their research shows that as well as monetary costs, personal costs include anxiety, substance abuse, depression and heart disease. Their results show that emotional and physical well-being are affected and stress has an effect on employees' personal and professional lives. They report that in the long term, depression, anxiety, marital and interpersonal problems, physical illness, mental ill health and burnout might ensue. Their results highlight that the organisational effects of stress include low quality work, reduced work output, high employee turnover and high absenteeism. Westman and Etzion (2001) note that researchers have implied that absenteeism might provide a 'safety valve' in order to cope with stress. Wong, Leung and So (2001) found that 37.5 per cent of their nurse sample were considered 'at risk' for poor mental health. Generally speaking, they were anxious about dealing with problems and making mistakes.

Harris's (2001) aim was to identify situations at work where stress could cause ill health. If employees are unable to exert control over demands placed upon them, this then might lead to stress and burnout. She shows how, usually, stress effects are short-lived and if the pressure on each individual recedes, this results in a return to normality. In some cases, particularly if pressures are sustained and intense, stress leads to long-term physical and psychological ill health. De Lange, Taris, Kompier, Houtman and Bongers (2004) highlight that well-being can affect work characteristics such as job demands and social support. They found that unhealthy workers reported higher job demands and poorer levels of manager support over time. They note that unhealthy workers might perceive their workplace environment in a negative fashion. Terluin, Van Rhenen, Schaufeli and De Haan (2004) believe that distress reflects an individual's ability to cope with psychosocial effects of life stress such as work stress and that such distress might result in physical disease. They note if circumstances threaten an individual's psychosocial functioning, symptoms of distress might ensue. Some psychiatric disorders are linked with environmental stress triggers (Gunlicks & Weissman, 2008).

There is existing evidence that stress has resulted in nurses leaving their profession altogether, and a decrease in the number of men and women choosing to enter this field (Laschinger et al., 2001a). According to a National Nurse Survey which polled 10,000 nurses in Washington DC., many nurses ‘wanted out’. Sixty-six per cent were ready to leave the profession or their current job and 50 per cent were advising relatives, friends or children not to enter the profession. The survey indicated a strong relationship between various health-related symptoms and inadequately staffed units (Sherer, 1993).

Research evidence from nurse administrators and organisational and industrial psychologists indicates that job dissatisfaction is a result of job stress and significantly predicts workers’ turnover, performance and absenteeism (Griffin & Bateman, 1986). Nurse leaders and managers would most likely be interested in preserving nurses’ and midwives’ well-being (Begat, Ellefsen & Severinsson, 2005). Nurses’ and midwives’ well-being might then influence high-quality patient care (Jamal & Baba, 2000).

Howard (2001) found that ten per cent of people suffer from bullying and workplace stress, sometimes leading to hospitalisation and unemployment. Ootim (2001) has shown that the symptoms indicative of stress effects are a sudden change in behaviour, nurses who are usually tolerant become timid and nervous, suffer low morale as well as lose consideration and empathy for others. People low in self-esteem feel more threatened and are more vulnerable to stress. Occasionally nurses might lose their temper when they have been calm and professional in the past. Other indicators he has shown include insensitivity to patients, withdrawal and inflexibility in approach (Ootim, 2001).

Pinikihana and Happell (2004) found that despite significant stress and burnout levels, the majority of rural psychiatric Victorian nurses were satisfied with their current work situation, but almost half (47.8%) thought about finding another nursing job. The majority of nurses in their study indicated that they do not often think about searching for another nursing job (52.2%) or an occupation outside nursing (55.8%). McGrath, Reid and Boore’s (2003) respondents considered exiting the profession at some point, with over a third of their respondents considering leaving over the past

year, with others favouring a change of work location. Ten per cent of nurses in McKenna et al's (2003) study actually did change their area of practice due to a critical incident involving horizontal violence in the workplace. Over a third (34%) of their nurse respondents in their first year of practice considered leaving the nursing profession following a distressing incident. Oloffson, Bengtsson and Brink's (2003) study of nurses' experiences of stress in the workplace indicated that they had considered at some point leaving the profession.

5.2. Prolonged exposure to stress leading to burnout

Burnout is the result of unmanaged stress, not a symptom of stress at work (Altun, 2002). Burnout is one example of an excessive 'strain' reaction (Payne, 2001). Factors associated with burnout include: passive coping style, external control orientation, work pressure, little social support, less hardiness and intensive contact with clients (Ewers, Bradshaw, McGovern & Ewers, 2002). Governments and healthcare managers should implement strategies which would increase nurses' and midwives' job satisfaction, thereby reducing burnout and enhancing retention (Barrett & Yates, 2002).

Burnout is a serious issue – many 'thirty-somethings' have expressed a desire to make a career change or reduce their stress (McIntyre, 2004). Understanding factors related to burnout would benefit health care institutions financially and in terms of human costs, especially in view of consistent international shortages of nurses and midwives. It has been suggested there are two main sources related to these factors including individual characteristics and the work environment (Lee, Song, Suk Cho, Za Lee & Daly, 2003).

Koivula, Paunonen and Laippala's (2000) Finnish study found that nearly half of their sample of nursing staff experienced burnout with 27 per cent experiencing serious burnout. Laschinger and Finegan (2005) found on average that nurses reported only moderate burnout levels, although 44.7 per cent scored high burnout levels. Pinikahana and Happell's (2004) study with Victorian rural psychiatric nurses identified 10.4 per cent scoring high burnout, with 70.8 per cent experiencing low

burnout. Research literature identifies correlations between burnout and distress in intensive care nurses (Sundin-Huard & Fahy, 1999).

Maslach, Schaufeli and Leiter's (2001) research shows that nurses and midwives do not just respond to their work setting but they bring distinctive qualities to their work. These distinctive qualities include personal factors such as demographics (formal education or age), work-related attitudes and enduring personality characteristics. Previous research on burnout suggests it is a social phenomenon rather than related to individuals' personalities. Rosser (1995) links burnout with post-traumatic stress disorder. Kalimo, Pahkin, Mutanen and Toppinen-Tanner (2003) found that workers experiencing burnout had worked in worse working conditions in comparison with those with healthy well-being.

Increasing demands will accentuate stress sources that contribute to burnout in health professionals (Sciacchitano, Goldstein & DiPlacido, 2001). Personnel working in healthcare environments might find it helpful to develop coping methods to protect themselves against long-term stress effects resulting in burnout (Randolph, Price & Collins, 1986). Some physical signs of burnout include a feeling of fatigue and exhaustion, experiencing frequent headaches, gastrointestinal disturbances, depression, sleeplessness and shortness of breath (Bailey, 1985; Schwarz, 2005). There are also psychological and behavioural signs of burnout. These signs include boredom, alienation and exclusion from interaction with people, feeling discouraged, disenchanted, resentful and confused. Other behavioural signs include anger, irritation and frustration (Bailey, 1985).

Laschinger, Purdy, Cho and Almost's (2006) study with nurse managers found that 58 per cent experienced increased levels of burnout. Maslach, Schaufeli and Leiter (2001) highlight that those nurses who burn out and leave early during their career leave behind survivors who exhibit lower burnout levels. Older nurses are more likely to have experienced many work scenarios thus managing and understanding ambiguous or problematic work situations with certainty (Kent & Lavery, 2007). The reasons for this seem poorly understood, hence another reason for the importance of this research.

MacLellan (1990) reported that years of experience seemed to protect district nurses from burnout. Even though these nurses might have become survivors, they might still experience burnout due to relentless workloads and understaffing. They might have survived early stresses in their work and succeeded in their career (Maslach & Jackson, 1981). On the other hand, Koivula, Paunonen and Laippala's (2000) study found that exhaustion increased with more years spent in the profession. In fact, they found that those nurses practising for more than ten years, experienced more burnout than those with less work experience.

Maslach, Schaufeli and Leiter (2001) note that burnout and exhaustion appear to be associated with particular behaviours (time-pressured lifestyle, competition, extreme need for control and hostility). They note that 'feeling types' of individuals are more likely to experience burnout than 'thinking types'. Studies on personality traits have attempted to discover types of people more at risk of suffering burnout. People displaying decreased levels of hardiness (openness to change, control over events and participation in daily activities) experience higher levels of burnout, especially the exhaustion dimension (Maslach, Schaufeli & Leiter, 2001).

Burnout is higher among people who have an external locus of control (attributing events and achievements to powerful others or to chance) rather than an internal locus of control (attributions to one's own ability and effort) (Maslach, Schaufeli & Leiter, 2001, p. 408).

Loss of control in Browning, Rolniak, Greenberg and Larkin's (2001) study on accident and emergency nurses predicted burnout.

Ootim (2001) notes that negative affectivity or neuroticism refers to a broad dimension of personality which consists of long-term negative emotions including anxiety, sadness, anger and guilt as well as behavioural and cognitive characteristics such as insecurity, preoccupation and low self-esteem. He shows that negative affectivity is a pervasive disposition and people experience emotional states which include feelings of anxiety and tension. Those experiencing negative affectivity report physical and stress symptoms and experience dissatisfaction and strain across

situations and time even in the absence of stress. These people are constantly distressed and nervous. They usually dwell on their disappointments, mistakes and shortcomings and focus on negative aspects in general. People experiencing low negative affectivity appear more satisfied, calm and self-secure and focus less on daily irritations and frustrations.

The burnout process causes lack of energy, rendering concentration difficult. The attitudes of nurses thinking that they are ‘only a nurse’ emphasises low morale, instead of proficiency in knowledge in decision-making and clinical skills. Lack of communication and increased workload results in loneliness (Severinsson, 2003). Dembroski and MacDougall (1978) maintained that some individuals were more likely to work alone, and that this led to increased workload resulting in high stress levels. This led to reduced colleague support and feelings of frustration. Waldron (1978) proposed that increased work overload is self-imposed by some personality types. This then relates to anxiety, poor stress-related coping abilities and high stress levels. Some nurses who are experiencing burnout are functional but deny burnout is the cause of headaches, insomnia and gastrointestinal troubles (Schwarz, 2005).

Maslach and Leiter (1997) suggest that individuals see the imbalance of the job-person fit problem as a personal crisis, when in fact it is the workplace which is in trouble. They show how burnout is visible in the behaviours and emotions of individual employees. The common belief is that the problem relates to people rather than the job. They report that a common view is that people who suffer burnout are weak. They think that only the fit will survive and burnout is a result of failing to survive. Another view shows that people who suffer burnout are unreasonable and complain about everything. Maslach and Leiter (1997) suggest that the common belief is that people bring burnout upon themselves and have the responsibility for fixing it. This view might be popular because individuals describe their experiences in personal terms, looking for personal solutions which might be making career changes or going to counselling. Maslach and Leiter (1997) agree that people play a part in alleviating burnout. However they indicate that people are not completely responsible for its occurrence or solution.

One would expect that a consequence of stress is poor quality patient care and a decrease in performance and morale (Brown & Edelman, 2000). AbuAlRub (2004) has shown that continuing low morale will eventually lead to burnout and that performance declines in stressful situations. Internal resources such as self-esteem have been effective in sustaining staff against emotional distress evoked by their work (Delvaux, Razavi & Farvacques, 1988). Workers experiencing low morale tend to be affected by all types of organisational factors, including leadership behaviours, peer-group interactions, socialisation practices and evaluation feedback (Furnham, 1992). Janssen, de Jonge and Bakker (1999) have shown that if a person is suffering stress and burnout, their reaction time to act in a stressful, emergency situation can be delayed. This might have deleterious consequences for their clients. Rushing to complete tasks might cause impairment of interaction with clients. Basel, Grassi and Magnani (2000) report that psychiatric morbidity has been associated with burnout, particularly emotional exhaustion. They report that depersonalisation has been related to loss of confidence in one's worth. A sense of decreased personal accomplishment often results in difficulty in concentration, making decisions and facing problems.

Payne (2001) investigated burnout levels in hospice nurses. She wanted to ascertain which nursing aspects were associated with burnout. In doing this, she investigated stressors, demographics and coping strategies. She suggested organisational and individual interventions to reduce burnout levels and she found stressors contributing the most to burnout with demographic factors contributing the least. The most frequently reported problematic stressor was 'death and dying' followed by inadequate preparation and workload.

Gaithersburg and Roach (1994) show an increased level of commitment contributes to rising cycles of burnout. When a nurse is overburdened and continues to work hard without being relieved from the workload, the nurse becomes committed to meeting work demands and becomes burned out by continuous pressure. They found the nurse's physical and emotional reserves are diminished. In order to conserve psychological and physical well-being, the nurse stops caring and commitment declines drastically. NSW Nurses Association (2008h) comments that hundreds of nurses and midwives leave the profession every year because they experience burnout

from relentless pressure and heavy workloads. Hancock (1998) shows that feeling powerless and undervalued are often factors of burnout. Samuelsson, Gustavsson, Petterson, Arnetz and Asberg's (1997) study revealed that people who had suicidal feelings over the past year had higher scores on the Maslach (1986) Burnout Inventory for emotional exhaustion and depersonalisation, hopelessness and tiredness than those who never thought about suicide.

Cousins (2003) presented vicarious trauma or compassion fatigue which is similar to burnout. The concept is relatively new and is linked with people experiencing trauma which encroaches into the nurse's and midwife's professional and personal life. NSW Nurses Association (2008i) reports that levels of exhaustion for nurses in the public health system are extremely high. Cousins (2003) stated ignoring emotional reactions and stress predisposes for poor outcomes. She highlighted how vicarious trauma damages idealism, hope and optimism. She identified some of the signs of vicarious trauma which are similar to burnout such as depersonalisation, feeling like a failure and increased fatigue and sickness. Burnout might lead to extended sick leave (Huibers, Beurskens, Prins, Kant, Bazelmans, Van Schayck, Knottnerus & Bleijenberg, 2003).

5.3. Family and work balance

Hart (1999) shows that there has been an increasing interest in the interface between family and work. He highlights how this has resulted in work stress scales. He has shown how current interest is focused on the overlap between work and family. The conflict between family and work might occur because of competing demands on a person's time. Mackin and Sinclair's (1998) study found midwives' work stress was more prominent than stressors of personal life. The main personal life stress was financial difficulty. Harris (2001) describes how stress can affect nurses in many ways, as humans develop symptoms when reacting to excessive pressure at work and at home. Harris (2001) found that the pressures nurses experience outside work, including such factors as financial worries, family sickness or bereavement, affects stress levels at work. Work stress for these nurses and midwives was a pertinent factor in their personal life.

Mauno, Kinnunen and Pyykko's (2005) preliminary analysis on their work in Finland found relatively high correlations between work-family variables across organisations. Their study included three important dimensions: career development, working hours and management. They recommend training of management staff and dissemination of information on appropriate work-related behaviour and fostering a family-friendly workplace atmosphere. They also recommend changing the long-working-hours culture. Midwives in Curtis, Ball and Kirkham's (2006b) study gave family commitments and lack of control over working hours as the main reasons for exiting the profession. Forty per cent of these midwives found shift patterns and difficult working hours key factors in their final decision to leave. This study identified the importance of family friendly working hours for midwives.

Nolan (1995) discovered that poor pay compels nurses to increase their income by working overtime which leads to exhaustion and subsequent effects on family life at home. Nolan (1995) found that home / work conflicts were associated with insomnia and anxiety, as well as poor social support. Home / work conflicts were consistent predictors of decreased mental health outcomes, outweighing significant client-related difficulties. For these respondents, staff shortages were considered particularly stressful and taking work home and working long hours impeded quality family life.

Unpaid overtime is a major issue for the nursing and midwifery professions. Taylor, White and Muncer (1999) found that one of the main stressful issues was working overtime and long shifts with inadequate breaks. This caused disruption in their personal lives due to staying at work beyond paid hours. In their study, one nurse reported only being paid for 13 instead of 14 hours for work completed. The nurse's entitled break was one hour and 20 minutes during the shift and he / she only managed 20 minutes for the entire shift. Another nurse reported staying at work after shifts finished and knowing their child was waiting after school.

6. Individual responses

This section examines issues associated with various individual responses relating to work behaviours. Individual reactions to stress, individual factors relating to situational factors and the personality hardiness concept will also be discussed.

6.1. Individual reactions to stress

Goodfellow et al. (1997) state that each individual will manage stress in a different way. They report that many work stressors will constitute satisfying challenges rather than distress. Jonsson and Segesten (2004) highlight how influencing individual predictors are important for determining how humans respond to stress. Individual diversity in vulnerability can determine how well people respond to stress (Jonsson & Segesten, 2004).

The literature tells us that engagement is a popular synonym for motivation. An engaged nurse or midwife acts quickly, immediately reacting to client demands (Engelbrecht, 2006). It is inaccurate to presume that because the environment appears stressful that individuals will experience more stress. Nurses might perceive the environment as challenging and exciting (Rhead, 1995). Nurses might be naturally inclined to seek personal development and intellectual challenges and stimulation might not be stressful for them (Stordeur, D'Hoore & Vandenberghe, 2001).

It seems self-evident that there are major individual differences when it comes to job satisfaction. Different individuals in exactly the same job will experience different sources of satisfaction and two people doing different jobs will experience similar levels of satisfaction (Furnham, 1992). Schultz and Schultz (1997) report that it is not so much the incident but the way an individual interprets the incident that might cause stress. They report how people can absorb significant amounts then continue their work without debriefing. They recommend looking back on a situation and giving credit to how they helped themselves in that stressful situation.

It is likely that different people will read the same situation differently and therefore respond differently (Lawrence, 1990, p. 41).

Motivation in the work setting is described by direction, intensity and persistence (Kanfer, 2002).

Similar research has focused on behavioural and personality differences between low and high-stressed individuals. In the early 1960's, the major research design concerning individual stress differences started with Friedman and Rosenman's (1974) work. They classified individuals as having type A as opposed to type B personalities. Type A individuals' style of living was overtly characterised by striving for achievement, extremes of competitiveness challenged by responsibility, haste, impatience, hyper-alertness, aggressiveness, restlessness and explosiveness of speech. Type B personality they described as being free of such habits, harbouring little hostility and strong feelings and rarely experiencing time urgency or impatience.

In 1982, Cooper noted that there was a paucity of research concerning stress outcomes and personality traits in female managers. Ootim's (2000) study showed how stress effects are moderated by circumstantial and individual factors. Ootim (2001) raised the question why one individual might become stressed in a specific situation while another might embrace it and thrive on the opportunity for development and growth. He believed the answer could be in the individual's cognitive appraisal concerning stress. This could be projected as a positive or negative outlook about the task at hand. It is the cognitive assessment of a stressful situation that makes the event positive or negative (Ootim, 2000).

Feshbach and Weiner (1991) highlight how some individuals are highly emotional and overreact to some situations, while other individuals react calmly to adverse situations. Stebnicki (2000) highlights how one's own attitude is influential in coping with trauma. O'Donnell and Stephens (2001) show that individual differences such as age, gender, geographical location, education and tenure have an effect on strains and stressors. They suggest that measurement of stressors could focus on the individual perceptions of the workplace.

Breakwell (1990) notes that people have different resources such as self-confidence, knowledge and intelligence and demands that could overwhelm one person might not affect another. Hanson (1989) noted that stress does not seem to be linked to financial losses or illness. Stress remains neutral until it comes into contact with a person. How that particular person reacts to the stress determines the outcome. Merson (2001) noted that some people release high amounts of cortisol and adrenaline when experiencing stress and others do not, noting that these differences could be linked to varied reactions to stress.

Humpel and Caputi (2001) suggest how people can react emotionally to difficult and stressful episodes at work. They report that some reactions will be positive. At other times emotions might be considered as anxiety, depression and anger. They suggest that a person's ability to manage their emotions might influence stress reactions in a positive way. Some researchers (Hillhouse & Adler, 1997; Jansen, Kerkstra, Abu-Saad & Zee, 1996; Lee, So, Alan & Kim, 1998; Omdahl & O'Donnell, 1999) stipulate that nurses display a highly individualised reaction to work stress, and that burnout is a consequence of individual rather than environmental characteristics. Personalities might then have an effect on how that individual deals with stress.

Baldwin (1999) highlighted how investigations have focused on occupational issues for nurses rather than the personality of the individual entering the profession. Little is known about the interaction between these factors and the type of person working in healthcare. Baldwin (1999) examined what happens when a person who is vulnerable to stress commences working in a particularly demanding nursing job. Clinton et al. (1995) show that stress is not a fixed response but a process depending on the situation and the individual's characteristics. They note that, recently, knowledge of the different ways individuals react to life issues has resulted in investigation of social and personal resources that could moderate stressors. Payne (2001) states that response to stress is influenced by individual differences among employees, such as coping and demographic factors, as not all nurses experience burnout.

Hurrell Jr, Murphy, Sauter and Cooper (1988) have shown that within nursing and midwifery, disciplines are struggling to increase productivity. They have shown the

importance of closely examining stress vulnerability, vocational placement and personal characteristics. Even though theoretical models already exist for each of these factors, little is known concerning stress responses. They show that if individuals are identified as having dysfunctional stress responses, it might be possible to provide extra support and counselling by assisting with the most appropriate work environments and providing mentors. Hall's (2001) study recommended future research on individual attributes in nurses.

In Nolan's (1995) study, stress and burnout in professionals appear to be related to personal factors as well as contextual factors, as some nurses working in highly stressful areas like psychiatric, emergency and neonatal units do not experience stress symptoms whereas others do. Rhead's (1995) study showed some nurses working in volatile workplaces might perceive the environment as exciting and challenging but not stressful. Lee et al. (2003) showed that individual characteristics could be used to steer vulnerable nurses towards areas of nursing most suitable for them. Their study showed that individual characteristics could be important contributors towards burnout, but less significant when evaluated alongside personal resources or job stress.

Bohle and Quinlan (2000) report that evidence suggests that certain stress responses are influenced by dispositional differences among individuals such as how they value feedback, achievement, interpersonal recognition, self-control and responsibility, challenge, acceptance and stimulation. They found evidence that relevant experience and abilities, along with familiarity of stressful situations and training in coping skills, diminishes negative responses to stress. Laschinger, Heather, Finegan, Shamian and Wilk (2001b) have shown that if nurses and midwives feel undervalued and overburdened with unrealistically high levels of workloads, disempowerment might occur within each individual if this stress is not relieved. Their findings have shown that empowerment has effects on job satisfaction and job strain. Their results suggest that when nurses participate in controlling their practice, job strain is diminished. Keil (2004) believes that ultimately, all coping strategies, from those concentrating on manipulating external factors, to those attempting to modify a human's emotional response to a particular situation, are generated by the individual internally. Keil

(2004) implies that stress is an individual experience rather than one that is linked to other social or political factors.

Why are potentially stressful situations perceived as stressful by some individuals and non-stressful by others? (Cooper, 1982, p. 157).

Individual reactions to stress might account for how people deal with stress and burnout.

6.2. Individual responses according to situational factors

Bernardin and Bownas (1985) report that individual differences contribute to behaviour variance more than situational differences. Individuals might not always behave consistently with the expectations of a situation (Moskowitz & Cote, 1995). According to Mansfield et al. (1989) an approach to reducing stress amongst nurses would be to provide a descriptive guide to various clinical settings, prior to commencing their employment. Nurses could then make better choices according to their personal preferences, strengths or personality, enhancing job satisfaction and decreasing burnout and job stress (Mansfield et al., 1989). The nursing profession works diligently to ensure graduate nurses are competent with nursing skills. Perhaps graduate nurses lack the awareness of their own personality in relation to job performance, success and coping with stress (Bellack, 1999). As well as ensuring graduate nurses are competent with nursing skills, perhaps they could be taught about coping strategies dealing with stress.

Paine (1982) purports that a person who relies exclusively on organisational skills will usually handle certain pressures (time pressures, multiple responsibilities, numerous demands, tight deadlines) very effectively. This same person could have difficulty reacting appropriately to personal or job situations that induce a grief reaction. Their pain and sense of loss do not respond well to being organised. In this particular situation, the individual should focus on obtaining personal support or practising ‘surrender’, which means debriefing about their stress (Paine, 1982). Gilpin (2004) advises acknowledging instinctive reactions to irritating situations.

Stress is not a stable response but a process that depends on both the characteristics of the individual and of the situation
(Clinton et al., 1995 p. 6).

Brunero, Cowan and Fairbrother (2008) comment that perceived stress issues arise from work environmental circumstances where there is no individual control. Kluger, Laidlaw, Kruger and Harrison (1999) demonstrate that environmental and personality variables play a significant part in influencing stress precursors or antecedents. They show how easy it is to recognise environmental aspects (for example, sleep deprivation, long working hours) and ignore personality aspects. They report how the personality influences coping mechanisms used when responding to stress. They stress the importance of the personality when determining the development or outcome of stress. Aliche (1985) suggests that accurate self-evaluation might predict an individual's influence over people and events. Self-report assessments might be useful to some organisations because they could help identify workers and leaders who were able to continue to perform efficiently and effectively under stress (Roberts & Hogan, 2001).

Cooper and Hazelrigg (1988) recommend that future research examines interactions between individuals and situations as well as statistical interactions between these variables, hence the importance for this research. Hattrup and Jackson (1996) recommend that to understand individuals in organisations, a researcher must understand the process by which persons are shaped by or shape situations. By including a time dimension, both situation and person are intertwined in a particular process. They report that personal attributes determine behaviours, for example choosing to enter certain types of work situations. The length of time spent in each situation and how often a particular behaviour is repeated might result in the person's attributes changing. Schneider (1996) proposes that previous studies on individual differences have failed to reveal a direct link between individual differences and organisational performance.

Motowildo (1996) reports that job satisfaction is usually measured by self-report questionnaires asking respondents whether they will stay in their job and whether they

think about leaving, similar to the approach used in this research study. He reports that job satisfaction is judged according to negative or positive responses evoked and the likeability of the working environment. He reports that job satisfaction is also based upon evaluation of such things as co-workers, pay, the work itself, supervision and benefits. It reflects reactions to conditions and events in the work, social and administrative environment and other broader, organisational aspects of the environment which might produce negative or positive affective reactions.

6.3. Personality hardiness concept

Kobasa (1979) proposed the personality hardiness concept which related to stress resistance and personality characteristics. She proposed that hardy individuals are most likely to remain healthy while enduring high stress levels and non-hardy individuals are most likely to become ill when confronted with enduring stress levels. She showed that healthy people exposed to high stress levels have a multifaceted personality style. Even though the ‘type A and Type B’ concept provides clues to stress-prone personalities, many believe it is inadequate when explaining people’s ill health and increased stress levels (Furnham, 1992). According to Prag (2003) some people might be drawn to the nursing profession as they have specific personality types either making them resilient to stress or allowing them to endure stress more readily.

There are three components to hardiness. The first one is commitment to whatever one encounters (Kobasa, 1979). Commitment is a way of being actively involved in one’s life events rather than passively involved (Lambert, Lambert & Yamase, 2003). The second aspect is control. Control is believing one influences life events rather than being helpless (Lambert, Lambert & Yamase, 2003). The third aspect is challenge, being able to confront new activities representing opportunities for growth and undertaking change. This process of never-ending struggle for growth, according to Kobasa (1979), usually leads to continuous learning. Another approach says that change is normal, as opposed to stability, and is a stimulus to improve maturity rather than being a threat to security (Lambert, Lambert & Yamase, 2003).

Low levels of the many dimensions of hardiness lead to burnout (Lambert, Lambert & Yamase, 2003). Hardiness can lead to developing coping mechanisms (Kobasa, 1979). Bohle and Quinlan (2000) suggest that professionals and managers who have challenging, interesting and autonomous jobs might be expected to exhibit greater senses of commitment, challenge and control than workers whose jobs are externally controlled, monotonous and unstimulating. Bausler (1992) found significant relationships between burnout and personality hardiness in nursing faculty. She found that nursing faculty who believed their life had purpose and were in control of life events tended to experience less depersonalisation and emotional exhaustion and higher personal accomplishment. Those who believed their lives were in control but believed their lives served little purpose, experienced more emotional exhaustion and less depersonalisation.

Severinsson (2003) suggested that there is a complicated interaction for nurses and midwives, in which social standing, work situation and personality influences the way various stressors affect their health. Toohey (1996) suggested that integrating work and family life might be a function of their particular personality and how they deal with stressors of every day living. If they are unable to develop a balance between the two, this might lead to ill health. He believes that for those who are ‘workaholics’ and work past their finishing time regularly, this might have a negative effect on their family life and cause burnout. He reports that individuals’ personalities determine their reaction to whatever demands are placed upon them, which determines the failure or success of their coping methods.

7. Coping strategies

7.1 Positive coping strategies

Coping with stress is important in people’s working lives in terms of possible illness and work performance (Cooper, 1982). Dorz et al’s (2003) study shows that individual coping strategies might be important buffers of stress. Wong, Leung and So (2001) reported that little research had been undertaken examining nurses’ strategies for coping with stressors in the workplace. They suggest such an understanding would contribute to further development of these coping strategies and nurses’ capabilities.

Wong, Leung and So's (2001) research examined coping strategies of Hong Kong hospital nurses. Results showed that their coping strategies were culture-specific and situation-specific, with positive thinking, direct action coping and acceptance being used more than avoidance and alcohol. One-third of their nurses were considered at risk of poor mental health. The most frequent complaints included feelings of inadequacy and anxieties in dealing with daily activities. Wong, Leung and So (2001) suggest future research could explore the direct effects of coping strategies such as positive thinking. They believe that nurses with this attribute will have good mental health despite their particular area of work.

Lazarus and Folkman's (1984) Theory of Stress and Coping tries to explain humans coping with stress. It identifies internal and environmental demands which can exceed or tax a person's resources, endangering their well-being. This model might be useful for clarification of relationships between stress, burnout and individual responses. The model proposes that people's perception of physical and mental health pertains to ways they cope with and evaluate stressors of living (Polit & Hungler, 1997). This might correlate to how nurses and midwives deal with stress or exert control and develop coping mechanisms to deal with the working environment. Greenglass and Burke (2001) state that nurses require personal coping strategies so they can deal with chaos in their work environments. They state that each individual will deal with stress and burnout differently, hence the importance of this research. This research will highlight nurses' perceptions and dealings with the phenomena of stress, burnout and how it affects individual responses.

Lazarus and Folkman (1984) conceptualised coping as serving two functions. The first is altering or managing the distressing problem within the environment. This is known as *problem-focused* coping. The second is regulating a response to the particular problem. This is known as *emotion-focused* coping. Lazarus and Folkman (1984) also theorised about developing emotion-focused responses to problems which led to the experience of psychosocial effects of stress.

Hall (2001) found that pursuing outside interests and reducing enthusiasm for work were problem-focused coping strategies. Maintaining high standards of client care at

all costs or adopting a cynical view about work were emotion-focused coping strategies. Payne's (2001) study with hospice nurses showed that problem-solving was reported to be most frequently used as a coping strategy to prevent burnout. However low burnout levels reported by hospice nurses who used emotion-focused strategies might be explained because they use more coping strategies than any other nurses.

Dumas (2001) found that most coping strategies seem to be developed by individuals who have experienced their own major life events. This might include a catastrophic illness. He also notes that locus of control has an effect on coping. The person who has an external locus of control is more likely to perceive a stressful event as extraordinary in nature.

Dumas (2001) notes that coping with daily stressors means developing stress management ability and behavioural adaptation. This includes exercise with exposure to sunshine and fresh air which allows expenditure of nervous energy and trains the body to readily achieve homeostasis for future stressors. Dumas (2001) also noted that repetition of stressful events in controlled circumstances would gradually remove the fear of the unknown. Lazarus's (1966) Transactional Theory highlights that all approaches do not work for everyone or every situation. Satel (2003) highlighted that following stressful events and trauma people try to reconnect to rebuild their cultural and physical environments. Humans are resilient and prefer to cope and adapt well, according to Satel (2003).

Maeve (1998) has shown how nurses have yet to articulate their construction of how they manage to live their everyday lives when daily experiences include deaths and the suffering of others. She found that caring for the dying imbued these nurses with a type of courage and thoughtfulness towards dilemmas in their own lives. She researched nurses who were working with the dying and constructed four central themes. The four themes were: creating a fabric of honourable meaning; doing the correct thing; tempering involvement; and cleaning up. Creating a fabric of honourable meaning meant that the nurses' own lives were understood by them, both professionally and personally. They described meandering between their relationships with clients to avoid obstacles within their own lives. Doing the correct thing involved

two methods – coming to know the correct thing and doing the correct thing. Coming to know the correct thing involved a combination of experience and education. Doing the correct thing involved a combination of courage, commitment and competence.

Further, Maeve (1998) reported that the nurses described developing a type of honourable consciousness towards their clients as individuals. Tempering involvement included setting boundaries and limits in their involvement with their clients. Using humour was another aspect of tempering involvement to manage the realistic aspects of nursing. Cleaning up designated the finality of involvement. Cleaning up represented cleaning up grief and preparing to carry on. This time allowed the nurses to self-review, professionally and personally.

Some nurses use humour as humour has been seen as a way of coping with social demands during a crisis event (Britton, 1990; Eaton, 1994). Bender (2001) reports that laughing produces endorphins, which automatically lowers stress levels. She has shown how gallows humour is used throughout healthcare, although there is little research done in this area. She has shown how gallows humour reputedly provides a release for anxiety, stress and tension, lightens crisis situations, slows the burnout process and gives staff a ‘second wind’.

The AIDS-dedicated nurses in Sherman’s (2000) study alleviated stress by protecting themselves, taking the risks in their stride and reframing the risk. They protected themselves by using universal precautions and totally focusing on what they were doing. Taking the risks in their stride meant viewing the risks as part of life. Reframing the risk meant that nurses attributed responsibility for any injuries in the workplace to a lack of protection by the hospital as opposed to any failure on their own part.

Sherman (2000) reported that nurses overcame emotional stressors by finding meaning and enhancing their growth and well-being. They did this by establishing a balance between their professional and personal lives. They pampered themselves through long walks, good novels, hot baths, visits with friends, hugs from family and soothing music. They released their pain by crying, debriefing and meditating. They

attended support groups and workshops to acknowledge their feelings. These nurses managed their demands and asked for help. They found relationships they developed with their clients supported their professional and spiritual growth and lessened their stress (Sherman, 2000). Clinton et al's (1995) group of mental health nurses were reluctant to discuss their stress status which might imply that they were already using effective coping strategies. Clinton et al. (1995) found that nurses relied on colleague support as a coping behaviour when dealing with stress. Another plausible conclusion could be that these nurses have an aversion to reporting stress, preferring to minimise any difficulties they experience (Clinton et al., 1995).

Different cultures adopt different coping strategies to deal with difficulties in life. Studies show that besides problem-solving, Chinese people adopt 'acceptance strategies' in response to situations that are unalterable. If they are unable to change the situation, they accept it as part of the situation. The Chinese also use less alcohol than other populations to manage life stressors (Wong, Leung & So, 2001). Bohle and Quinlan (2000) suggest that professional workers and managers who have a high level of control over their work, and whose job problems are easily solvable, develop better coping skills by solving the problems and removing the sources of stress.

American nurses identified coping strategies in Sherman's (2000) study as balancing professional and personal life, managing demands, asking for help, respecting and controlling feelings and releasing pain while maintaining their spiritual perspective. O'Connor and Jeavons' (2003) study revealed themes such as sharing with others experiencing the same event, communication, stress education, self-understanding and group cohesion. Working together and sharing similar experiences reduce levels of stress and burnout.

Consistent with previous findings, adaptive coping strategies have been identified as problem-solving, seeking social support and debriefing about stress (Clinton et al., 1995). Formal debriefing following a critical incident is also viewed as useful (Levin, Hewitt & Misner, 1998). Kushnir, Rabin and Azulai's (1997) study showed that experienced nurses are more likely to apply positive coping reactions. They report that rational-functional thinking is a positive coping resource which promotes well-being,

by using adaptive responses. Fagin et al's (1995) research showed that community psychiatric nurses used peer support to alleviate work-related stress.

Muscroft and Hicks (1998) showed that talking to colleagues, talking to families and friends and talking to counselling services were helpful. Midwives in Mackin and Sinclair's (1998) study demonstrated their stress awareness in their personal and working lives. A significant stress moderator for midwives in their study was support from work colleagues. Midwives described a variety of activities to relieve stress which included quiet reading, physical exercise, socialising and holidays. Jonsson and Segesten's (2004) study found that a coping strategy to diminish stress was obtaining support from others.

Milne and Watkins' (1986) study indicated that nurses were mildly stressed when working shift rotations. Of greater practical and theoretical significance was the fact that they increased certain coping strategies when dealing with a change in the type of stress. These nurses significantly reduced the stress and strain they experienced. Milne and Watkins (1986) highlight the theoretical importance of the interaction between strain, coping and stress over time. They recommend psychological coping skills training workshops for registered nurses experiencing excessive strain, and the emphasis on coping could also be applied to the training and recruitment of nurses. For example, applicants for training could be 'screened' for coping skills, as well as vocational and academic aptitudes and those currently training could be offered additional coping strategies.

Brunero, Cowan, Grochulski and Garvey (2006) have written about stress management for nurses and include coping strategies in their booklet. They advise how easy it is to develop negative thinking patterns because of the constant daily pressures faced by nurses. They advise nurses to recognise these thinking patterns and try to change them. They provide examples or scenarios in their booklet commissioned by the NSW Nurses Association and NSW Health Department in 2006 that explores stress in the workplace.

It is important to examine coping resources that might assist in the prevention of burnout (Spooner-Lane & Patton, 2008). Dorz et al. (2003) found that developing adequate coping strategies could be a protective factor against burnout. One study examining coping strategies showed that hospital staff nurses who scored low burnout scores, (meaning they were the least stressed),

use planful problem solving, self-controlling coping, positive reappraisal and seek social support (Gaithersburg & Roach, 1994, p.44).

7.2. Negative coping strategies

Although nurses seem resilient and have learnt to cope with intense pressures within their profession, repeated exposure to pressures can compromise coping strategies, both at work and at home (Badger, Kaiman & Moellering, 2001). Keil (2004) showed how ‘coping’ suggests a low level of success. The word is less positive than ‘manage’. She shows that ‘coping’ suggests dealing with stressful or adverse or difficult circumstances, whereas ‘manage’ denotes a new challenging situation. Coping contains elements of alteration or modification, the object being to reduce stress; by removing, modifying or accommodating the stressors.

Bohle and Quinlan (2000) suggest that workers who have little control over work issues have a sense of powerlessness and are more likely to develop negative coping strategies which leave the stress source untouched, such as psychological withdrawal and day dreaming, and resorting to drugs to ease work pressures. They suggest that situations which are intense and unalterable are more likely to result in psychological withdrawal. Recent research by the NSW Nurses Association (2008j) reported nurses and midwives becoming accustomed to the work environment, as it relates to the situation in public hospitals. The NSW Nurses Association (2008j) has highlighted that some nurses and midwives have described working environments as ‘war zones’ and that some shifts feel like they are ‘out of control’ and rated their workloads as high to excessive (NSW Nurses Association, 2008j). They describe arriving home exhausted and with nothing left for their families. Lambert and Lambert (2001) have shown that a degree of control is instrumental in enabling nurses to cope with facets

of stress and burnout. Clinton et al. (1995) found that maladaptive strategies for mental health nurses included coping by withdrawal, smoking, worrying, eating, crying and behaving towards clients in a detached and callous manner.

In Muscroft and Hicks' (1998) study, some of the techniques of coping with stress such as smoking, alcohol and talking to management, were not effective. Studies showed that nurses who ignored social support were more likely to experience emotional exhaustion. General nurses were more likely to receive workplace professional counselling than their counterpart psychiatric nurses. Fagin et al. (1995) noted that some nurses distance themselves from the stress source. Breaux (1998) found that avoidance coping was related to burnout.

Fineman's (1985) study on social workers showed the most common coping style was internalising difficulties and compartmentalising or 'bottling-up' anxiety, hoping it would disappear. Gaithersburg and Roach (1994) noted that nurses with high burnout scores use 'avoidance and self-controlling methods'. They have shown that coping strategies become counterproductive when nurses show cynicism, psychological withdrawal and rigidity, and that coping in this way can be destructive. Wigens (1997) concluded that some nurses use routinisation and emotional detachment as coping strategies. According to Kushnir, Rabin and Azuali's (1997) research, young oncology nurses have few coping skills. A common reaction of inexperienced and young oncology nurses is to resign from their position. Working continuously with patients' high emotional demands can become emotionally and physically demanding.

Clegg's (2001) research in the United Kingdom has noted that within the current climate, although there is a shortage of nurses, many nurses are employed on only short-term contracts and nurses perceive this as a deterioration in working conditions. Nurses accept increased levels of responsibility with reduced control over workload or work environment. The Garling Inquiry which is presently focusing on the NSW public health system is hearing overwhelming evidence that nurses and midwives endure and cope with extreme workloads (NSW Nurses Association, 2008k). Clegg has also identified behaviour and workers' risk factors such as drinking and smoking. Clegg (2001) highlighted absenteeism and staff sickness as major problems showing a

number of nurses reported stress-related illnesses. They found that the impact of these issues not only affects quality of care and all nursing staff's health, but nursing colleagues facing staffing shortages. Nurses and midwives want better retention initiatives for safer workplaces for patients and staff (NSW Nurses Association, 2008).

Behling and Guy (1993) have shown that continual smoking places a health risk on nurses as stimulants such as tobacco and coffee can be perceived to relieve chronic fatigue and stress, particularly in night workers. Their study showed that shift workers are negatively affected by loss of sleep and disturbances of elimination and eating. Nurses coping with the effects of stress suffer from ill health leading to increased rates of absenteeism, high turnover rate and poor performance (Buchan, 1994; Seccombe & Ball, 1992). Drug use, alcohol consumption and smoking were negative lifestyle practices adopted due to stress by the nurses in Hope, Kelleher and O'Connor's (1998) study. Not only did stress affect these nurses in their work life, their own personal lives suffered. These nurses adopted unhealthy habits as a relief from their work stress, resulting in long-term, negative effects on their health.

Often, callousness and detachment occur as a result of coping with stress (Clinton et al., 1995). Jones, Janmah, Payne and Rick (1987) have suggested that following repeated exposures to numerous stressors, the nurse or midwife might become numb and unable to react to further stress. As a result, an uncaring attitude is displayed. The nurse or midwife might become apathetic about the value of work leading to the concept of depersonalisation associated with burnout.

Community psychiatric nurses in Fagin et al's (1995) study reported being emotionally drained from their work, reporting they were unable to feel for clients. They felt a sense of hopelessness and futility. Their sick leave had increased, they felt unfulfilled in work and had lower self-esteem. Those community psychiatric nurses who were not coping showed signs of ill health, poor work performance and deterioration in personal or professional relationships. Jones et al. (1987) found that nurses have a high incidence of outpatient psychiatric referrals and increased rates of suicide.

8. Stress in other professions

Snelgrove (1998) investigated levels and sources of stress in relation to specialty areas. She revealed that stress levels were an outcome of occupation as opposed to other variables such as gender, age or work setting. Seglin (2003) reported that other professionals, such as accountants, endure pressures and strain to make money. Hensher (1947) reported that interstate truck drivers experience fatigue related to their environment and industrial structure. These include long driving hours, long work hours, off-road work commitments, alternating night and day shifts, drug use, night driving and lack of regular sleep patterns. Nurses and midwives might also relate to these irregular sleep and working patterns.

Cotts (2003) raised questions about stability and stress levels of reporters' jobs. The Australian Council of Trade Unions (1997) in Melbourne found that 70 per cent of workers reported increased workloads and 68 per cent reported organisational restructuring and change to be the most common problems. Other problems included job insecurity and poor career opportunities. Stress in nursing and midwifery and other professions is therefore a global problem.

In Weekes, Peterson and Stanton's (2001) study of medical scientists, the most striking changes in workplaces over the previous 12 months had been increased amounts of work, faster pace of work, and corresponding increases in stress levels. Employees felt they could not provide a quality service due to work overload. Fulltime workers found it difficult to organise or plan their personal commitments, as well as establishing a balance between their family and their working life. Job satisfaction had diminished. Sixty-nine point six per cent of workers worked at an increased pace, which contributed to rising stress levels (69.2%). They reported medical scientists' job satisfaction had decreased (55.7%) due to excessive workloads necessitating the increased pace at which they work. Chopra, Sotile and Sotile's (2004) literature review on physician burnout found that the evidence suggests that practising physicians are experiencing burnout with 46 to 80 per cent experiencing moderate to high levels of emotional exhaustion.

In Weekes, Peterson and Stanton's (2001) study, fulltime workers suffered depression, high blood pressure and continual tiredness, showing physiological symptoms of stress. Their recent study looking at medical scientists' working conditions showed stress caused by poor working conditions and understaffing had resulted in many leaving the workforce. Job security and employees' control over their jobs had decreased. Medical scientists had problems with work intensification occurring throughout the decade. Their study showed that healthcare is continually burdened by a constant need for increases in productivity, an increased pace influenced by expectations of better customer service, and increased workloads with less staff. They found that it was believed that extra staffing and flexible hours and extra hands to manage a workload that had increased over the past 12 months would solve the problems. The staff were dissatisfied with management, due to increased management control. Fineman's (1985) study with social worker stress showed losing control over some aspects of their jobs was an issue.

There is evidence that physicians in stressful specialty areas are at risk of developing stress-related illnesses. As for the suicide rate among physicians, most studies do not agree on this variable. Physicians having emotional problems might be attracted to specific specialty areas. Similarly, physicians who are physically ill might be drawn to less stressful medical specialties (Bloom, 1988). Pharmacists are also more prone to burnout and are at high risk for drug and alcohol dependence and suicide (Chi, 1982).

Bohle and Quinlan (2000) visited workplaces. At one, a food processing factory, the movement and layout of materials was badly organised, requiring a large number of trucks to operate within a confined area. This posed a risk of injury of collisions between trucks. It also increased drivers' stress.

Berg, Hem, Lau, Haseth and Ekeberg (2005) developed a new instrument to assess stress in the Norwegian police force. They believed that stress perception also depends on support, coping strategies, personality and locus of control. They demonstrate the usefulness of an exclusive stress instrument for police. Their study found that police experience high stress levels from lack of support. They reported police with neurotic personality traits evaluate work stress as more serious than did

their extrovert counterparts. Those police with internal locus of control were more motivated and did not evaluate situations as being as stressful as their external locus of control counterparts did.

Kushnir, Cohen and Kitai (2000) conducted research on continuing medical education among medical doctors, including family physicians and paediatricians. They hypothesised that continuing medical education would reduce stress and burnout and increase job satisfaction. Lack of opportunities to participate in continuing medical education, combined with the pressure and expectation of continued professional development, were associated with job stress. Another issue highlighted in stress literature is professional isolation. In Kushnir, Cohen and Kitai's (2000) study of physicians' job stress, lack of stimulation and professional isolation were significant sources of stress. They found that imbalances between an individual's needs and the job environment are also a source of stress, and that dissatisfaction and job stress are inversely related to perceived opportunities for continuing professional development. Mandy and Rouse's (1997) study investigated work stress and burnout in junior physiotherapists and the results indicated that they exhibited moderate to high burnout levels. These burnout levels might be indicative of the early years in a profession, which is a time of learning and developing professional skills such as general organisational and time management skills. Their results showed that role and organisational issues and quantity and quality of work were related to the burnout component, emotional exhaustion. Their study also highlighted high depersonalisation scores.

Rada and Johnson-Leong's (2004) study showed that dentistry is a stressful profession. Their study found that 34 per cent of dentists felt emotionally or physically exhausted while 26 per cent experienced backaches or headaches. Other physical symptoms included abdominal or intestinal problems. Other stressors included the workload and coping with uncooperative or difficult patients. Blatchford (2003) reports on stress experienced by dentists, highlighting that a busy, stressed environment was perceived as not fulfilling patient needs. Mandy and Mandy (2000) found burnout levels higher among podiatrists when compared to dentists.

Ames, Kilpatrick, Zoller, Sistino, Blackwell and Acsell's (2004) study researched burnout levels among perfusionists (health professionals who insert intravenous cannulas or collect blood). Their results demonstrated that low and high burnout levels of perfusionists were almost equal. Their results verify job satisfaction to be a reliable marker of burnout. They also found an association between higher burnout levels and a greater intention to leave the profession.

Griva and Joekes (2003) studied teachers experiencing stress in London. Their burnout levels predicted higher emotional exhaustion and lower social support levels. Increased demands were associated with low job satisfaction and high social support levels were related to high job satisfaction. Older teachers were more satisfied.

9. Gaps in the literature

Stress and burnout levels have not been assessed in nurses and midwives in the same group in any research. As nurses and midwives work differs somewhat, it has been interesting to see how nurses and midwives perceive their stress and burnout experiences. Some nurses and midwives worked in either of these roles, further accentuating the importance of pursuing this area simultaneously. Even though Williams and Cooper (1998) developed the Pressure Management Indicator which assessed how much control the individual is able to exert over their life and ways in which they cope with stress, this tool did not examine work behaviour as pressure and motivation levels.

10. Conclusion

Current research indicates nurses and midwives are leaving their profession and the nursing shortage has become a major global problem. This has prompted significant new research. The link between illness and stress is well established, stress being implicated in many conditions including cancer, asthma, hypertension and coronary heart disease (Rhead, 1995). Stress has destructive consequences, including cardiovascular disease, tension, depression and ulcers (Quick et al., 1985). It would seem reasonable to expect that nursing and midwifery professions will become an unhealthy segment of the population if documented stress levels continue. The result

is self-depletion, negativism and cynicism (Williamson & Dodds, 1999). Excessive time demands prevent nurses pursuing quality opportunities for further professional development (Duke, 1984).

The literature conveys the meaning of stress and burnout and associated individual responses for nurses and midwives. The work stress theories partly explain some of the underlying reasons for stress and burnout including motivation and low rewards, lack of autonomy and low control over the work environment and a mismatch between person and the type of work. Karasek's (1979) Demand-Control Theory specifically is related to how a person manages particular demands placed upon them, and if that person feels overwhelmed by these demands this could lead to stress and burnout. The Person-Fit Theory relates to the assessment of a person being suited to a particular job. Vroom's (1964) Motivational Expectancy or Effort-Reward Theory relates to how a person behaves according to expectations or rewards in the workplace.

The questionnaire developed for this research specifically focuses on aspects relating to these work theories. The information obtained relates to external pressures in the work environment, the ability of the individual to deal with these external pressures, whether the individual is suited to the particular work and the individual's motivation levels. The ability of the individual to deal with external pressures directly relates to how much stress and burnout they will experience. The individual's suitability to a particular job relates directly to job compatibility and satisfaction. The individual's pressure and motivation levels directly relate to their work behaviour. The literature highlights the important aspects, which include sources and results of stress, environmental working conditions, organisational factors, emotional and physical wellbeing, burnout, individual reactions and coping strategies. These important aspects of individual responses to stress and burnout are all connected in some way to the work theories.

Chapter 3

METHODOLOGY

1. Introduction

The literature review identified the main sources of individual responses to stress and burnout as they are related to environmental working conditions and occupational stress. Experiencing stress can affect emotional and physical wellbeing including symptoms of stress related to ill health and outcomes relating to disruption of family and work balance. Continued exposure to stress results in burnout which includes emotional exhaustion, depersonalisation and low personal accomplishment. Individual responses and reactions to stress relate to work behaviours, situational factors and the personality hardiness concept. The theoretical framework and work theories presented in the previous chapter have common characteristics in dealing with individual responses to stress and burnout workplace issues. This information provided a theoretical basis for developing a specific tool to explore individual responses to stress and burnout workplace issues in a sample of Australian nurses and midwives.

The literature indicated that nurses and midwives are experiencing significant stress and burnout. Other than a few studies, three focusing on Victorian nurses (Healy & McKay, 2000; Kent & Lavery, 2007; O'Connor & Jeavons, 2002) three focusing on mental health nurses (Clinton et al., 1995; Humpel & Caputi, 2001; Taylor & Barling, 2004), two in Queensland (Barrett & Yates, 2002; Spooner-Lane & Patton, 2008) and one in Sydney focusing on violence and abuse from patients (Carstairs & Trenoska, 2002), all other studies are based on nurses and midwives working in countries other than Australia. Lambert and Lambert (2001) recommend that more studies be undertaken in other countries as there is a plethora of studies in the United Kingdom and United States of America. On this basis alone, there is good reason to conduct more research focusing on stress and burnout issues relating to nurses and midwives working in Australia.

The research process began with the development of a questionnaire based on a comprehensive literature review. As well, questionnaires from this area of interest were reviewed. Gray-Toft and Anderson (1981), for example, designed the Nursing Stress Scale specifically to assess three sources of stress, namely, physical, psychological and social. Their questionnaire was deemed inadequate for this study as it did not examine self-imposed pressure and motivation levels. Other tools assessed such things as psychiatric morbidity and fibromyalgia but unfortunately they did not focus on nurses and midwives. Only one questionnaire (Wheeler & Riding, 1994) focused on assessment of nurses' and midwives' stress and did not investigate burnout and work behaviours.

The major reason why a new questionnaire had to be designed was linked to the fact that none of the currently available survey instruments are able to measure stress, burnout and work-related behaviours for nurses and midwives. As most studies have concentrated on measuring stress and not the outcomes of experiencing stressors (Delvaux, Razavi & Farvacques, 1988), the questionnaire developed for this project examines not only overall levels of stress, but also discrete outcomes of the multifaceted phenomena of stress, specific aspects of burnout and individual responses to workplace issues.

The development of a new tool required a pilot study to address problems and issues of reliability and validity. Major issues associated with the development of a new survey tool include identifying logistical problems, assessing data analysis techniques to uncover potential problems and testing adequacy of the research instrument (Hundley & van Teijlingen, 2002). Once reliability and validity were established with the newly developed questionnaire, it could then be used for the main study.

1.1. Ethical considerations

The draft questionnaire was submitted for ethics approval to the University of New England, Armidale in March 2004 and approved, once requested minor changes were made, in July, 2004. The approval number for this study is HE03/201 (Appendix 1). Ethics approval for the pilot study was obtained from the appropriate Area Health Service or individual health facilities for distribution of the questionnaire (approval

number for Central Coast Area Health Service, 03/61). Further ethics variation approval was obtained from the University of New England in March 2005 to permit distribution at nursing and midwifery conferences scheduled over the coming year. All respondents were advised that they could withdraw without penalty from the study at any time.

Confidentiality was maintained by coding each of the questionnaires with a numeral. Each respondent was identified by a numeral to allow for easy access to data information and to ensure that responses could not be linked with the name of the respondent. Each of the questionnaires was also given a colour code to allow for identification of conference attended. The last page of each questionnaire enabled respondents to write their name if they wanted to be informed of the final results of the study. Using the last page of each questionnaire allowed these personal details to be separated from the actual questionnaire. The questionnaires are kept in a locked cabinet at a private residence and will be destroyed following a period of five years.

2. Pilot study

Hundley and van Teijlingen (2002) report that before using a questionnaire for the first time a pilot study is of the utmost importance. Reasons include: testing and developing research instruments, assessing whether the proposed tool is workable and realistic, assessing the success of recruitment approaches, assessing data analysis techniques and identifying logistical problems. Sufficient pilot work should be carried out while developing a new measurement tool (Rattray & Jones, 2007). Edwards and Burnard (2003) recommend pilot studies to establish reliability and validity. A pilot study was undertaken primarily to acquire feedback, ensure the questionnaire was user-friendly, ensure the items in the questionnaire covered the content area and establish an adequate degree of reliability and validity.

Respondents included 18 registered nurses from three aged care facilities, 30 midwives from the Central Coast of NSW and one doctoral student (who was a registered nurse) from the University of New England, Armidale. The sample was a mixture of registered nurses and midwives working in different arenas and

indicative of the intended main study sample. The pilot respondents were selected by convenience sampling. The sample was selected because of geographical accessibility and ethics approval was obtained from the appropriate authorities.

The aged care facilities offered verbal agreement for the pilot study and the questionnaires were distributed via the Directors of Nursing. The questionnaire was distributed directly to the doctoral student. Nursing Unit Managers from a conveniently located hospital, who had formally agreed to this activity, distributed the questionnaire to their staff (approval number for Central Coast Area Health Service, 03/61). As it is sometimes impossible to exclude pilot study respondents from the main study (Hundley & van Teijlingen, 2002), some of the pilot study respondents might have also been included in the subsequent main study. It was not possible to determine if there was such overlap, as the questionnaire forms were distributed to respondents attending a number of conferences (refer to Appendix 2).

While pilot studies are usually based on smaller numbers (Hundley & van Teijlingen, 2002), there should be sufficient pilot respondents to obtain valid results (Dunning & Martin, 1996). The questionnaire was distributed to 49 respondents in the pilot study, this being comparable to 50 respondents from Dunning and Martin's (1996) pilot study. The pilot sample size for this study was chosen so as to be able to provide adequate information on reliability and a certain degree of face validity. The average age of the pilot respondent was 47.9 years and the average number of years in the nursing profession was 24.2 years. As the sample was small, an average was calculated for any numerical data that were missing, using a non-parametric mean imputation method (Nielson, 2001).

2.1. Operational definitions of stress, burnout and individual responses

For the purpose of this research, stress, burnout and individual responses have been given the following operational definitions, developed to be specifically applicable for nurses and midwives in their current working climate.

Stress is defined as:

an inability to control the work environment which leads to considerable pressure and job dissatisfaction amongst working team members. This might contribute to feelings of unease at the initial episode of stress and involve an array of symptoms characteristic of ill health over a prolonged period of time in the helping professions;

burnout is defined as:

an emotional state experienced over a prolonged period of time by those in the helping professions resulting in feelings of powerlessness and being emotionally exhausted and overwhelmed. This contributes to lack of empathy towards colleagues and clients and feelings of incompetence and lack of achievement in one's work with people;

and individual responses are defined as:

how an individual reacts in a particular work situation depending upon self-imposed work pressure and motivation.

2.2. Classifications and coding legends for questionnaire

Classifications or categories were developed with numerical values attached to extreme, moderate, fair and nil / negligible levels of stress and burnout for relevant questions. This enabled categorisation and calculation of the entire sample's level of stress, burnout and individual responses. Relevant questions from the questionnaire were also categorised into the following subscales: work environment, psychosocial stressors, issues of control, job satisfaction, exhaustion and individual responses. As identified in the literature, questions which related to a particular subscale were grouped accordingly.

For the majority of the questions, individual responses to stress and burnout experiences were identified by using a rating scale which designated how often these occurred (Roberts & Taylor, 1998). As part of a standard valid methodology, such scales comprise, in most cases, between five and ten points (Schneider et al., 2003).

The scales used as part of this research range from five and nine points. For example, some responses included: ‘never’, ‘occasionally’, ‘frequently’, ‘most of the time’ and ‘always’, while others offered nine choices, such as ‘for seven to ten weeks’, ‘for five or six weeks’, ‘for a month’, ‘for two or three weeks’, ‘for a week’, ‘for three to five days’, ‘for two days’, ‘for a day’ and ‘no holiday’.

There were eight questions which included ‘never / occasionally’ in the same box as the answer or option. Respondents who used this ‘never / occasionally’ box in their answer to any of these eight questions were recorded as having answered ‘nil / negligible’. For example, the question, ‘How often do you feel emotionally drained at work?’ would rate a nil / negligible stress rating if the answer was ‘never / occasionally’. Seven questions included ‘yes’, ‘no’, ‘sometimes’ or ‘unsure’ statements. For logistic regression analysis only, answers to these questions were recoded as dichotomous variables by removing any answers indicating ‘sometimes’ and ‘unsure’. There was one question which gave options of behaviour (Bello, 1994). This question asked, ‘How do you react when you are irritable?’ The options for this question were ‘swear and shout’, ‘verbalise your feelings in a disruptive manner’, ‘verbalise your feelings in a controlled manner’ and ‘bottle your feelings inside’.

All parts of the stress, burnout and individual response components of the questionnaire used different indices of coding to accommodate the varied answers. The specific indices used for the subscales are set out in Table 1 and were used for the initial pilot study.

Table 1 Stress, Burnout and Individual Response Subscales / Indices for Pilot Study

Major theme	Category	Subscale	Questions	Indices
Stress	Occupational stress	Work environment	Incidence of stress Time management- workload Rush to complete tasks Finishing late Respected by clients Organisational support Work colleagues unsupportive Expectation of 'stress' free environment	0-4 0-4 0-4 0-4 0-4 0-4 0-4 0-4 0-2
	Stress leading to ill health	Psychosocial stressors and symptoms	Sleeplessness over past decade Depression over past decade Sleeplessness over past week Headaches requiring analgesia Stress considered healthy Stress requiring treatment Mental health leave Helplessness over past decade Frequency of depression Length of holiday	1-6 1-6 1-5 1-5 0-2 0-7 0-6 1-7 0-6 0-8
	Autonomy	Control	Feeling powerless Decision-making Motivated by maintaining control	0-4 0-4 0-4
	Job compatibility	Job satisfaction	Being suited to the work Enjoying the type of work Wanting to change area of practice Wanting to leave professional discipline Frequency of job dissatisfaction	0-4 0-4 0-3 0-3 0-7
Burnout	Prolonged exposure to stress	Exhaustion	Apathy Experiencing low morale Feeling undervalued Feeling overwhelmed Feelings of incompetence Experiencing increased anxiety Fatigue Feeling emotionally drained Loss of empathy for clients Loss of empathy for colleagues Burnout unavoidable	0-4 0-4 0-4 0-4 0-4 1-6 1-5 1-5 0-2 0-2 0-2
Individual Responses	Individual & work stressors	Pressure / motivation	Working independently Trying to achieve more than time allows Unreasonable expectations on self Irritability Pushed for time Difficulty slowing down for procedures Working at high performance Arriving early for appointments Reporting sick if unwell Continuing work if unwell Keyed up on most days Multi-tasking Constantly looking for challenge Strong sense of commitment Reactions when irritable	0-4 0-4 0-4 0-4 0-4 0-4 0-4 0-4 0-4 0-4 0-4 0-4 0-4 0-4 0-4 0-4

2.3. Validity and reliability

Tools must possess basic attributes that assure dependable measurement of the variables under investigation. These important attributes are validity and reliability (Waltz, Strickland & Lenz, 1991). Rattray and Jones (2007) state that it is essential that nurse researchers incorporate methods to establish validity and reliability, particularly of new tools. It is vital to establish validity and reliability and to incorporate these pre-planned methods when designing a questionnaire (Rattray & Jones, 2007). Norbeck (1985) suggests that there are four minimum standards necessary for the adequate evaluation of an instrument for use in research. These standards should include at least one type of content validity (for example, face validity), two types of reliability testing (internal consistency and test-retest) and at least one type of construct (or criterion-related) validity.

Validity is the extent to which a study using a particular tool measures what it sets out to measure (Polit & Hungler, 1997). The testing of validity is not exactly proven, but rather supported by an accumulation of evidence. A tool cannot be said to lack or possess validity; it is an issue of degree. A researcher does not totally validate a tool in isolation but more an application of the tool (Polit & Hungler, 1997). When designing a questionnaire, a wide variety of options should be given, so that respondents can answer truthfully. This enhances validity of the tool (Polgar & Thomas, 1997). Unlike reliability, there are no simple statistical calculations to assess validity (Polit & Hungler, 1997).

The reliability of a tool is a criterion for assessing quality (Polit & Hungler, 1997). It refers to whether the tool obtains consistent results when used again. A tool is reliable when a repeat use of the tool consistently measures what it is measuring in exactly the same way (Dempsey & Dempsey, 1992). Reliability is an important precondition for validity because if an instrument is unreliable, it lacks adequate validity. However, a reliable instrument is not necessarily valid since it might be measuring something other than what it is supposed to measure. Reliability is expressed as a numeral which is called a coefficient. The higher the numeral the more reliable. Rarely is a tool perfectly reliable and is often reported as 0.8, 0.7 or 0.6, as opposed to 1.0 (Dempsey & Dempsey, 1992). Stress and burnout are multivariate and multidimensional

concepts and achieving lower correlation coefficients is more acceptable (Kotzabassaki & Parissopoulos, 2003).

2.3.1. Content validity

Polit and Hungler (1997) define content validity as the adequacy of the content area being considered. A subtype of content validity is face validity and this investigates whether an instrument is calculating the appropriate construct. Dempsey and Dempsey (1992) define face validity as whether the items within an instrument measure the variables in a specific content area.

A. Generation of items for the draft questionnaire

The questionnaire used for this study was developed specifically for the target group of nurses and midwives. The questionnaire was designed to ascertain information relating to issues and concerns they faced in their current clinically challenging work environments. Developing the questionnaire involved an extensive literature review on stress and burnout pertaining to other professions as well as nurses and midwives. The search item words included stress; burnout; and behavioural characteristics when reviewing the literature. Items were generated from a literature review and advice from academic and clinical experts in the field. Other tools were reviewed but found to be less specific for current issues faced by this group or cohort (Goldberg, 1978; Jewell & Siegall, 1990; Maslach & Jackson, 1981; Rahe & Tolles, 2002; Stordeur, D'Hoore & Vandenbergh, 2001).

The questionnaire for this research consisted of three sections. The first section obtained demographic information, encompassing six questions. The second section comprised 37 questions related to stress and burnout. The third section comprised 15 questions related to behaviour exhibited in particular circumstances, known as vignettes (Polit & Hungler, 1999). Additionally a comprehensive accumulation of information from the area of interest came from first-hand knowledge and experience in the healthcare workforce. The questionnaire, a structured assessment tool, included self-report techniques consisting of questions with pre-coded response options (Wilde, 1977).

The questionnaire devised for this research uses a measurement framework known as a norm-referenced approach (Waltz, Strickland & Lenz, 1991). This approach is employed when comparing and evaluating a respondent's performance in relation to the performance of other respondents in some well-defined norm or reference group. An example of this strategy would be comparing nurses' and midwives' scores on stress in relation to particular demographics, for example, whether they were fulltime or part-time, better educated or living alone (used in this research, see Chapter 4, section 2.2.2.). This was important for this research because the questionnaire aims to assess the relationship of stress amongst nurses and midwives and important categorical variables.

Following the development of this draft questionnaire, the university presentation feedback session held in October, 2003, provided an opportunity for reviews and advice from academic and clinical experts in the field. Content validity ensures that expert opinion is obtained on whether the questions represent the proposed concepts the questionnaire is intending to measure. It is the first step when establishing validity, but insufficient by itself (Rattray & Jones, 2007). Content validity is based on judgement. There are no objective methods ensuring sufficient content coverage of a particular tool (Polit & Hungler, 1999).

B. Changes to questions relating to stress and individual responses

All changes which were aimed at improving acquisition of realistic information from respondents, reducing the ambiguity of questions or enhancing valid analysis of the aggregated data were accepted. The first addition included 'Tick one box' to ensure respondents provided single responses only. The word 'inefficient' replaced 'poor'. The words 'In your work' were added onto the question, 'Are you constantly looking for a challenge?' The value-laden word 'suffered' was changed to 'experienced', in questions relating to sleeplessness and depression. 'Stress that keeps you moving' was changed to 'stress that keeps you motivated'.

The questions, 'How long was your holiday at one time over the last year?' and 'How often did you holiday for more than one day over the last year?' were condensed into

one question, ‘How long was your longest holiday at one time over the last year?’ One of the options for this question was changed from ‘seven or eight weeks’ to ‘seven to ten weeks’ to avoid any ambiguity. The phrase ‘not having enough time to attend to the quality of care of clients’ was changed to ‘Is your workload too excessive at times to provide quality of care for clients?’. The question ‘Do you think you are well-suited to this particular type of work?’ was changed to ‘Do you think you are suited to the particular type of work you are doing?’

C. Changes to questions relating to demographics

Demographics were placed at the end of the questionnaire in an effort to initially engage respondents in the topic under question rather than their particular details, as suggested by experts in the field (Rattray & Jones, 2007). Changes were made as indicated: the area of ‘nursing management’, which had not been included in the original draft questionnaire, was included in the ‘areas of work’. The sentence ‘If you work in more than one area, please write in the space provided starting with the most predominant area first’ was added to prevent confusion in being unable to distinguish predominant areas. It was recognised that nurses often work in many different specialties and it would be important to know the primary or most usual specialty workplace. Added to the demographics were the hours worked and whether the nurse or midwife worked on a permanent, fulltime, part-time or casual basis.

2.3.2. Internal consistency

Acceptable levels of Cronbach reliability values are 0.7 or higher (Field, 2005). The overall Cronbach reliability level for internal consistency concerning all 37 of the 38 questions for the pilot study relating to the stress and burnout components of the questionnaire was 0.87 in respect of the first test and 0.82 in respect of the second test. One question was not included in the reliability analysis because 100 per cent of the nurse and midwife respondents for both test and retests responded ‘no’ to the question: ‘Would you expect your environment to be “stress” free?’ As it is recommended that the Cronbach’s alpha statistic be stated for separate parts within a questionnaire rather than for the whole questionnaire (Rattray & Jones, 2007), these statistics were calculated for the stress and burnout components separately. The overall reliability for the stress component of the questionnaire was 0.79 for the first

test and 0.75 for the second test. The overall reliability for the burnout component was 0.87 for the first test and 0.83 for the second test.

Figures 1 and 2 illustrate the Cronbach's alpha values for each relevant item relating to either the stress and burnout components for the pilot study in relation to the preliminary (first test) and final (second test) versions of the questionnaire. All Cronbach alpha statistics were analysed by SPSS (Statistical Package for Social Sciences, Version 14).

Figure 1 Reliability Values for Stress Component of Questionnaire

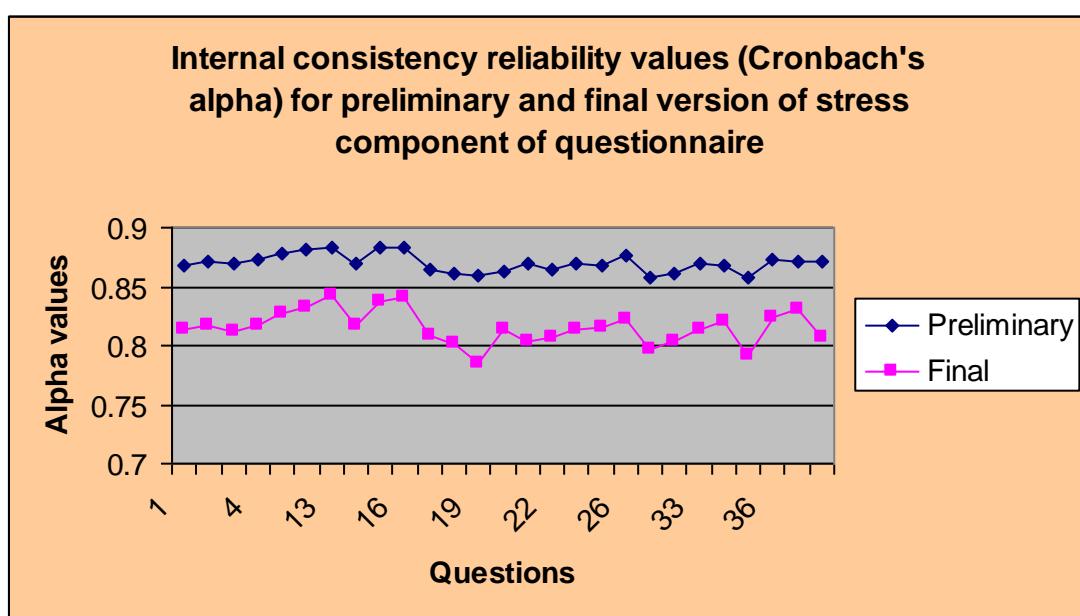
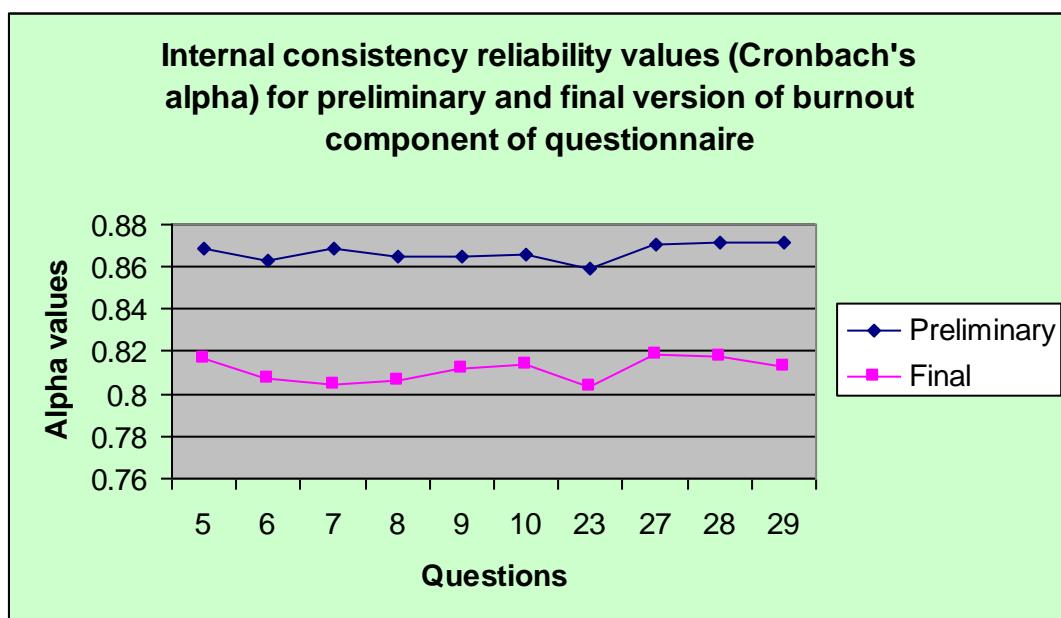


Figure 2 Reliability Values for Burnout Component of Questionnaire



For the individual response component of the pilot questionnaire, only five questions of 15 intended to measure pressure and motivation were able to be used for statistical analyses, as only these five questions showed good reliability for internal consistency (> 0.7) for the preliminary (first test) and final (second test) versions of the questionnaire (Table 2). Despite this finding, the remaining ten questions were not deleted from the final version of the questionnaire (Appendix 3) as it was believed that these questions could also provide a basis for descriptive statistics. Questions should not be removed if they are theoretically important, even if the criteria of Cronbach's alpha is not met (Rattray & Jones, 2007).

Table 2 Internal Consistency Reliability Values (Cronbach's Alpha) for Preliminary and Final Versions of Individual Response Component

Question	Preliminary	Final
Trying to achieve more	0.8354	0.7957
Unreasonable expectations	0.8146	0.7671
Irritability	0.8454	0.7360
Pushed for time	0.8387	0.7938
Difficulty slowing down	0.8781	0.8260
Total Reliability	0.8708	0.8208

2.3.3. Test-retest reliability

A. Processes for determining test-retest reliability

Test-retest reliability should be included when developing any questionnaire (Rattray & Jones, 2007). This procedure involves administering the instrument to similar individuals resembling the proposed main study, letting a period of time elapse (say a week) to allow for loss of memory of the items, then administering the instrument to the same individuals again. For test-retest reliability, scores on the two sets of responses are correlated statistically to yield a correlation coefficient referred to as the coefficient of stability or Pearson Product moment. A high correlation of 0.9 is used as a sensible level due to the fact that only a few participants will be involved (if 200 test-retest participants were to be used, a much lower correlation would suffice to indicate significance). If the results are the same or similar, the coefficient will be high – for example, 0.9 and the instrument is said to have high test-retest reliability. One problem with this method is realistically deciding the length of time between test and retest. If it is too short, individuals will remember responses and if too long, individuals might score differently because of maturation and learning (Dempsey & Dempsey, 1992).

As noted earlier, for the pilot study, the first questionnaire was distributed to 49 nurses and midwives in five locations by the nursing unit manager and author and the second questionnaire was mailed by the author. The time period between the original test and the retest was two weeks. This time period was chosen so that individuals would not remember specific responses and not so long that maturation and learning might occur and affect the answers (Dempsey & Dempsey, 1992). The directions to complete the questionnaire were exactly the same for each respondent for both the original test and the retest.

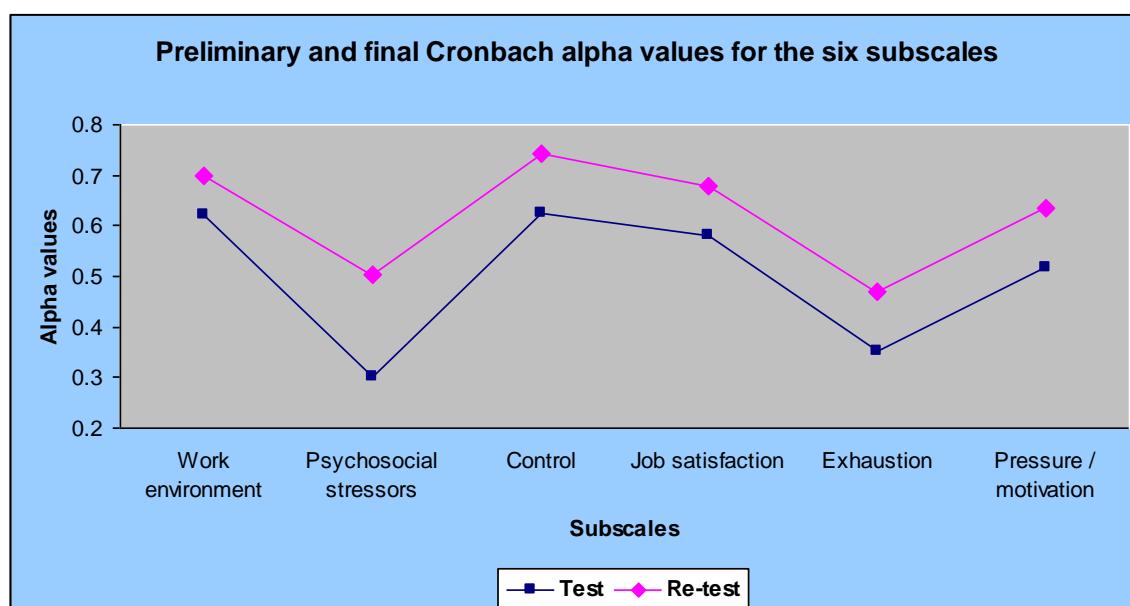
Thirty-five questionnaires were returned out of 49 distributed resulting in a 71 per cent initial return rate. As eight of these 35 respondents remained anonymous, it was possible to mail a second questionnaire to only 27 respondents. Twenty-four respondents returned this second questionnaire, giving a total return rate of 49 per cent of the postal questionnaires distributed. Twenty-four respondents were therefore

used in the pilot data analysis. Twenty nurses were used to validate a research instrument on burnout in Hall's (2001) pilot study in Dunedin Hospital, New Zealand.

B. Data analysis for test-retest reliability

Figure 3 gives a diagrammatic representation of the preliminary and final Cronbach alpha scores resulting from the pilot study for the six subscales of the questionnaire. These subscales (except for control) will therefore be used as the conceptual framework throughout this thesis. Control was excluded as a subscale in factor analysis because of the poor sampling adequacy (0.5) as, for factor analysis to be reliable, sample size must be adequate (Field, 2005) (see section 3.5.4. C. b.).

Figure 3 Reliability Values for Six Subscales of Questionnaire



For the pilot study, the intraclass correlation coefficient was calculated for continuous data. The Spearman's rank order correlation was employed to analyse inter-item, item-total correlation and correlations between subscales. Spearman's rank order correlation was also used with the intraclass correlation coefficient to estimate the degree of resemblance or reliability of the scales for the preliminary and final versions of the pilot questionnaire (that is, the test and retest scores). Table 3 shows the test-retest reliability estimates (column 4). From the table, all subscales in retest reliability were moderately correlated ($r = 0.47 - 0.74$) (Table 3, column 4). The correlation

coefficients were between 0.3 and 0.62 (Table 3, column 3) for the preliminary version of the test. Exhaustion and psychosocial stressors subscales show lower correlation coefficients. This can be expected as the strengths of the relationship or association depend on context and in some cases, where the correlation is low, the outcome might still be significant (Stevens, 1992). Even though a small correlation is identified, this could make a substantial contribution for determining and evaluating strategies for reduction of stress. Peiro, Gonzalez-Roma, Tordera and Manas' (2001) study for test-retest reliability coefficients gave results of 0.45, 0.64 and 0.66, which were relatively low but statistically significant ($p<0.01$) for burnout dimensions.

Losing descriptive statistical information might be detrimental for understanding symptoms of stress. For example, if high correlation coefficients are identified, these areas might be easier to address in possibly alleviating stress areas. For the pilot study, the intraclass correlation coefficient (ICC) ranged from 0.3 to 0.92, with psychosocial stressors and symptoms and exhaustion showing a high resemblance between pre and post-test (Table 3, column 5) which indicates that the instrument has high test-retest reliability for these two subscales. Average paired responses (for test-retest scores) for all questions measured the same for 27.5 out of 38 (73%) for the stress / burnout component of the questionnaire and the same for 9.3 out of 15 (61%) for the individual response component (Appendix 4). This means that out of the 38 questions for the stress / burnout component of the questionnaire an average of 27.5 out of the 38 questions were answered the same for test and retest scores, and an average of 9.3 out of 15 questions were answered the same for the individual response component.

Table 3 Spearman's Rank Order Correlation - Rho, Intraclass Correlation Coefficient (ICC) and Factor Analysis Method for the Six Sub-scales

Subscales	Category	Consistency (Spearman's rho)	Test-Retest	ICC
Work environment (8-item scale)	Occupational stress	0.62	0.70	0.44
Psychosocial stressors and symptoms (10-item scale)	Stress related to ill health	0.30	0.50	0.81
Control (3-item scale)	Autonomy	0.62	0.74	0.30
Job satisfaction (5-item scale)	Job compatibility	0.58	0.68	0.73
Exhaustion (11-item scale)	Prolonged exposure to stress	0.35	0.47	0.92
Pressure motivation (15-item scale)	Individual and work stressor	0.52	0.64	0.52

2.3.4. Construct validity

Construct validity is another standard to be achieved in developing a new tool. It measures a specific construct or hypothetical trait, such as grief, intelligence or prejudice pertaining to an instrument (Field, 2005).

Factor analysis

Factor analysis is one way of establishing construct validity (Field, 2005). Construct validity addresses how well the questions in the tool represent the fundamental conceptual structure (Field, 2005). Factor analysis was used in developing the questionnaire to establish if items were representative of the factor (Rattray & Jones, 2007). Factor analysis is calculated to statistically define subgroups for the indices created by the researcher (Field, 2005). This is useful to assess dimensions of phenomena to justify them (Waltz, Strickland & Lenz, 1991). Some questionnaires include a number of subscales which ‘tap’ into the construct being measured (Rattray & Jones, 2007). Different aspects of individual responses to stress and burnout can be measured. Thus, items such as stress and burnout levels, ideas of motivation and enthusiasm can be assessed.

Factor analysis shows whether these measures reflect a single variable. Specifically it asks, are these numerous variables driven by one underlying variable? Principal component analysis and factor analysis are techniques for identifying clusters or groups of variables (Field, 2005). Principal component analysis using factor analysis was employed to produce the variables that are highly loaded or pertinent to nurses and midwives. The six subscales were then revised as part of factor analysis in the main study to address construct validity. These clusters or groups of variables or questions were then tested to ensure they related to the same factor. Factor analysis for the pilot study indicated that psychosocial stressors and exhaustion (Table 4, column 3) had the highest loading factors identifying these two major factors that nurses and midwives experience in relation to their work.

Table 4 Factor Analysis for Pilot Study

Subscales	Category	Factor1
Work environment (8-item scale)	Occupational stress	0.33
Psychosocial stressors and symptoms (10-item scale)	Stress related to ill health	0.91
Control (3-item scale)	Autonomy	-0.30
Job satisfaction (5-item scale)	Job compatibility	0.54
Exhaustion (11-item scale)	Prolonged exposure to stress	0.90
Pressure motivation (15-item scale)	Individual and work stressors	0.53

2.3.5. Summary

Meticulous attention to appropriate piloting strategies identified ambiguities relating to some wording and categories of a number of questions contained in the draft questionnaire. A forty-nine per cent return rate was considered adequate for the pilot study (Polit & Hungler, 1997). The pilot study and accompanying analysis for this newly devised questionnaire showed good overall reliability. For the individual response component of the questionnaire test-retest processes showed that only the first five questions were reliable.

It was concluded that there was a strong statistical correlation ($\alpha = 0.86$) between psychosocial stressors and symptoms and exhaustion ($p<0.05$) which suggests that nurses' and midwives' experiences of psychosocial stressors and symptoms might increase exhaustion levels. The four standards as recommended by Norbeck (1985) were met in developing this new tool as demonstrated by the pilot study namely, face validity, internal consistency, test-retest reliability and construct validity. An article

describing this pilot study has been published in *The Australian Journal of Advanced Nursing*, vol 24, no 4, Jun-Aug, 2007 (Appendix 5).

3. Main study

3.1. Estimation of sample size

Required sample size (*a priori* calculation) and statistical power for known sample size of the study (*post hoc* calculations) were performed according to Field's (2005) recommendations, using the computer program, G*Power. The effect size within a population is linked to three statistical properties, namely the sample size, the probability level (the alpha level) and the statistical power (the beta level). Field (2005) describes the probability level as an accepted level of an effect being statistically significant and the statistical power as the ability of a specific test to detect any effect of that size. Field (2005) states that the aim is

to achieve a power of 0.8, or an 80 per cent chance of detecting an effect if one genuinely exists (Field, 2005, p. 33).

The power of a specific test is the given probability that that test will discover an effect assuming one exists in that population (Field, 2005). A probability (or alpha) (α) level of 0.05 is standard, according to Field (2005), meaning there is a five per cent chance that results would occur by chance alone. Lang and Secic (1997) state that statistical power is equal to $1 - \beta$, meaning beta (β) is the likelihood of calculating a type 2 error; that is, wrongly concluding there is no distinction between the groups when in reality there is a difference. For example, if the beta level ($1 - \beta$) is set at 0.8 (80% power), the researcher will incur a 20 per cent possibility of missing a difference (Lang & Secic, 1997). For large scale social science research, a power of 0.8 is acceptable in respect of *a priori* sample size (Mandy & Mandy, 2000).

Cohen (1992) suggested detection of a small effect size as $r = 0.1$, medium effect size as $r = 0.3$ and a large effect size as $r = 0.5$. Based on these guidelines, 783 respondents from this questionnaire are needed to reveal a small effect size, 85 respondents to reveal a medium effect size and 28 respondents to reveal a large effect

size. The effect size is a standardised and objective measure providing information on the importance and the extent of the effect. It does not matter what or how the variable has been measured. A value of 0 means no effect and 1 equals a perfect effect (Field, 2005). Sample size (*a priori*) and power (*post hoc*) were calculated using the relevant statistical parameters (Table 5). There were 1358 respondents in the study with a response rate of 562.

Table 5 Sample Size and Power Calculations- 2-tailed

	Alpha level – probability	1 - beta level –power	Effect size	Sample size
A priori	0.05 (α)	0.8 (1 - β)	$r = 0.12$	540
Post hoc	0.05 (α)	0.81 (1 - β)	$r = 0.12$	562

3.2. The sample

From April to November 2005, questionnaires were distributed to nurses and midwives at 13 nursing, breastfeeding and midwifery seminars and conferences within Australia, including areas within Sydney, Gosford, Brisbane, Perth and Hobart (see Appendix 2). These conferences were selected according to their geographical accessibility as they were held in capital cities. The sample consisted of enrolled and registered nurses and midwives.

Seven respondents who worked in countries other than Australia were removed from the sample, to make it possible to compare the phenomena of stress, burnout and individual responses among nurses and midwives working in Australia. This method of convenience sampling involves the use of most conveniently available respondents for the study using relatively easily available elements of a population who meet the criteria (Polit & Hungler, 1999; Roberts & Taylor, 1998). In convenience sampling, one chooses respondents who, due to their location, are easy to recruit and / or likely to respond. In this project, professional conferences attended by nurses and midwives were deemed the most convenient locations for recruiting eligible respondents.

3.3. Recruitment of respondents and coding of questionnaires

Twelve different conferences and seminars throughout Australia were attended by the author in 2005 in order to distribute the questionnaire. At the Perth conference, the

questionnaire was distributed by a conference convenor. At five of the conferences, there was an opportunity to address the audience and discuss the research. At the remaining eight venues or seminars, the conference convenor addressed the audience regarding the research.

At each conference or seminar, a stand was set up and flyers were distributed describing the study, encouraging respondents to complete a questionnaire. Several nurses and midwives at these conferences spoke openly about experiences of stress and burnout. The questionnaires were placed at each of the stands at each conference, allowing nurses or midwives to volunteer to take the questionnaire. A box with the researcher's photo and instructions to 'place the questionnaires into this box' was also positioned at the stand so that respondents could complete their questionnaire and return it on the same day. Each questionnaire had a stamped addressed or reply paid envelope attached to further enhance the return rate for those conference respondents who did not avail themselves of the option to place their completed questionnaire form in the box provided.

3.4. Data collection

The returned questionnaires were able to be identified as to the location of conference but not the name of the person completing the questionnaire form by way of a colour coding or object placed on one of the pages. They were sorted into conference groups. Each question was coded and scores added at the end of each part of the questionnaire. Each respondent was given a code or identification number for their questionnaire, in order to manage and de-identify data. Standard coding, enabling appropriate data analysis, was used for data entry. Following coding and scoring of the questionnaires, data were entered onto the computer programme Microsoft Excel and SPSS (Statistical Package for Social Sciences, Version 14) for later statistical analysis.

3.5. Levels of statistical analyses

3.5.1. Descriptive statistics

Statistics were analysed in SPSS (Statistical Package for Social Sciences, Version 14). Descriptive statistics were used to describe frequencies, percentages, demographics, measures of central tendency and variability. These statistics are mainly presented in tables and bar or pie graphs. Dempsey and Dempsey (1992) highlight two types of descriptive statistics. One is central tendency which describes how scores are grouped together or where most of the scores are clustered or centred. These comprise the median, mode and mean.

The median measures the centre of a statistical data set (Rumsey, 2003). The median divides the distribution in half. The scores are arranged from lowest to highest (Dempsey & Dempsey, 1992). The mode is the most commonly occurring score in a data set. It becomes more important when there is a bimodal distribution or two peaks in a bar graph. The median then becomes less important in a bimodal distribution. The mean calculates an average of a data set.

The other type of descriptive statistic describes variability, which is how the scores are spread on the specific scale being used (Dempsey & Dempsey, 1992). Examples of measures of variability are the range, standard deviation and interquartile range.

The range is simply the subtraction between highest and lowest numerals in a data set. It includes the outliers in a distribution. The standard deviation is used on a normal distribution curve. It measures the average distance of a score from the distribution mean (Schneider et al., 2003).

The interquartile range is where 25 – 75 per cent of the scores lie, or how far around the median the scores lie, measuring that variability. The interquartile range, or 25th to 75th percentile, is the range of values between these percentiles of the particular distribution (Lang & Secic, 1997). For example, if the 25th percentile was 2 and the 75th percentile was 3, the middle bracket of respondents scored between 2 and 3. Essentially, 25 per cent of the distribution had a score of above 2 and 75 per cent of

the distribution had a score of below 3. The interquartile range is used again because of the ordinal data and is used on distributions which do not propose to be normal. This is likened to the standard deviation.

The confidence interval is the boundary within which the true sample mean will fall and equates to a range of values accounting for a margin of error. The particular demographics for which confidence intervals are given are age, hours worked and years in profession (Chapter 4, sections 1.1.1. D., E., F.). The specific formula is:

$Z * \sqrt{p(1-p)/n}$ where p is the sample proportion, Z is the appropriate Z-value for 95% confidence (1.96), and n is the sample size
(Rumsey, 2003, p. 181).

The confidence interval chosen for these demographics was 95 per cent which means 95 per cent confidence that the interval contains the true sample mean (Field, 2005).

3.5.2. Correlational or inferential statistics

Inferential statistics enable researchers to make inferences or draw conclusions about characteristics of a population according to data obtained within a sample. Different researchers would draw the same conclusions again with identical data (Polit & Hungler, 1999). Correlational statistics are able to detect associations or relationships between variables. A correlation measures a linear relationship between two variables and might be positively or negatively related. Correlational statistics are unable to predict outcomes from another variable (Field, 2005). Correlational or inferential statistics were used to measure associations or relationships between phenomena and individual components / subscales of individual responses to stress and burnout to detect group differences. Non-parametric statistics were used as the data were ordinal (Likert scale) (Mandy & Mandy, 2000).

Spearman's correlation coefficient

Correlational statistics used included Spearman's correlation coefficient. This was used as it is a non-parametric statistic for ordinal data and a bivariate correlation. Two-tailed analyses were calculated. Two-tailed hypotheses are non-directional,

meaning that the prediction one makes might increase or decrease (Field, 2005). The hypothesis might show a positive or negative association. The process of identifying the particular sub-categories related to the subscales formed from the questionnaire (Chapter 4, section 2.1. Tables 70 to 74) and Spearman's correlations were calculated on all reliable variables. These then coincide with the three major work theories (Chapter 2, section 2., Chapter 5, section 2., Table 94). Spearman's correlations were also calculated on the overall scores (being the sum of all scores, not factor scores, as in Tables 8, 11, 12 & 13) for all major themes and subscales to establish strength of relationships.

3.5.3. Logistic regression

Regression analysis, unlike correlations, is able to predict outcomes (dependent variables) from predictor variables (independent variables). Multiple regression predicts an outcome variable from several predictor variables. Logistic regression was calculated to predict outcome variables (dependent) that are categorical. It is multiple regression with an outcome (dependent) variable that is categorical and dichotomous and predictor (independent) variables that are categorical and continuous. A categorical dichotomous variable is able to be classified as meaning 'yes' or 'no'; for example, losing empathy or not losing empathy. Continuous variables are those that have no finite limitations and continue indefinitely; for example, age, hours worked and years in profession. Logistic regression can predict which category a person is more likely to fit, given other reliable information (Field, 2005).

Logistic regression allows assessment of how well the predictor (independent) variables predict the outcome (dependent) variable. It assesses 'goodness of fit' of the model. It provides the importance and interaction of the predictor variables. An accurate assessment of classification of cases is provided, highlighting the specificity and sensitivity of the model as well as positive and negative predictions (Pallant, 2005). These analyses might then identify the nurse or midwife who is more prone to experiencing stress and burnout relating to certain occupational and individual factors or behaviours.

Logistic regressions were calculated with the major themes and questions which were outcome or dependent variables, were able to be coded dichotomously and met the following assumptions. The first assumption is that a large sample size and a small number of predictors are used in the analysis. The second important assumption addresses multicollinearity (see next section 3.5.3.). The third assumption addresses outliers by inspecting residuals only if there is a problem with the model. The model's support is indicated by a 'goodness of fit' test being an overall indication of how well the model performs and a significance value of less than 0.05 (Pallant, 2005).

The data requirements are as follows:

- An outcome dependent variable which is categorical (dichotomous).
 - Two or more categorical or continuous predictor independent variables
- (Pallant, 2005). All logistic regression calculations presented as part of this project satisfy all assumptions noted above.

If there were outliers for logistic regression, these outliers were removed from the analysis. If the outliers were the only ones who answered 'no' on the dependent outcome variable, the analysis was impossible as 100 per cent of answers were equal to 'yes'. For example if 427 nurses and midwives answered 'yes' and two answered 'no', and the outliers were the ones responding 'no', the analysis was impossible. The following variables which met the assumptions for logistic regression were included in the calculations (Table 6).

Sleeplessness, headaches requiring analgesia and feeling emotionally drained were all dichotomised the same. Those who answered 'never / occasionally' were taken as those not concerned with these aspects of stress and burnout and those who answered 'once or twice a week', 'three or four times a week', 'five to six times a week' and 'daily' were taken as those experiencing these aspects. Stress requiring treatment was dichotomised into the categories 'yes' and 'no'. The 'never' answer was placed into the 'no' category and the 'yes' category was taken as those who answered 'once a year', 'once every six months', 'once every three months', 'once a month', 'once every few weeks', 'once a week' and 'daily'.

“Mental health” leave was dichotomised into the categories ‘yes’ and ‘no’. The ‘never’ answer was placed into the ‘no’ category and the ‘yes’ category was taken as those who answered ‘once’, ‘twice’, ‘three to ten times’, ‘11 to 29 times’, ‘30 to 49 times’ and ‘50 to 100 times’. Length of depression was dichotomised into the categories ‘yes’ and ‘no’. The ‘never’ answer was placed into the ‘no’ category and the ‘yes’ category was taken as those who answered ‘for one hour’, ‘for one day’, ‘for two weeks’, ‘for a month’, ‘for a year’ and ‘for a few years’.

Wanting to change area of practice and loss of empathy for colleagues and clients were dichotomised into the categories ‘yes’ and ‘no’. Those who answered ‘sometimes’ and ‘unsure’ were not included in the analysis. Apathy and difficulty slowing down were dichotomised into the categories ‘yes’ and ‘no’. Those who answered ‘never’ were placed into the ‘no’ category and those who answered ‘occasionally’, ‘frequently’, ‘most of the time’ and ‘always’ were placed into the ‘yes’ category.

Table 6 Dichotomous Dependent Variables for Logistic Regression

Subscale- Work Environment <i>(Stress)</i> Category- Occupational Stress	Subscale- Psychosocial Effects <i>(Stress)</i> Category- Stress Related to Ill Health	Subscale- Job Satisfaction <i>(Stress)</i> Category-Job Compatibility	Subscale- Exhaustion <i>(Burnout)</i> Category- Prolonged Exposure to Stress	Subscale-Pressure and Motivation <i>(Individual responses)</i> Category-Work Behaviours such as Self-imposed Work Pressure and Motivation
Time management-workload (contained outliers)	Sleeplessness in relation to work	Suited to work (contained outliers)	Apathy (outliers removed)	Achieving more than time allows (contained outliers)
Rush to complete tasks (contained outliers)	Headaches requiring analgesia	Enjoy work (contained outliers)	Low morale (contained outliers)	Unreasonable expectations (contained outliers)
Finish work late (contained outliers)	Stress requiring treatment	Wanting to change area of practice	Powerlessness (contained outliers)	Irritability (contained outliers)
Organisational support (contained outliers)	Mental health leave	Leave professional discipline (contained outliers)	Feeling undervalued (contained outliers)	Pushed for time (contained outliers)
	Length of depression	Incidence of job dissatisfaction (contained outliers)	Feeling overwhelmed (contained outliers)	Difficulty slowing down
			Feelings of incompetence (contained outliers)	Working at high performance (contained outliers)
			Fatigue (contained outliers)	Keyed up (contained outliers)
			Feeling emotionally drained	Multi-tasking (contained outliers)
			Loss of empathy for colleagues	
			Loss of empathy for clients	

The overall levels of stress, burnout and individual responses were also dichotomised according to low, moderate and high categories (see Chapter 4, section 1.2.). Low was dichotomised into the ‘low’ or ‘low self-imposed work pressure and motivation’ category and moderate and high were dichotomised into the ‘high’ or ‘high self-imposed work pressure and motivation’ category.

The categorical predictor (independent) variables that were used with questions included employment status, qualifications and living arrangement. The continuous predictor (independent) variables that were used with these questions were age, hours worked and years in profession. For each question, the employment status, qualifications and living arrangement were all placed into the logistic regression calculation as well as either age, hours worked or years in profession. These demographics might be considered as potential confounding factors when investigating stress and burnout (Makinen et al., 2003). These predictors (independent variables) were placed into the calculation separately. So for each question there were exactly four independent variables (three categorical and one continuous). This scenario is an ideal calculation for logistic regression (Field, 2005).

The categorical predictor (independent) variables were coded dichotomously. The independent variable, ‘employment status’ was already coded and grouped by the researcher into three categories. These categories were: permanent fulltime, permanent part-time and casual. They were then grouped as either permanent fulltime or not working fulltime (dichotomous answers). Permanent fulltime was classed as fulltime and the categories permanent part-time and casual were classed as not working fulltime. The 44 respondents who answered this question permanent only, without indicating whether they worked fulltime or part-time, were not included in the dichotomous calculation.

The categorical predictor variable ‘qualifications’ was coded as possessing a degree or not possessing one. The original categories were: hospital certificate, diploma or degree. The categories hospital certificate and diploma were classified as not possessing a degree. The predictor variable ‘living arrangement’ was categorised as

either living alone or not living alone. The continuous predictor variables, hours worked and years in profession were placed into SPSS as they were, and age as years.

All calculations used the forward stepwise likelihood ratio method initially to define a model containing only the constant (Field, 2005). A stepwise method is appropriate for explorative studies, rather than theory testing (as this study is an exploratory study). A predictor is then selected which best predicts the dependent (outcome) variable (Field, 2005). The N (sample size) value for each of the calculations (including those in Appendix 6) ranges from 298 to 508 (total sample size 562) because the forward stepwise method chooses a subset of predictors which best provides the predictive power (Pallant, 2005).

The predictor is selected which correlated best with the dependent variable. If this significantly improves the prediction, the predictor is retained and a second predictor is chosen which has the biggest semi-partial correlation with the dependent (outcome) variable. For example, the first predictor might explain 30 per cent of variation in the dependent outcome variable, which leaves 70 per cent unexplained. The second predictor is chosen which explains the biggest part remaining (70%). The predictor accounting for the newest variance is added towards the model. If it makes a substantial contribution to the model's power, the predictor is retained and a new predictor is considered (Field, 2005).

Multicollinearity for logistic regression

All of the independent (predictor) variables were checked for high inter-correlations which would mean multicollinearity existed, posing a problem for logistic regression. Multicollinearity exists if the predictors in a regression model show strong correlations between them. A high collinearity level increases the probability that the good predictors of the outcome might be found non-significant, thereby being abandoned from the model (known as Type 2 error, believing there is no effect when in reality there is). Low collinearity levels pose no threat to logistic regression models but if predictors show strong correlations (above 0.8) it is difficult to assess which predictor is important (Field, 2005). These variables were related somehow to the dependent (outcome) variables but not to each other. Variance inflation factors predict

strength of relationship between the predictor independent variables (Field, 2005). Variance inflation factor values should not be greater than 10 (Myers, 1990). Tolerance levels are related to the variance inflation factor, being its reciprocal (1/VIF) (Field, 2005). All tolerance levels for a multicollinearity check should be more than 0.1 (see Appendix 7) (Pallant, 2005).

3.5.4. Factor analysis

Factor analysis was calculated *a priori* for the pilot study and as a *post hoc* analysis to statistically define subgroups for the questionnaire. It is vital to report *a priori* the number of factors expected to emerge (Rattray & Jones, 2007). Factor analysis was also calculated to establish construct validity for the questionnaire to confirm factorial validity of underlying attributes or different questions on a scale. These questions are usually related to a conceptual framework (Polit & Hungler, 1997). Pervin (1996) states that factor analysis is exceedingly useful in determining groups or clusters of items or behaviours that go together.

Hillhouse and Adler (1997) also used factor analysis as a way of examining factor structures of individual items and reducing the variables to a more workable variable-to-case ratio. Factor analysis is exploratory and used only to guide researchers about patterns in the data (Field, 2005). Factor analysis can be considerably affected by a few undifferentiated variables or questions (Hillhouse & Adler, 1997). Coffey (2000) states that factor analysis could highlight areas of work with particular problems. Field (2005) highlights that in social sciences attempts are often made to measure things that cannot be directly measured (latent variables). Stress and burnout cannot be measured directly: they have numerous facets (Field, 2005).

Instead of predicting an outcome or dependent variable as is done in logistic regression, factor analysis works in the opposite direction. Factor analysis predicts an independent variable calculated from underlying dimensions of dependent variables. The existence of groups of high correlation coefficients between groups of variables could mean that those variables might be measuring features of similar underlying dimensions. These combinations of dependent variables or dimensions are identified as factors (latent variables). By reducing an enormous data set from a cluster of

interconnected variables into a more concise set of factors, factor analysis shows whether many variables clustered together reflect a single phenomenon. The analysis achieves this by explaining the greatest amount of common variation in a correlation pattern using the least amount of explanatory concepts. Factor loadings explain the virtual contribution that a variable formulates to factor. Factor loadings can be both regression co-efficients and correlation co-efficients (Field, 2005).

A. Sample size and factor loadings

Field (2005) reports that once factor indexing has been established, it is worthwhile to choose which variables or questions belong to which factors. For a sample size of 600, a factor loading must be greater than a level of 0.21 and for 300, more than 0.298, based on alpha of 0.01 (two-tailed). Therefore, in larger samples, small loadings could be statistically meaningful. For factor analysis to be reliable, it depends on sample size (Field, 2005). Following an initial pilot study and questionnaire development, the tool should be distributed to a sufficient sample size ($N > 100$) to allow factor analysis to be performed (Rattray & Jones, 2007).

Field (2005) suggests that a researcher should have ten to 15 respondents per variable. If this is true, the number of variables for this research was 52, and so the sample size should be 520; so this research sample of 562 was appropriate. The value of the significance of a factor loading is calculated by squaring the loading which gives an estimate of amount of variance within a factor attributed to a variable. For example, if a factor loading of 0.5 was squared (R-squared) this would explain 25 per cent of variance within the variable. The significance of a factor loading shows little indication of the importance of a variable to a factor (Field, 2005).

B. Assessing normality

An underlying assumption for factor analysis is that the variables used should be normal distributions of scores (Rattray & Jones, 2007). The Kolmogorov-Smirnov significance level assesses normality of the score distribution. A non-significant result indicates normality ($p>0.05$) All of the variables used for this factor analysis had significance levels of $p<0.0001$ indicating violation of this assumption of normality. However, this is common in large samples (Pallant, 2005). A large sample of 200 or

more (this sample being 562) should be assessed for normality by a visual inspection of the distribution rather than significance level (Field, 2005). This is supported by inspection of normal probability plots (normal Q-Q Plots). The observed values are plotted against expected values from a normal distribution. If a reasonably straight line is displayed, this suggests a normal distribution (Pallant, 2005). These normal Q-Q Plots for these distributions are displayed in Appendix 8 for each subscale and all display relatively straight lines.

C. Methods used in factor analysis

Principal component analysis was used as a function of factor analysis. Both of these techniques differ. Factor analysis produces a mathematical model, identifying factors. Principal component analysis decomposes original data into sets of linear relationships. Factor analysis estimates the underlying factors whereas principal component analysis establishes which linear components are present within the data and whether a specific variable might contribute to each component (Field, 2005). The terms principal component analysis and factor analysis are frequently used synonomously. In practice, principal component analysis is more often used. Rarely is a tool uni-dimensional and principal component analysis identifies one principal component which accounts for the majority of the variance (Rattray & Jones, 2007).

a. The Anderson-Rubin method

The first step involved checking for multicollinearity which was determined by the Anderson-Rubin method. Prior to performing principal component analysis, this assesses the data's suitability for using factor analysis (Pallant, 2005). The first part of factor analysis involves looking at a correlation matrix to determine that the variables correlate fairly well. This means that one needs to assess whether the variables are very closely correlated, suggesting there are too many variables providing the same information (Field, 2005).

The significance values should be less than 0.05 and there should be no correlation coefficients greater than 0.9 which would indicate that the variables were measuring the same factor. For factor analysis, variables should correlate, but not perfectly. So if the correlations are too high, for example, larger than 0.9, this means that one of the

variables is redundant because they are measuring the same factor. The information is overlapping because the information is already given elsewhere. The determinant should be greater than 0.00001, indicating that multicollinearity was not a problem (Appendix 7) (Field, 2005).

b. Sampling adequacy

Following this, the Kaiser-Meyer Olkin measure of sampling adequacy was calculated. The Kaiser Meyer-Olkin measure of sampling adequacy operates by determining a ratio of squared correlations between variables to squared partial correlations between variables. This statistic ranges from 0 to 1. A value of 0 means that the addition of partial correlations is large compared with the addition of correlations signifying diffusion in the correlations' patterns. In this situation, factor analysis is probably inappropriate. A value nearer to 1 signifies correlation patterns which are compact. This situation shows that factor analysis yields reliable and distinct factors (Field, 2005). Rattray and Jones (2007) state that the Kaiser Meyer-Olkin measure detects if the correlations between the variables can be accounted for according to a smaller factor set and should be higher than 0.5. Hucheson and Sofroniou (1999) state that Kaiser Meyer-Olkin

values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb (Hucheson & Sofroniou, 1999, pp. 224-225).

The following table (Table 7) displays levels of sampling adequacy for each theme and subscale.

Table 7 Kaiser-Meyer Olkin Measure of Sampling Adequacy

Theme	Subscale	Measure	Accepted Interpretation
Stress	Work environment	0.869	Very good
	Psychosocial effects		
	Job satisfaction		
Burnout	Exhaustion	0.848	Very good
Individual Responses	Pressure and motivation	0.815	Very good

c. The Bartlett method

The Bartlett method was used to ensure there were some relationships between variables (Field, 2005). The Bartlett Test of Sphericity is based on the chi-square test which is a significant and large test used to designate discoverable relationships (Rattray & Jones, 2007). Factor analysis can work only if there are some relationships between the variables. A significant Bartlett test (less than 0.05) ensures that the R -matrix does not resemble an identity matrix because if it did, all coefficients would be equal to 0. If the Bartlett test is significant, factor analysis is therefore appropriate (Field, 2005).

d. Inspection of anti-image correlation matrix

Inspection of an anti-image correlation matrix should reveal all variables running diagonally to have a value of at least 0.5, an important part of factor analysis as it identifies problematic variables. If any are below 0.5 exclusion from the analysis might be appropriate. The off-diagonal elements of this anti-image correlation matrix represent partial correlations between the variables and should be very small (Field, 2005).

e. Factor extraction

Two principal methods are used when deciding upon number of factors, Kaiser's criterion for factors with eigenvalues of more than 1 and the scree test (Rattray & Jones, 2007). The aim of factor analysis is to find a solution with as few factors as possible; explaining as much of the variance in the data as possible (Pallant, 2005).

e. (i.) Kaiser's criterion

Factor extraction determines which factors to retain by using Kaiser's criterion to extract eigenvalues greater than 1 (Rattray & Jones, 2007). The eigenvalue represents the amount of total variance explained by that factor and the importance of each individual factor (Field, 2005; Pallant, 2005).

e. (ii.) Scree test

Subsequent to this, Cattell's (1966) scree plot graph was used. The scree plot graph is fairly reliable for factor selection with more than 200 respondents and was used in this research sample of 562. The graph plots each eigenvalue (Y-axis) against the associated factor (X-axis). The scree plot gives a cut-off point of inflection for selecting factors. The number of factors can be selected in this way (Field, 2005). Retaining factors above the elbow in the plot contributes most to the explanation of the variance in the data (Cattell, 1966). The eigenvalues for each factor represent a percentage of total variance (Field, 2005).

f. Communalities

Following factor extraction, common variance is better demonstrated and communalities are a percentage of variance explaining the underlying factor. To do factor analysis and discover underlying dimensions, it is essential to discover common variance. These are the variances for each question which are explained by the retained factor. Communalities values can be calculated for each variable. Once underlying factors are extracted, new communalities are calculated representing multiple correlations between variables and factors extracted. This is done by alpha factoring which uses squared multiple correlations of each variable compared to all the other variables. The communalities are a percentage of variance explaining the underlying factor (Field, 2005).

g. Inspection of component matrix

Inspection of a component matrix displays contributory loadings of variables onto each factor before rotation and values less than 0.4 were suppressed (option in SPSS). This is suitable for interpretive purposes as loadings higher than 0.4 denote substantive values. This means suppressing loadings that are significant. However, significance of loadings provides little indication of substantive importance of each variable to a factor, and significance itself is unimportant (section 3.5.4. A.) (Field, 2005). Stevens (1992) recommends interpretation of factor loadings greater than 0.4 explaining approximately 16 per cent of variance in a variable (section 3.5.4. A.).

h. Residuals

The next step of factor extraction involved looking at residuals. Residuals are calculated between reproduced and observed correlations. If these residual values are large, the model reproduced does not fit the observed data properly and generalisations cannot be made beyond the sample. Any conclusions reached must then be restricted to the sample being used. There are no set rules in factor analysis about what residual proportions should be but the percentage of residuals with values over 0.05 ought to be less than 50 percent to make a generalisation beyond that sample (Field, 2005).

i. Factor rotation

To assist in interpretation of these factors, the last step involved factor rotation. Factor rotation assists in making sense of the projected factor structure (Rattray & Jones, 2007). It does not alter the underlying solution but assists in identification of the underlying theme represented by each factor by looking at the variable with the highest loading on each factor. It makes interpretation easier than before rotation, as variables are ordered by loading size (Pallant, 2005). Factor rotation ensures that groups of variables are being intersected by a factor to which the variables most relate (Field, 2005).

Two types of rotation exist: orthogonal and oblique rotation (Field, 2005). It is vital to state which rotation method is being used before commencing an analysis (Rattray & Jones, 2007). For orthogonal (varimax) rotation to be used, underlying factors are regarded as being independent. In this situation, a factor loading is a correlation between the variable and the factor as well as the regression coefficient. The correlation coefficient values are the same values as the regression coefficients (Field, 2005).

Alternatively, there are circumstances in which underlying factors are regarded as being correlated or related to each other. For example, the subscales psychosocial effects of stress, exhaustion and pressure and motivation are all interrelated when exploring concepts of individual responses to stress and burnout. In these circumstances and for all calculations for this research, oblique rotation (direct

oblimin) was the type of rotation used. When oblique rotation is used, the factor matrix splits into two matrices. The pattern matrix contains information about unique contributions of variables to a factor and is preferable for interpretation. The structure matrix shows the relationship between the factors and is produced from the pattern matrix. It is a useful double-check as shared variances are not ignored (Field, 2005).

Orthogonal (varimax) rotation was used in two instances. This was done to compare the results between oblique (direct oblimin) and orthogonal (varimax) rotations. If oblique (direct oblimin) rotation resulted in stronger correlations, for example above 0.3, oblique rotation was the most accurate rotation to use, as it showed that the variables were interrelated and not independent (Pallant, 2005). However, if the components were independent, oblique (direct oblimin) would produce identical results to orthogonal (varimax) rotation and the component transformation matrix would be an identity matrix displaying all correlations as 0 (Field, 2005). In the two instances where orthogonal (varimax) rotation was used for the oblique (direct oblimin) correlation of less than 0.3, this was not the case, showing that they were related in some way (Chapter 4, section 2.3.1., A. Tables 80, 81 & 82 & B. Tables 85, 86 & 87).

D. Factor scores

Factor scores can be added to obtain a single overall score for each respondent. The measurement scales used influence resulting scores. If different variables use diverse measurement scales, factor scores cannot be compared. Two of the subscales scores were calculated by factor analysis and this was done by the Anderson-Rubin method; this method ensures scores are uncorrelated (no multicollinearity). Only these two subscales which used the same measurement scales were used to obtain factor scores (Field, 2005).

a. Coding levels for major themes

The major themes were scored to provide an overall analysis relating to stress, burnout and individual responses (Table 8). A low summary score (0 to 32) for stress reflects the fact that respondents would have indicated nil / low stress or the frequency of the question being ‘never’ or ‘occasionally’ to the majority of relevant questions in

the questionnaire. A total stress score of 33 to 64 indicated that the majority of scores indicated ‘frequently’ or ‘most of the time’ for the relevant questions relating to stress. A total score of 65 to 95 reflected the fact that the majority of scores were rated as ‘always’ or scored at a high level of stress.

A low summary score (2 to 13) for burnout reflects the fact that respondents would have indicated ‘never’ or ‘occasionally’ or answers which identified the scenarios as occurring least frequently to the majority of relevant questions in the questionnaire. A total burnout score of 14 to 26 indicated that the majority of scores indicated ‘frequently’ or ‘most of the time’ for the relevant questions relating to burnout. A total score of 27 to 38 reflected the fact that the majority of scores were rated as ‘always’ or scored at a high level of burnout. A low summary score (-3.51 to -1.0) for individual responses reflects the fact that respondents would have indicated ‘never’ or ‘occasionally’ or answers which identified the respondent as not self-imposing work pressure upon themselves to the majority of relevant questions in the questionnaire. A total individual response score of -0.9 to 1.5 indicated that the majority of scores indicated ‘frequently’ or ‘most of the time’ for the relevant questions relating to individual response or pressure and motivation. A total score of 1.6 to 5.7 reflected the fact that the majority of scores were rated as ‘always’ or scored as high levels of self-imposed work pressure and motivation relating to individual responses.

Table 8 Scoring for Overall Themes

Theme	Low	Moderate	High	Overall score
Stress	0-32	33-64	65-95	0-95
Burnout	2-13	14-26	27-38	2-38
Individual responses	-3.51 to -1.00	-0.900 to 1.50	1.60 to 5.68	-3.50 to 5.68

The Maslach Burnout Inventory (Maslach & Jackson, 1981) also scored low, moderate and high categories in relation to burnout. An example of scores for depersonalisation includes: low, 0 to 6; moderate, 7 to 12 and high, 13 or over. The three factors relating to stress which include the work environment, psychosocial effects and job satisfaction were amalgamated to provide one overall score. These three factors relating to stress were also scored separately to obtain information about

each individual subscale (see Tables 9, 11 & 12). The other single factors, exhaustion which related to burnout, and pressure and motivation which related to individual responses, were amalgamated to provide one overall score (as in Tables 10 & 13).

b. Coding levels for subscales

For the individual subscales work environment and pressure and motivation, factor scores were obtained from each respondent for those questions relating to each of these subscales (provided by SPSS version 14). Factor scores were used as each question used the same scoring system. These individual scores were then categorised as either low, moderate or high (Tables 9 & 10) and percentage results for the entire sample of nurses and midwives (Chapter 4, section 1.2.1. A. & 1.2.3.) were then calculated for the subscales, being work environment and pressure and motivation. (Raw scores and not factor scores were used to obtain overall stress scores as displayed in Table 8).

Table 9 Scoring Levels for Work Environment Subscale

Levels for work environment	Score
Low stress	-2.49 to -1.00
Moderate stress	-0.90 to 1.50
High stress	1.60 to 3.17
Overall score	-2.49 to 3.17

Table 10 Scoring Levels for Pressure and Motivation Subscale

Levels for self-imposed work pressure and motivation	Score
Low self-imposed work pressure and motivation	-3.51 to -1.00
Moderate self-imposed work pressure and motivation	-0.90 to 1.50
High self-imposed work pressure and motivation	1.60 to 5.68
Overall score	-3.5 to 5.68

The remaining subscales were psychosocial effects of stress, job satisfaction and exhaustion. Factor scores were not used for these three subscales as questions in each subgroup used different scoring systems (Table 14). For each respondent, an individual subset of measures was included in an overall score to produce subscale results (Chapter 4, section 1.2.1. B. C. & 1.2.2.) for the entire sample. Each individual's scores were added for those particular questions relating to that subscale and then this individual overall score was scored as low, moderate or high (Tables 11, 12 & 13). Percentages were then calculated for the entire sample of nurses and

midwives for the subscales psychosocial effects of stress, job satisfaction and exhaustion.

Measurements of these factor scores are given in Tables 11, 12 and 13. As stated previously, Field (2005) states that factor analysis is exploratory and only used to guide researchers about patterns in the data. He recommends making informed decisions about the outcomes. The questions were subgrouped according to particular themes for factor analysis and then evaluated and changed (adding and deleting questions) until reliability was established for factor scores (Appendix 9).

Table 11 Scoring Levels for Psychosocial Effects of Stress Subscale

Level for psychosocial effects subscale	Score
Minimal psychosocial effects of stress	6-21
Moderate psychosocial effects of stress	22-38
Excessive psychosocial effects of stress	39-54
Overall score	6 to 54

Table 12 Scoring Levels for Job Satisfaction Subscale

Level for job satisfaction subscale	Score
High satisfaction	0-6
Moderately satisfied	7-14
Dissatisfied	15-21
Overall score	0 to 21

Table 13 Scoring Levels for Exhaustion Subscale

Levels for exhaustion	Score
Low exhaustion	2-13
Moderate exhaustion	14-26
High exhaustion	27-38
Overall score	2 to 38

E. Development of questionnaire's subscales using factor analysis

As in the pilot study (with some questions deleted and moved into different subscales), the first part of the questionnaire used for the main study included 37 questions relating to stress and burnout within the nursing and midwifery profession. The second part of the questionnaire included 15 questions focusing on individual responses to workplace issues and how an individual might react in a specific situation. There is a growing consensus about the need to measure the perceived

frequency of incidence of stress-related episodes in the workplace or, in other words, the perceived frequency of occurrence and severity of stressful events in workplaces (Vagg & Spielberger, 1999).

The pilot study's results initiated the development of the relevant subscales (see Tables 3 & 4, section 2.3.3. B. & 2.3.4.). All subscales except job satisfaction were modified for the main study following factor analysis as only those questions which were reliable were used. Specific indices were used for the subscales (Table 14). All questions were subgrouped according to the conceptual framework and those questions which related to each subscale were added for each respondent to give an overall individual score (Table 14). This score was then coded as in Tables 11, 12 and 13 to give an overall percentage of that subscale for the entire sample of nurses and midwives. Factor analysis was the basis for developing the conceptual or theoretical framework throughout this thesis. The following demonstrates how each subscale relates to individual responses to different aspects of stress and burnout:

- Work environment relates to occupational stress
- Psychosocial effects relate to stress leading to ill health
- Job satisfaction relates to job compatibility
- Exhaustion relates to prolonged exposure to stress
- Pressure / motivation relates to work behaviours such as self-imposed work pressure and motivation

Table 14**Stress, Burnout and Individual Response Subscales / Indices for Main Study**

Major theme	Category	Subscale	Questions	Indices
Stress	Occupational stress	Work environment- 5-item scale Used factor scores for overall scores from stress theme as all indices are the same	Incidence of stress Time management- workload Rush to complete tasks Finishing late Organisational support	Factor Scores used (SPSS)
	Stress leading to ill health	Psychosocial effects- 9-item scale Overall score 6 to 54	Experiencing increased anxiety Sleeplessness over past decade Depression over past decade Sleeplessness over past week Headaches requiring analgesia Stress requiring treatment Mental health leave Helplessness over past decade Length of depression	1-6 1-6 1-6 1-5 1-5 0-7 0-6 1-7 0-6
	Job compatibility	Job satisfaction- 5-item scale Overall score 0 to 21	Being suited to the work Enjoying the type of work Wanting to change area of practice Leave professional discipline Frequency of job dissatisfaction	0-4 0-4 0-3 0-3 0-7
Burnout	Prolonged exposure to stress	Exhaustion- 10-item scale Overall score 2 to 34	Apathy Experiencing low morale Feeling powerless Feeling undervalued Feeling overwhelmed Feelings of incompetence Fatigue Feeling emotionally drained Loss of empathy for colleagues Loss of empathy for clients	0-4 0-4 0-4 0-4 0-4 1-5 1-5 0-2 0-2 0-2
Individual Responses	Work behaviours such as self-imposed work pressure & motivation	Pressure / motivation- 8-item scale Used factor scores for overall scores as all indices are the same	Achieving more than time allows Unreasonable expectations on self Irritability Pushed for time Difficulty slowing down for procedures Working at high performance Keyed up on most days Multi-tasking	Factor Scores used (SPSS)

Begat, Ellefsen and Severinsson (2005) used factor analysis to explain their sample responses, condense their items to focus on pertinent themes and address construct validity. This framework relates to a set of five subgroups or classifications of different aspects of individual responses to stress and burnout workplace issues based on the questionnaire used for this research project. The conceptual or theoretical framework for this particular study encompasses the five subscales which were work

environment, psychosocial effects of stress, job satisfaction, exhaustion, and pressure and motivation. These five subscales, then are a way of determining and assessing individual responses to stress and burnout workplace issues for respondents instead of an overall score from many variables within the questionnaire.

F. Reliability analysis

Cronbach's alpha (α) was calculated on all questions to determine reliability for the questionnaire on the sample of 562 nurses and midwives (Appendix 10). Cronbach's alpha, is a measure of internal consistency or split-half reliability (Field, 2005). Split-half reliability is assessed by adding up all the odd scores and then the even scores from the same respondent and comparing those two scores. If they are similar, they have a high level of split-half reliability which yields internal consistency (Dempsey & Dempsey, 1992).

To determine reliability, the corrected-item correlations are calculated between each individual item and the overall total score from the questionnaire. These correlations should be at least 0.3. With bigger sample sizes, smaller correlations are acceptable. If there are very low correlation coefficients, these items do not correlate with the total scale overall. If values for each question are greater than the alpha level overall, these items are deemed unreliable and might then be deleted to improve reliability (Field, 2005). All questions in this questionnaire which pertain to these criteria can be seen in Appendix 10. As a few of these questions were unreliable, no inferential but only descriptive statistics were computed (see Appendix 11).

As factor analysis was used for construct validity in this research, overall reliability of the questionnaire was assessed and determined by Cronbach's alpha, for each of the five subscales (Appendix 9). The variables relating to each of the subscales (as in Table 14) as well as the overall addition of scores (as in Tables 11, 12 & 13) relating to each subscale were assessed (acceptable levels being 0.7 or higher) (Field, 2005). Field (2005) recommends that reliability analysis be conducted on subscales individually. For each of the subscales, correlations between variables were evaluated and a reliable scale shows all variables correlating with the overall tally from the questionnaire.

Kline (1999) highlights that values below 0.7 can be expected when measuring psychological constructs because of their diversity. This might be an indication that the data aggregated for these particular questions were multi-dimensional, not uni-dimensional. While 0.7 is a preferred minimum level for reliability, 0.65 is acceptable for surveys (Dorze et al., 2003). Skipper, Jung and Coffey's (1990) health scale had a reliability level of 0.671. A Cronbach alpha level of 0.6 to 0.64 might be considered acceptable (Boey, 1996).

For the first subscale, variables relating to the work environment (Appendix 9), the overall Cronbach α reliability level was 0.759 which was good. None of the correlations between variables were less than 0.3 and the only value which was bigger than the overall Cronbach α reliability level was 0.781 for organisational support, which would not alter the overall reliability substantially, so if this variable were deleted, the overall Cronbach α reliability level would be 0.781. For the second subscale, variables relating to psychosocial effects (Appendix 9), the overall Cronbach α reliability level was 0.794 which was good. None of the correlations between variables were less than 0.3 and none of the values were bigger than the overall Cronbach α reliability level. For the third subscale, variables relating to job satisfaction (Appendix 9), the overall Cronbach α reliability level was 0.681 which was acceptable. None of the correlations between variables were less than 0.3 and the only value which was bigger than the overall Cronbach α reliability level was 0.719 for job dissatisfaction, which would not alter the overall reliability substantially.

For the fourth subscale, variables relating to exhaustion (Appendix 9), the overall Cronbach α reliability level was 0.793 which was good. One of the correlations between variables was less than 0.3, but given this was a large sample, is acceptable. This was loss of empathy for colleagues and the correlation was 0.29, which is only slightly lower than 0.3 and the overall Cronbach α reliability level for this variable was 0.795, which was slightly bigger than the overall Cronbach α reliability level (0.793) which would not alter the overall reliability substantially. The other variable which was bigger than the overall Cronbach α reliability level (0.793) was 0.796 for fatigue, which would not alter the overall reliability substantially. For the fifth subscale, variables relating to pressure and motivation (Appendix 9), the overall

Cronbach α reliability level was 0.772 which was good. None of the correlations between variables were less than 0.3 and the only value which was bigger than the overall Cronbach α reliability level was 0.773 for working at high performance, which would not alter the overall reliability substantially (Field, 2005).

Reliability was also assessed on the 19 questions relating to the stress theme. The overall Cronbach α reliability level was 0.843 which was very good. Two of the correlations between variables were less than 0.3 but, given this was a large sample, is acceptable. These variables were ‘finishing work late’ and ‘thinking they are suited to the work’ and correlations were 0.236 and 0.281 respectively, which is only slightly lower than 0.3 and the overall Cronbach α reliability level for these variables was 0.843 and 0.842 respectively, which was not bigger than 0.843. None of the other values were bigger than the overall Cronbach α reliability level (Appendix 9). (As the questions for burnout and individual response themes were the same as the exhaustion and pressure and motivation subscales, reliability was already assessed in factor analysis). The overall addition of these theme scores were then analysed for strength of associations (Spearman’s correlations).

Reliability was also calculated on all subscales according to the overall addition of scores (see Tables 11, 12 & 13). (Work environment and pressure and motivation subscales were analysed by way of raw scores, not factor scores). For all subscales, the overall Cronbach α reliability level was 0.744 which was good. None of the correlations between variables were less than 0.3 and none of the values were bigger than the overall Cronbach α reliability level (Appendix 9). The overall addition of these subscale scores were then analysed for strength of associations (Spearman’s correlations).

MacLellan (1990) states that burnout is a multi-dimensional phenomenon resulting from pressures at numerous levels. Brenninkmeijer and VanYperen (2003) state that the multidimensionality of burnout is widely acknowledged. They state that researchers might want to investigate which variables are related to burnout. Researchers might also wish to combine the overall notion of burnout into one underlying dimension (Brenninkmeijer & VanYperen, 2003).

3.5.5. Group comparisons

Kruskal-Wallis test

The Kruskal-Wallis test was used to detect group differences. Each person contributes to one cell of a contingency table and measures must be independent of each other. The frequency data or the numbers of respondents for the categorical dependent variable must contain three or more categorical groups. There must be an independent continuous variable (Pallant, 2005). All Kruskal-Wallis calculations presented as part of this project satisfy these above assumptions.

The categorical groups which were compared were within the area of practice and these groups were classified as the predominant area of work. This test shows differences exist, but it does not show where the differences are situated (Field, 2005). Instead of comparing the medians of the groups, this test compares means. This test shows which highest ranking corresponds to one highest score on the continuous variable. The test includes two variables. The variables include a categorical variable which contains three or more groups (the specialty) and a continuous variable (age, hours worked) (Pallant, 2005). The predominant areas of work are displayed in Table 16, Chapter 4, section 1.1.1. C.

3.6 Overview

The questionnaire used in this research will provide methodologically valid information on variables of individual responses to stress and burnout workplace issues for Australian nurses and midwives who are currently working in the health field. The statistical part of this thesis will elaborate on these issues surrounding the work environment, psychosocial issues, job satisfaction, exhaustion and self-imposed work pressure and motivation. The literature review encompassed all the findings associated with these issues, including sources of stress, results of stress, coping strategies and the dimensions and variables of stress and burnout. Other issues involve comparison of different areas of nursing, other health professionals and other occupations, professionals' fear of appearing weak if seen to be stressed, detectors of stress, individual behavioural differences and reactions to stress.

Chapter 4

RESULTS

In this chapter the major findings of the questionnaire will be presented to facilitate the analysis of the questionnaire response data. This will include an overall account of the major themes of individual responses to stress and burnout. The five main subscales developed from factor analysis, as detailed in the previous methods section, form the basis for the key concepts guiding this study, which are links between work environment, psychosocial effects of stress, job satisfaction, exhaustion, and pressure and motivation. These five subscales are pertinent factors in nurses' and midwives' stress and burnout levels and relates to individual responses to workplace issues which will now be presented in finer detail in this chapter.

The presentation of relevant data will be divided into two sections. The first section will provide information on demographics and responses to the questionnaire using univariate descriptive statistics. Demographics will provide an overview or description of this sample of nurses and midwives including area of practice, age of respondents, hours worked and years in profession. Individual responses to stress and burnout in relation to the questionnaire will outline variables such as anxiety, depression, helplessness, fatigue and irritability.

The second section will employ a range of multivariate statistical analyses to identify associations or relationships in the data, predict outcomes, signpost important indicators of individual responses to stress and burnout, and detect group differences.

1. Univariate descriptive statistics

1.1. Sample characteristics

There were 1365 respondents in this study's sample population. The seven respondents who worked in countries other than Australia were removed, with a final sample of 1358. Five-hundred and sixty-two respondents returned completed questionnaires yielding a response rate of 41.4 per cent. The registered nurses and

midwives were not mutually exclusive groups, as some registered nurses also worked as midwives. A detailed list of the location of conferences / seminars where the questionnaires were distributed, as well as respective questionnaire response rates, is displayed in Appendix 2.

1.1.1. Demographics

A. Gender

Five-hundred and fifty-four (98.9%) respondents were female and six (1.1%) were male.

B. Employment status

Employment status categories were divided into permanent fulltime, permanent part-time and casual (see Chapter 3, section 3.5.3. for explanation of same). Forty-four respondents who answered permanent hours only, without indicating if they worked fulltime or part-time, could not be included in the employment status categories. Table 15 displays frequencies for employment status and illustrates, in part, that almost all (94.9%) respondents were employed on a permanent basis, and of these more than half were part-timers (53.1%) and two-fifths fulltimers (41.8%).

Table 15 Employment Status

Employment Status	Number	Percentage
Permanent fulltime	215	41.8
Permanent part-time	273	53.1
Casual	26	5.1
Total	514	100

C. Area of practice

The areas of practice provided as options were: accident and emergency, aged care, community, critical care, education, management, medical, midwifery, neonatal care, oncology, operating theatre, recovery, surgical, and other. Respondents were asked to circle the predominant area of work. If the respondent worked in more than one area, they were asked to note the areas in the space provided, noting the area where they worked the most often. (See Appendix 12 for a list of all areas worked by the respondents as well as a comparison with the NSW (Workforce Planning NSW Health, 1999-2003) and national nursing workforce) (Chrisopoulos & Waters, 2003).

For the purpose of listing nurses' and midwives' main jobs or predominant areas of work, a frequency count was made. Only respondents who nominated one area of predominant work were included, resulting in the 20 respondents who stated that they worked in more than one area and eight missing responses being excluded. Table 16 demonstrates these data in more detail, highlighting, in part, that the three most frequently nominated work areas, amounting to 77.4 per cent of responses, are midwifery (46.3%), the community (20.8%) and neonatal areas (10.3%).

Table 16 Frequency of Nurses and Midwives in Main Job

Predominant Area of Work	Number of Respondents	Percentage
Midwife	247	46.3
Community	111	20.8
Neonatal	55	10.3
Accident & Emergency	20	3.7
Other area	18	3.4
Critical care	16	3.0
Education	14	2.6
Management	14	2.6
Medical	12	2.2
Operating Theatre / Recovery	11	2.1
Surgical	11	2.1
Aged care	3	0.5
Oncology	2	0.4
Total	534	100

D. Age of respondent

The average age in this research sample is 45 years. The most commonly occurring age is 44 years. More detailed age data for measures of central tendency are shown in Table 17.

Table 17 Central Tendency Statistics for Age Distribution

Statistics	Mean	Median	Mode	Standard Deviation	Range	95% Confidence Interval
Years	45.1	46	44	8.4	42	44.3-45.8

As respondents were invited to write their actual age in years, a number of age categories were selected to display their answers (Table 18). These age categories were chosen to facilitate future comparison for national statistics (Chapter 5, section 1.2.4.). Table 18 shows in part that the highest concentration (46.8%) in age groups in the sample is between 40 to 49 years of age.

Table 18 Age Categories

Age in years	<25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	Total
Number	6	23	37	62	113	145	98	51	16	1	552
Percentage	1.1	4.2	6.7	11.2	20.5	26.3	17.7	9.2	2.9	0.2	100

E. Hours worked per week

The average number of hours worked per week in this study is 34.5 hours. The most commonly occurring number of hours worked per week is 40 hours. More detailed hours worked data for measures of central tendency are shown in Table 19.

Table 19 Central Tendency Statistics for Hours Worked per Week Distribution

Statistics	Mean	Median	Mode	Standard Deviation	Range	95% Confidence Interval
Hours	34.5	36	40	10.6	84	33.6-35.4

As respondents were invited to write their actual hours worked per week, a number of hours categories were selected to display their answers (Table 20). Table 20 highlights that over four-fifths (83.1%) of respondents worked between 20 to 44 hours per week.

Table 20 Hours Worked per Week

Hours worked	1-9	10-19	20-29	30-37	38-44	45-49	50-59	60-69	70 & over	Total
Number	6	23	125	134	205	24	29	5	7	558
Percentage	1.1	4.1	22.4	24	36.7	4.3	5.2	0.9	1.3	100

The average number of permanent fulltime hours worked per week in this study is 42.5 hours. The most commonly occurring number of hours worked per week for fulltimers is 40 hours. More detailed hours worked data for measures of central tendency are shown in Table 21.

Table 21 Central Tendency Statistics for Hours Worked per Week Distribution for Fulltimers

Statistics	Mean	Median	Mode	Standard Deviation	Range	95% Confidence Interval
Hours	42.5	40	40	7.6	56	41.4-43.5

Categories were selected to display fulltimer answers (Table 22). The majority (70%) of fulltimers worked between 32 to 40 hours per week.

Table 22 Hours Worked per Week for Fulltimers

Hours worked	32-40	42-50	52-88	Total
Number	149	52	12	213
Percentage	70	24.4	5.6	100

The average number of part-time or casual hours worked per week in this study is 27.7 hours. The most commonly occurring number of hours worked per week for part-timers and casual workers is 32 hours. More detailed hours worked data for measures of central tendency are shown in Table 23.

Table 23 Central Tendency Statistics for Hours Worked per Week Distribution for Part-Timers and Casuals

Statistics	Mean	Median	Mode	Standard Deviation	Range	95% Confidence Interval
Hours	27.7	28	32	7.7	66	26.8-28.6

Categories were selected to display part-timer and casual worker answers (Table 24). Almost half (47.2%) of part-timers and casuals worked between 25 to 35 hours per week.

Table 24 Hours Worked per Week for Part-Timers and Casuals

Hours worked	4-24	25-35	36-70	Total
Number	125	141	33	299
Percentage	41.8	47.2	11	100

F. Years in profession

The average number of years in profession in this research sample is 22 years. The most commonly occurring number of years in the profession is 30 years. More detailed years in profession data for measures of central tendency are shown in Table 25.

Table 25 Central Tendency Statistics for Years in Profession Distribution

Statistics	Mean	Median	Mode	Standard Deviation	Range	95% Confidence Interval
Years	22.1	24	30	9.7	48	21.3-22.9

Respondents were invited to write actual years in their profession (Table 26). These categories were chosen to facilitate viewing the results. The highest concentration (41%) of respondents have been in the profession for 21 to 30 years. Similar proportions of nurses and midwives have spent less than 11 years or more than 30 years in the profession (17.3% and 15.8% respectively).

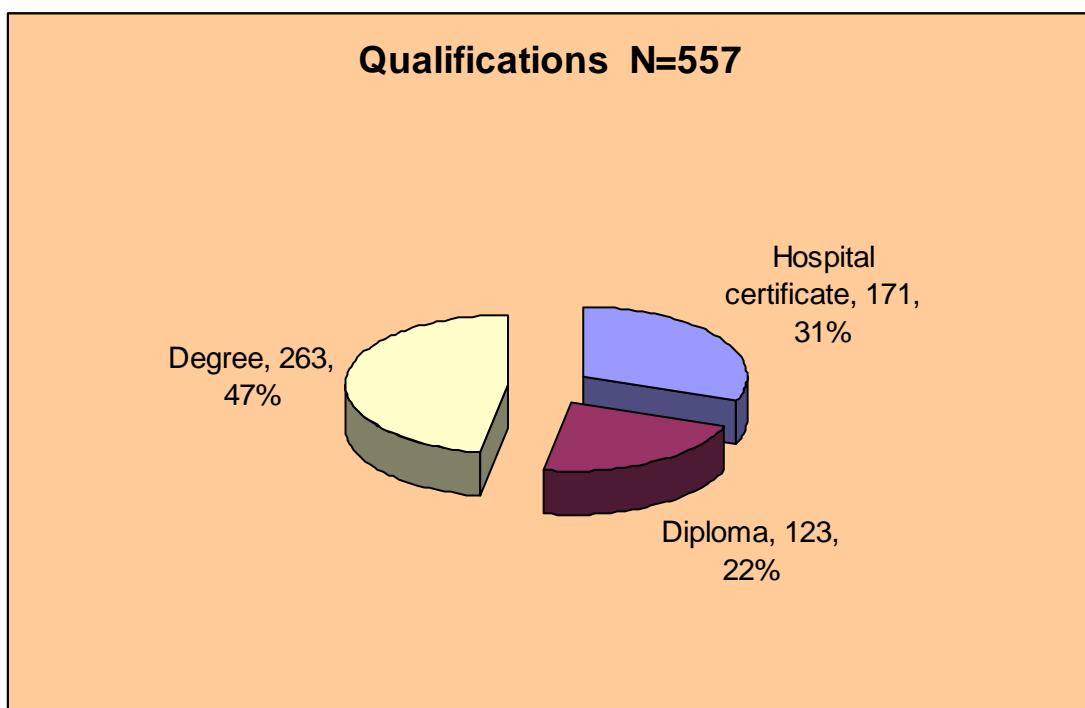
Table 26 Years in Profession

Years in Profession	0-10	11-20	21-30	31-40	41 & over	Total
Number	96	144	228	83	5	556
Percentage	17.3	25.9	41	14.9	0.9	100

G. Qualifications

The respondents were given three options for highest qualifications achieved. These included hospital certificate/s, diploma/s and degree/s. The degree category included Masters and PhD levels. The following pie graph (Figure 4) shows the largest proportion (47%) held a degree, followed by a hospital certificate (31%) and then a diploma (22%).

Figure 4 Qualifications of Study Sample



H. Living arrangements

The majority (88%) of respondents did not live alone. Seventy-four per cent of respondents lived with their partners; 72 per cent lived with their children, including those aged 18 and over; nine per cent lived with others including dependent parents, flatmates, grandchildren and siblings; and four per cent lived with parents. These groups were not mutually exclusive.

1.2. Stress, burnout and individual responses

This section highlights pertinent aspects of individual responses to stress and burnout for this sample of nurses and midwives and how they deal with these issues. This

information will provide an insight into how nurses and midwives react in different situations. It also highlights the frequency and duration of stress-related issues in the workplace and provides information on job satisfaction. It includes a snapshot of how the nurses and midwives are affected by way of the symptoms of stress and burnout in their personal lives.

The three essential themes that are to be highlighted include stress, burnout and individual responses as well as incorporating the five subscales identified by factor analysis, namely work environment, psychosocial effects of stress, job satisfaction, exhaustion, and pressure and motivation. In order to determine stress and burnout levels as well as being able to identify associated individual responses to workplace issues, mean scores will be displayed, as well as summaries of percentages in low, moderate and high categories for each theme. Detailed analysis of individual components will also be displayed as frequencies and percentages in the tables for each question related to each theme. Each theme will provide specifics related to that subscale. This summarises each theme by way of the five subscales.

1.2.1. Theme: stress

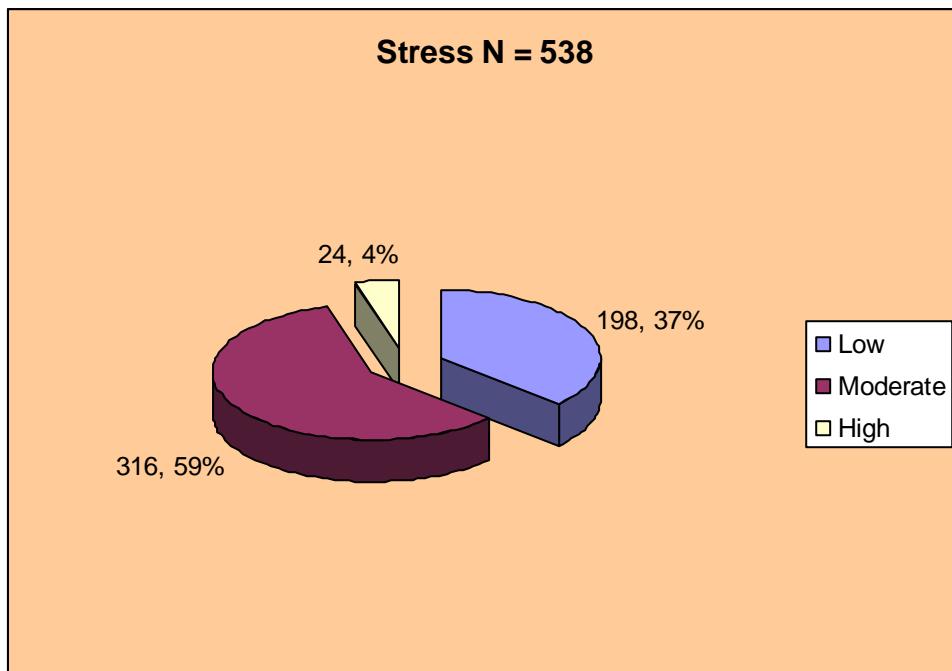
The following table (Table 27) demonstrates that nurses' and midwives' mean scores indicated moderate levels of stress (see Chapter 3, section 3.5.4. D. a., Table 8 for scoring levels).

Table 27 Overall Results for Stress

Theme	Mean / Standard Deviation	Stress Rating	95% CI	Total
Stress	38.56 / 14.098	Moderate	37.37- 39.76	538

Figure 5 displays that the majority (59%) of the sample experienced moderate stress levels, with 37 per cent experiencing low stress levels and four per cent experiencing high stress levels.

Figure 5 Overall Stress Levels



A. Subscale: work environment

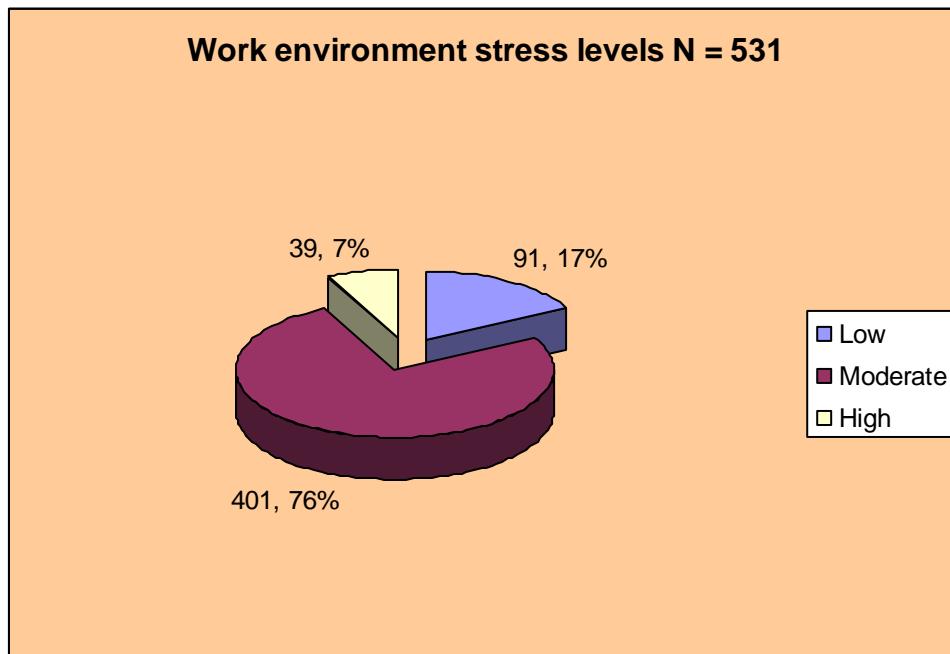
The following table (Table 28) demonstrates that nurses' and midwives' mean scores indicated moderate levels of stress related to the work environment (see Chapter 3, section 3.5.4. D. b., Table 9 for scoring levels). These scores were calculated from the actual factor scores, hence the minuscule numbers.

Table 28 Overall Results for Work Environment Stress Levels

Subscale	Mean / Standard Deviation	Stress Rating	95% CI	Total
Work environment	0.000 / 0.999	Moderate	-0.086- 0.085	531

Figure 6 displays that the majority (76%) of the sample experienced moderate stress levels related to the work environment, with 17 per cent of the sample experiencing low stress levels and seven per cent experiencing high stress levels.

Figure 6 Work Environment Stress Levels



The following information will highlight individual components as factors linked with work environment stress. The following five components, (having experienced stress; inefficient time management, for example, due to excessive workloads; frequency of rushing to complete tasks; frequency of finishing work late; and having insufficient organisational support) relate to the work environment as occupational stress (see section 2.3.1. A. for a detailed exposition of the development of this subscale by way of factor analysis).

Individual components

All respondents indicated having experienced some levels of work-related stress. The majority (65.1%) of respondents reported experiencing stress frequently, most of the time or always (see Table 29 for more detail).

Table 29 Incidence of Stress

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	0	195	282	74	7	558
Percentage	0.0	34.9	50.5	13.3	1.3	100

The majority (69.7%) of nurses and midwives in this sample indicated that they are inefficiently managing their time (for example, due to excessive workloads), frequently, most of the time or always (Table 30).

Table 30 Inefficient Time Management

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	3	167	276	97	18	561
Percentage	0.5	29.8	49.2	17.3	3.2	100

Three-quarters (75.9%) of respondents reported that they are rushing to complete tasks either frequently, most of the time or always (Table 31).

Table 31 Frequency of Rushing to Complete Tasks

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	3	132	283	128	15	561
Percentage	0.5	23.5	50.5	22.8	2.7	100

The majority (60.9%) of nurses and midwives stated that they finish work late either frequently, most of the time or always (Table 32).

Table 32 Frequency of Finishing Work Late

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	17	203	206	110	26	562
Percentage	3.0	36.1	36.7	19.6	4.6	100

The respondents were fairly evenly divided between those who receive sufficient organisational support either occasionally or never (49.7%) and those who received it frequently, most of the time or always (50.3%) (Table 33).

Table 33 Receiving Sufficient Organisational Support

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	43	235	124	142	16	560
Percentage	7.7	42.0	22.1	25.3	2.9	100

In response to the questions posed in Chapter 1 as to whether stress relates to environmental and / or organisational issues, for this study, 76 per cent of nurses and midwives experienced moderate stress levels related to the work environment and this included almost half (49.7%) identifying that they receive sufficient organisational support never or occasionally.

B Subscale: psychosocial effects

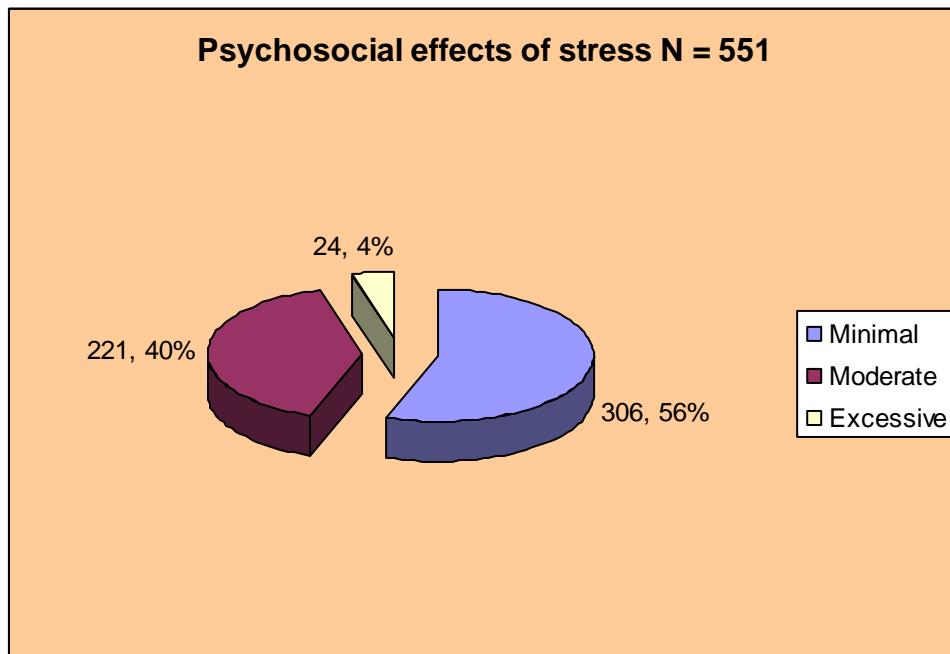
The following table (Table 34) demonstrates that nurses' and midwives' mean scores indicated minimal psychosocial effects of stress (see Chapter 3, section 3.5.4. D. b., Table 11 for scoring levels).

Table 34 Overall Results for Psychosocial Effects of Stress

Subscale	Mean / Standard Deviation	Stress Rating	95% CI	Total
Psychosocial effects of stress	20.970 / 9.847	Minimal	20.15- 21.80	551

Figure 7 shows that the majority (56%) of the sample of nurses and midwives experienced minimal psychosocial effects of stress, with 44 per cent experiencing moderate to excessive psychosocial effects of stress.

Figure 7 Psychosocial Effects of Stress



The following nine components, including anxiety, sleeplessness, depression, stress requiring treatment, mental health leave and feelings of helplessness, relate to factors linked with psychosocial effects at work which are manifestations of ill health related to stress (see section 2.3.1. A. for a detailed exposition of the development of this subscale by way of factor analysis).

Individual components

The majority (79.1%) of nurses and midwives in this sample either reported experiencing increased anxiety never / occasionally or over the past year / decade (Table 35).

Table 35 Experiencing Increased Anxiety in Relation to Work

Responses	Number	Percentage
Never / Occasionally	163	29.1
Over past few days	5	0.9
Over past few weeks	36	6.4
Over past few months	76	13.6
Over the past year	169	30.2
Over the past decade	111	19.8
Total	560	100

Over a quarter (27.1%) indicated that they have experienced sleeplessness over the past few months or over the past year (Table 36).

Table 36 Experiencing Sleeplessness in Relation to Work Over the Past Decade

Responses	Number	Percentage
Never / Occasionally	286	51.1
Over past few days	5	0.9
Over past few weeks	23	4.1
Over past few months	57	10.2
Over the past year	95	16.9
Over the past decade	94	16.8
Total	560	100

The majority (63.9%) of nurses and midwives reported that they experience depression in relation to work never / occasionally, with 15.5 per cent experiencing depression over the past year (Table 37).

Table 37 Experiencing Depression in Relation to Work

Responses	Number	Percentage
Never / Occasionally	358	63.9
Over past few days	1	0.2
Over past few weeks	10	1.8
Over past few months	32	5.7
Over the past year	87	15.5
Over the past decade	72	12.9
Total	560	100

The majority (67.2%) of nurses and midwives in this sample stated that the length of time they experienced depression in relation to work was either never or for one day (Table 38).

Table 38 Length of Depression in Relation to Work

Responses	Number	Percentage
Never	200	35.9
For one hour	76	13.7
For one day	174	31.3
For two weeks	50	9.0
For a month	16	2.9
For a year	20	3.6
For a few years	20	3.6
Total	556	100

Most (63%) nurses and midwives in this sample reported nil to occasional sleeplessness, but over a quarter (25.9%) experienced sleeplessness once or twice a week (Table 39).

Table 39 Experiencing Sleeplessness in Relation to Work Over the Past Week

Responses	Number	Percentage
Never / Occasionally	353	63.0
Once / twice a week	145	25.9
3 or 4 times a week	37	6.6
5 to 6 times a week	13	2.3
Daily	12	2.2
Total	560	100

The majority (61.5%) of nurses and midwives in this sample indicated that they never or occasionally experienced headaches requiring analgesia, but nearly two-fifths (38.5%) indicated experiencing headaches at least once or twice a week (Table 40).

Table 40 Experiencing Headaches Requiring Analgesia

Responses	Number	Percentage
Never / Occasionally	345	61.5
Once / twice a week	150	26.7
3 or 4 times a week	47	8.4
5 to 6 times a week	8	1.4
Daily	11	2.0
Total	561	100

The majority (69%) of nurses and midwives reported that they required treatment for their stress at least once every six months or more (Table 41).

Table 41 Experiencing Stress Requiring Treatment

Responses	Number	Percentage
Never	124	22.2
Once a year	49	8.8
Once every 6 months	79	14.1
Once every 3 months	67	12.0
Once a month	72	12.9
Once every few weeks	80	14.3
Once a week	66	11.8
Daily	22	3.9
Total	559	100

Almost half the sample (45.2%) of nurses and midwives identified that they took “mental health” leave at least once over the past year (Table 42).

Table 42 “Mental Health” Leave over Past Year

Responses	Number	Percentage
Never	306	54.8
Once	98	17.5
Twice	76	13.6
3 to 10 times	65	11.6
11 to 29 times	10	1.8
30 to 49 times	3	0.5
50 to 100 times	1	0.2
Total	559	100

Almost half (45.5%) of nurses and midwives in this sample stated that they experienced feelings of helplessness in their work environment never or occasionally (Table 43).

Table 43 Experiencing Feelings of Helplessness in Work Environment

Responses	Number	Percentage
Never / Occasionally	252	45.5
Yesterday	21	3.8
Over past few days	18	3.2
Over past few weeks	40	7.2
Over past few months	64	11.6
Over the past year	86	15.5
Over the past decade	73	13.2
Total	554	100

In response to the questions posed in Chapter 1 as to whether stress relates to psychosocial issues, for this study, the majority (56%) of nurses and midwives experienced minimal psychosocial effects of stress; however, 40 per cent experienced moderate effects, with four per cent experiencing excessive psychosocial effects.

C. Subscale: job satisfaction

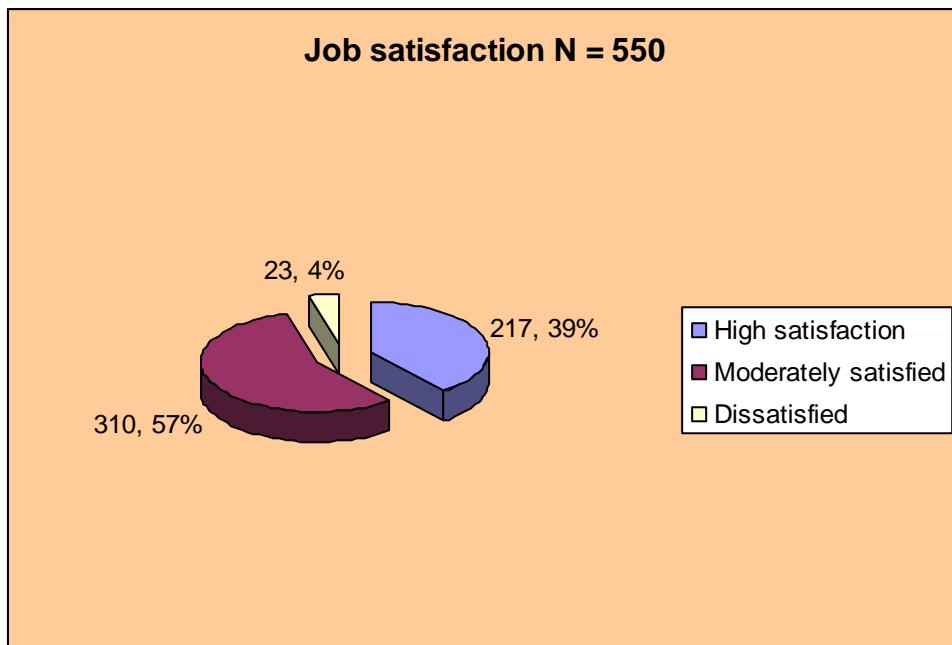
The following table (Table 44) demonstrates that nurses' and midwives' mean scores indicated moderate levels of job satisfaction (see Chapter 3, section 3.5.4. D. b., Table 12 for scoring levels).

Table 44 Overall Results for Job Satisfaction

Subscale	Mean / Standard Deviation	Stress Rating	95% CI	Total
Job satisfaction	7.610 / 4.137	Moderate	7.26- 7.95	550

Figure 8 displays that the majority (96%) of this sample of nurses and midwives showed moderate to high job satisfaction levels and a small percentage (4%) were dissatisfied in their work.

Figure 8 Job Satisfaction



The following five components, including wanting to change area of practice or leaving the profession, enjoying and being suited to the particular type of work, relate to factors linked with job satisfaction such as job compatibility (see section 2.3.1. A. for a detailed exposition of the development of this subscale by way of factor analysis).

Individual components

The majority (96%) of nurses and midwives indicated that they think they are suited to the work they are doing either frequently, most of the time or always (Table 45).

Table 45 Being Suited to the Work They are Doing

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	3	20	43	304	192	562
Percentage	0.5	3.6	7.6	54.1	34.2	100

The majority (94.8%) of this sample of nurses and midwives reported that they are doing the kind of work they like either frequently, most of the time or always (Table 46).

Table 46 Doing the Kind of Work They Like

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	3	26	60	315	157	561
Percentage	0.5	4.6	10.7	56.2	28.0	100

Almost half (48.6%) of nurses and midwives in this sample did not want to change their area of practice. Almost half (48%) said ‘yes’ they did or sometimes did want to change their area of practice (Table 47).

Table 47 Wanting to Change Area of Practice

Responses	Yes	No	Sometimes	Unsure	Total
Number	58	272	210	19	559
Percentage	10.4	48.6	37.6	3.4	100

The majority (55.2%) of nurses and midwives in this sample did not want to leave the professional discipline, although more than two-fifths (41.2%) of the sample said ‘yes’ they did or sometimes did want to leave (Table 48). More nurses and midwives (55.2%) were certain that they did not want to leave the professional discipline than the 48.6 per cent that were certain they did not want to change their area of practice (Tables 47 & 48).

Table 48 Wanting to Leave Professional Discipline

Responses	Yes	No	Sometimes	Unsure	Total
Number	42	307	187	20	556
Percentage	7.6	55.2	33.6	3.6	100

The majority (57.6%) of nurses and midwives reported that they experienced job dissatisfaction at least once a month (Table 49).

Table 49 Frequency of Experiencing Job Dissatisfaction

Responses	Numbers	Percentage
Never	39	7.0
Once a year	53	9.5
Once every 6 months	77	13.8
Once every 3 months	67	12.0
Once a month	61	11.0
Once every few weeks	141	25.3
Once a week	76	13.7
Daily	43	7.7
Total	557	100

In response to the questions posed in Chapter 1 as to whether stress relates to job dissatisfaction, the above results provide overall evidence that only a small percentage (4%) were dissatisfied in their work, however, the majority (57.6%) reported experiencing job dissatisfaction at least once a month.

1.2.2. Theme: burnout

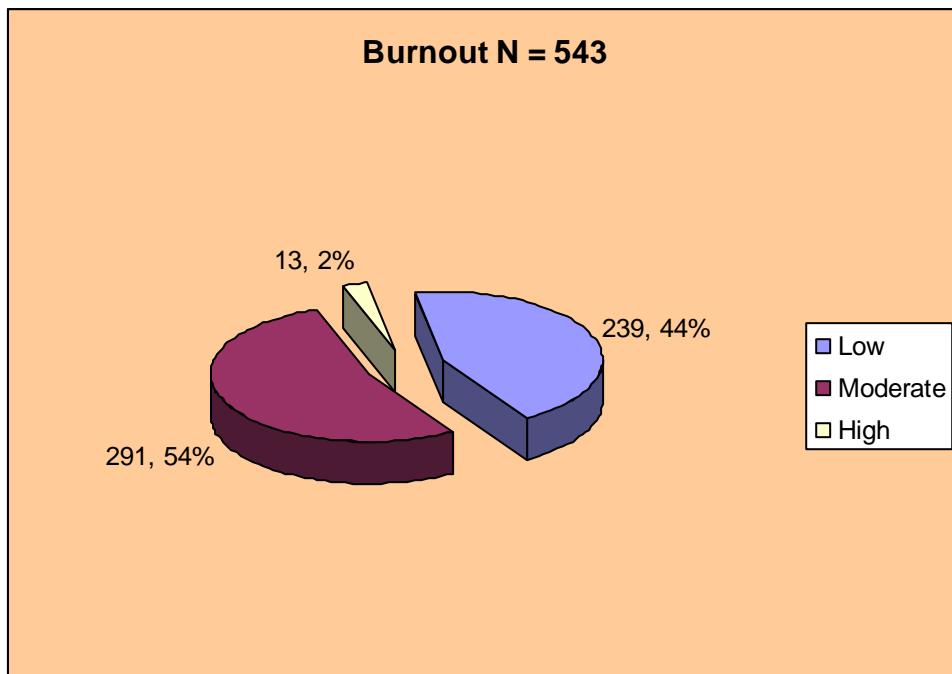
The following table (Table 50) demonstrates that nurses' and midwives' mean scores indicated moderate burnout levels (see Chapter 3, section 3.5.4. D. b., Table 13 for scoring levels).

Table 50 Overall Results for Burnout

Theme	Mean / Standard Deviation	Burnout Rating	95% CI	Total
Burnout	14.990 / 5.483	Moderate	14.53-15.45	543

Figure 9 illustrates that the majority (54%) of nurses and midwives experienced moderate burnout, with 44 per cent experiencing low burnout and two per cent experiencing high burnout.

Figure 9 Burnout Levels



Subscale: exhaustion

The following nine components including apathy, low morale, fatigue, feeling emotionally drained and losing empathy for colleagues and clients are factors linked with exhaustion which result from prolonged exposure to stress leading to burnout (see section 2.3.1. B. for a detailed exposition of the development of this subscale by way of factor analysis).

Individual components

Twenty-one per cent of nurses and midwives reported that they become apathetic frequently, most of the time or always, when “stressed” (Table 51).

Table 51 Becoming Apathetic when “Stressed”

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	111	328	86	25	6	556
Percentage	19.9	59.0	15.5	4.5	1.1	100

Nearly a third (32.7%) of nurses and midwives identified that they experience low morale in relation to work either frequently, most of the time or always (Table 52).

Table 52 Experiencing Low Morale in Relation to Work

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	52	326	130	47	6	561
Percentage	9.2	58.1	23.2	8.4	1.1	100

Over a third (34.9%) of nurses and midwives in this sample reported feeling powerless in their job either frequently, most of the time or always (Table 53).

Table 53 Powerlessness in Job

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	46	320	134	52	10	562
Percentage	8.2	56.9	23.8	9.3	1.8	100

Forty-four per cent of nurses and midwives in this sample stated that they feel undervalued in their job frequently, most of the time or always (Table 54).

Table 54 Feeling Undervalued in Their Job

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	55	260	155	68	23	561
Percentage	9.8	46.4	27.6	12.1	4.1	100

Nearly a third (31.2%) of the sample of nurses and midwives have either frequently or most of the time felt overwhelmed in their job (Table 55).

Table 55 Feeling Overwhelmed in Their Job

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	37	349	152	23	0	561
Percentage	6.6	62.2	27.1	4.1	0.0	100

The majority (78.4%) of nurses and midwives in this sample identified that they never or occasionally experienced feelings of incompetence within themselves when working with others (Table 56).

Table 56 Experiencing Feelings of Incompetence Within Themselves When Working With Others

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	66	370	106	13	1	556
Percentage	11.9	66.5	19.1	2.3	0.2	100

Almost all (90.9%) nurses and midwives reported feeling fatigued at least once or twice a week (Table 57).

Table 57 Frequency of Fatigue

Responses	Number	Percentage
Never / Occasionally	51	9.1
Once / twice a week	181	32.3
3 or 4 times a week	127	22.6
5 to 6 times a week	39	6.9
Daily	163	29.1
Total	561	100

A large portion (59.6%) of nurses and midwives in this sample indicated that they felt emotionally drained at work at least once or twice a week (Table 58).

Table 58 Frequency of Feeling Emotionally Drained at Work

Responses	Number	Percentage
Never / Occasionally	226	40.4
Once / twice a week	207	37.0
3 or 4 times a week	78	14.0
5 to 6 times a week	16	2.9
Daily	32	5.7
Total	559	100

Almost half (47.2%) of nurses and midwives in this sample reported that they had felt loss of empathy for colleagues while at work (Table 59).

Table 59 Feeling Loss of Empathy for Colleagues While at Work

Responses	Yes	No	Unsure	Total
Number	263	222	72	557
Percentage	47.2	39.9	12.9	100

Similarly, almost half (45.5%) of nurses and midwives in this sample reported that they had felt loss of empathy for clients while at work (Table 60).

Table 60 Feeling Loss of Empathy for Clients While at Work

Responses	Yes	No	Unsure	Total
Number	254	261	43	558
Percentage	45.5	46.8	7.7	100

1.2.3. Theme: individual responses

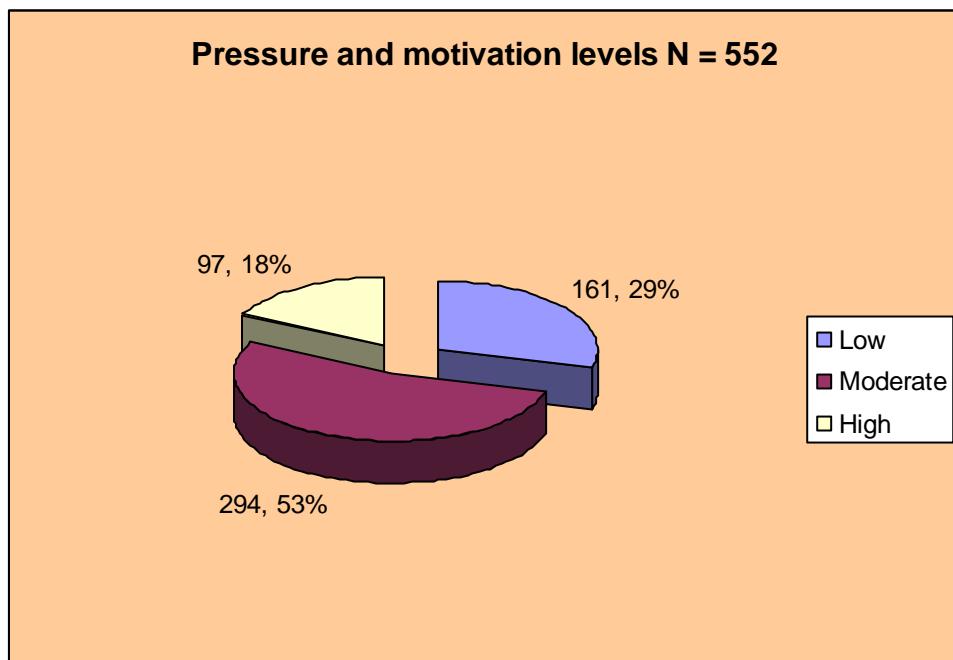
The following table (Table 61) demonstrates that nurses' and midwives' mean scores indicated moderate levels of pressure and motivation for individual responses (see Chapter 3, section 3.5.4. D. b., Table 10 for scoring levels). These scores were also calculated from the actual factor scores, hence the minuscule numbers.

Table 61 Overall Results of Pressure and Motivation Levels for Individual Responses

Theme	Mean / Standard Deviation	Pressure & Motivation Rating	95% CI	Total
Individual responses-pressure and motivation	0.000 / 1.691	Moderate	-0.141- 0.141	552

Figure 10 illustrates that the majority (53%) of nurses and midwives scored moderate levels of self-imposed work pressure and motivation, with 29 per cent scoring low pressure and motivation levels and 18 per cent scoring high pressure and motivation levels.

Figure 10 Pressure and Motivation Levels



Subscale: pressure and motivation

The following eight components, including high achievement levels, unreasonable expectations and multi-tasking, relate to individual responses which are work behaviours such as self-imposed work pressure and motivation (see section 2.3.1. C. for a detailed exposition of the development of this subscale by way of factor analysis).

Individual components

Almost two-thirds (65.4%) of respondents stated that they tried to achieve more than time allows either frequently, most of the time or always (Table 62).

Table 62 Trying to Achieve More than Time Allows

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	9	185	236	106	24	560
Percentage	1.6	33.0	42.2	18.9	4.3	100

Over half (58%) of respondents indicated that they placed unreasonable expectations on themselves either frequently, most of the time or always (Table 63).

Table 63 Unreasonable Expectations

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	27	209	188	112	25	561
Percentage	4.8	37.2	33.5	20.0	4.5	100

Almost two-thirds (61.1%) of nurses and midwives in this sample reported that they were occasionally irritable when there were constant interruptions. Another 35 per cent noted that they were irritable frequently, most of the time or always (Table 64).

Table 64 Irritability due to Constant Interruptions

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	23	343	142	42	11	561
Percentage	4.1	61.1	25.3	7.5	2.0	100

The majority (65.4%) of nurses and midwives responded that they were pushed for time either frequently, most of the time or always (Table 65).

Table 65 Pushed for Time

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	4	190	233	103	31	561
Percentage	0.7	33.9	41.5	18.4	5.5	100

The majority (89.3%) of nurses and midwives reported that they never or occasionally had difficulty slowing down (Table 66).

Table 66 Difficulty Slowing Down

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	233	266	42	16	2	559
Percentage	41.7	47.6	7.5	2.9	0.3	100

Nurses and midwives were fairly evenly divided in their description of working at high performance levels either occasionally (30.9%), frequently (28.2%) or most of the time (27.5%) (Table 67).

Table 67 Working at High Performance

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	37	173	158	154	38	560
Percentage	6.6	30.9	28.2	27.5	6.8	100

Over half (56.7%) of the sample of nurses and midwives indicated that they were keyed up (restless) on most days either never or occasionally. The remainder (43.3%) indicated that they were keyed up frequently, most of the time or always (Table 68).

Table 68 Keyed Up Most of the Time on Most Days

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	51	265	131	99	11	557
Percentage	9.1	47.6	23.5	17.8	2.0	100

Three-quarters (75.4%) of nurses and midwives indicated that they had a tendency to perform many tasks at one time either frequently, most of the time or always (Table 69).

Table 69 Tendency to Perform Many Tasks at One Time

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	5	133	257	134	33	562
Percentage	0.9	23.7	45.7	23.8	5.9	100

1.2.4. Other variables relating to stress and burnout not included in subscales

A total of 15 out of 52 questions were not included in the above calculations (see Appendix 11 for detail). The reasons were as follows:

- one question (while reliable in terms of the Cronbach's alpha level) detracted from its relevant subscale reliability. Therefore to include this question in the subscale would have made the subscale unreliable;
- two reliable questions were not included in the original pilot study's subscales; and
- 12 questions proved unreliable in terms of their Cronbach's alpha, which analyses and determines reliability of questions or variables.

2. Multivariate Statistics

This section identifies significant associations between the variables of stress, burnout and individual responses for this sample of nurses and midwives. These associations were identified by Spearman's correlations.

2.1. Bivariate correlations

2.1.1. Spearman's correlation coefficients

Spearman's correlation coefficients were calculated on all reliable questions in the questionnaire on this sample of 562 nurses and midwives (see Appendix 10 for reliable questions). This statistical analysis allowed certain associations or relationships between phenomena of stress, organisational, environmental and psychosocial issues or individual responses to be identified. All correlations were viewed for all reliable variables and those associations with the highest correlations, that is, those with an rho value of more than .40, and those that were statistically significant ($p<0.01$, two-tailed) were deemed as being the most important or pertinent issues and concerns for the nurses and midwives in this sample. Two-tailed analyses are non-directional, meaning that the prediction or hypothesis can show a negative or positive association (Field, 2005). These correlations highlighted relationships among the variables and subscales that also identified certain important themes relating to the conceptual framework.

Overall, these categories include occupational stress (sub-category, workplace pressures), stress leading to ill health, (sub-category, treatment for stress), job compatibility, prolonged exposure to stress and work behaviours such as self-imposed work pressure and motivation (Tables 70 to 74). These categories and sub-categories directly relate to the subscales of the conceptual framework. The sub-categories relate to significant Spearman's associations. Occupational stress and workplace pressures relate to the subscale work environment. Stress leading to ill health and treatment for stress relate to the subscales psychosocial effects and exhaustion. Job compatibility relates to the subscale job satisfaction. Prolonged exposure to stress and extended fatigue outcomes relates to the subscale exhaustion. Work behaviours such as self-imposed work pressure and motivation relate to the subscale pressure and motivation.

Tables 70 to 74 illustrate the following pertinent features:

- As far as workplace pressures were concerned, there was a positive relationship between rushing to complete tasks and inefficient time management (for example, due to excessive workloads), for nurses and midwives ($r = .636$, $p < 0.01$);
- As far as stress leading to ill health was concerned, there was a positive relationship between short and long-term sleeplessness for nurses and midwives ($r = .608$, $p < 0.01$);
- As far as nurses and midwives being treated for stress was concerned, there was a positive relationship between stress requiring treatment and feeling emotionally drained ($r = .477$, $p < 0.01$);
- As far as job compatibility was concerned, there was a positive relationship between being suited to the particular type of work and enjoying the work for nurses and midwives ($r = .557$, $p < 0.01$);
- As far as prolonged exposure to stress was concerned, there was a positive relationship between powerlessness and low morale for nurses and midwives ($r = .624$, $p < 0.01$); and
- As far as work behaviours such as self-imposed work pressure and motivation were concerned, there was a positive relationship between placing unreasonable expectations on oneself and wanting to achieve more in less time for nurses and midwives ($r = .584$, $p < 0.01$).

Table 70 Relationship Between Theme, Category, Work Environment Subscale and Spearman's Variables

Major theme	Category / Sub-category	Subscale	Rho*	Relationship between Spearman's variables
Stress	Category Occupational stress Sub-category Workplace pressures	Work environment	.636 .493 .492 .487 .486 .446 .431 .415	Rushing is associated with poor time management (for example, due to workloads) Poor time management (for example, due to workloads) is associated with stress Being pushed for time is associated with rushing to complete tasks Being pushed for time is associated with achieving more in less time Rushing to complete tasks is associated with incidence of stress Rushing to complete tasks is associated with finishing work late Time management (for example, due to workloads) is associated with being pushed for time Time management (for example, due to workloads) is associated with finishing work late

*All values p<0.01, 2-tailed

Table 71 Relationship Between Themes, Categories, Psychosocial Effects and Exhaustion Subscales and Spearman's Variables

Major theme	Category / Sub-category	Subscale	Rho*	Relationship between Spearman's variables
Stress	Category Stress leading to ill health	Psychosocial effects	.608 .586 .489	Sleeplessness over past week is associated with sleeplessness over past decade Depression over the past decade is associated with sleeplessness over the past decade Sleeplessness over past decade is associated with increased anxiety
Stress	Sub-category Treatment for stress	Psychosocial effects	.454 .401	Stress requiring treatment is associated with experiencing headaches requiring analgesia Stress requiring treatment is associated with incidence of stress
Stress & Burnout	Category Stress leading to ill health & Prolonged exposure to stress Sub-category Treatment for stress	Psychosocial effects & Exhaustion	.477	Stress requiring treatment is associated with feeling emotionally drained
Stress & Burnout	Category Stress leading to ill health & Prolonged exposure to stress	Psychosocial effects & Exhaustion	.402	Sleeplessness over past week is associated with feeling emotionally drained

*All values p<0.01, 2-tailed

Table 72 Relationship Between Themes, Categories, Job Satisfaction and Exhaustion Subscales and Spearman's Variables

Major theme	Category	Subscale	Rho*	Relationship between Spearman's variables
Stress	Job compatibility	Job satisfaction	.577 .494 .410	Being suited to the particular type of work is associated with enjoying the work one does Wanting to leave the professional discipline is associated with wanting to change area of practice Job dissatisfaction is associated with incidence of stress
Stress & Burnout	Category Job compatibility & Prolonged exposure to stress Sub-category Extended fatigue outcomes	Job satisfaction & Exhaustion	.456 .417 .402	Job dissatisfaction is associated with low morale Job dissatisfaction is associated with feeling undervalued Job dissatisfaction is associated with feeling emotionally drained

*All values p<0.01, 2-tailed

Table 73 Relationship Between Themes, Categories, Work Environment and Exhaustion Subscales and Spearman's Variables

Major theme	Category / Sub-category	Subscale	Rho*	Relationship between Spearman's variables
Burnout	Category Prolonged exposure to stress Sub-category	Exhaustion	.624 .612 .561 .444 .442 .440 .439 .424 .412 .409 .404	Powerlessness is associated with low morale Feeling undervalued is associated with powerlessness Feeling undervalued is associated with low morale Loss of empathy for colleagues is associated with loss of empathy for clients Low morale is associated with feeling overwhelmed Feeling undervalued is associated with stress Feeling overwhelmed is associated with feeling emotionally drained Low morale is associated with feeling emotionally drained Feeling undervalued is associated with feeling overwhelmed Feeling overwhelmed is associated with feelings of incompetence Feeling undervalued is associated with feeling emotionally drained
Stress & Burnout	Category Occupational stress & Prolonged exposure to stress Sub-category Workplace pressures & extended fatigue outcomes	Work environment & Exhaustion	.436 .433 .424 .416 .411 .408 .405 .400	Feeling overwhelmed is associated with incidence of stress Low morale is associated with incidence of stress Feeling emotionally drained is associated with incidence of stress Powerlessness is associated with rushing to complete tasks Low morale is associated with poor time management (for example, due to workloads) Feeling emotionally drained is associated with rushing to complete tasks Feeling emotionally drained is associated with poor time management (for example, due to workloads) Feeling undervalued is associated with poor time management (for example, due to workloads)

*All values p<0.01, 2-tailed

Table 74 Relationship Between Theme, Category, Pressure and Motivation Subscale and Spearman's Variables

Major theme	Category	Subscale	Rho*	Relationship between Spearman's variables
Individual Responses	Work behaviours such as self-imposed work pressure & motivation	Pressure & motivation	.584 .433 .425	Placing unreasonable expectations on oneself is associated with wanting to achieve more in less time Placing unreasonable expectations on oneself is associated with being pushed for time Being keyed up on most days is associated with having a tendency to multi-task

*All values p<0.01, 2-tailed

The following information demonstrates associations between stress, burnout and individual responses. All correlations were also analysed for overall scores for the major themes, stress, burnout and individual responses, and all associations were statistically significant ($p<0.01$, two-tailed). These relationships are also interchangeable as such an analysis does not provide the direction of these associations. Table 75 illustrates that all of the themes have significant relationships with each other and the strongest included the following:

- Stress was positively associated with burnout ($r = .661$, $p<0.01$).

Table 75 Theme Spearman's Correlations

Spearman's Rho	Stress	Burnout	Individual responses
Stress Number	1.000	.661* 543	.372* 552
Burnout Number	.661* 543	1.000	.385* 533
Individual responses Number	.372* 552	.385* 533	1.000

*All values $p<0.01$, 2-tailed

All correlations were also analysed for overall scores for subscales and all associations were statistically significant ($p<0.01$, two-tailed) (Table 76). Table 76 illustrates that all of the subscales have significant relationships but the strongest include the following:

- Psychosocial effects of stress were positively associated with exhaustion ($r = .605$, $p<0.01$);
- Work environment stress was positively associated with exhaustion ($r = .593$, $p<0.01$);
- Job dissatisfaction was positively associated with exhaustion ($r = .551$, $p<0.01$);
- Work environment stress was positively associated with psychosocial effects of stress ($r = .486$, $p<0.01$);
- Psychosocial effects of stress were positively associated with job dissatisfaction ($r = .448$, $p<0.01$) and
- Work environment stress was positively associated with high self-imposed work pressure and motivation ($r = .445$, $p<0.01$).

Table 76 Subscale Spearman's Correlations

Spearman's Rho	Work environment	Psychosocial effects	Job satisfaction	Exhaustion	Pressure and motivation
Work environment Number	1.000	.486*	.371*	.593*	.445*
		544	545	537	544
Psychosocial effects Number	.486*	1.000	.448*	.605*	.360*
	544		543	533	542
Job satisfaction Number	.371*	.448*	1.000	.551*	.197*
	545	543		536	540
Exhaustion Number	.593*	.605*	.551*	1.000	.385*
		533	536		533
Pressure and motivation Number	.445*	.360*	.197*	.385*	1.000
	544	542	540	533	

*All values $p<0.01$, 2-tailed

All subscales and the variable incidence of stress were also correlated with the variables age, hours worked and years in the profession and Table 77 displays statistically significant associations. Table 77 illustrates that:

- Work environment stress was positively associated with more hours worked ($r = .185$, $p<0.01$);
- Age was negatively associated with job dissatisfaction ($r = -.122$, $p<0.01$);
- Exhaustion was positively associated with more hours worked ($r = .096$, $p<0.05$);
- High levels of self-imposed work pressure and motivation were positively associated with more hours worked ($r = .120$, $p<0.01$);
- Incidence of stress was positively associated with more hours worked ($r = .135$, $p<0.01$) and
- Age was positively associated with years in the profession ($r = .750$, $p<0.01$).

Table 77 Spearman's Correlations Between Significant Subscales, Incidence of Stress and Continuous Variables

Spearman's Rho	Work environment	Job satisfaction	Exhaustion	Pressure and motivation	Incidence of stress	Years in profession
Hours	.185**		.096*	.120**	.135**	
Number	550		539	548	554	
Age		-.122**				.750**
Number		541				547

*All values $p<0.01$, 2-tailed

**All values $p<0.05$, 2-tailed

2.2. Logistic regression

The following calculations were done to enable prediction of the likelihood of stress, burnout, and high pressure and motivation levels in someone who is either older, works longer hours, has spent many years in the profession, works fulltime, is better educated or lives alone. These demographics might be potential confounding factors when investigating stress and organisational issues (Makinen et al., 2003). Only statistically significant findings ($p<0.05$) are presented here. A detailed presentation of all relevant data is contained in Appendix 6.

A. Stress

Predicting overall stress levels was done by analysing the data in respect of low or high levels and there was found to be no statistically significant findings. Predicting outcomes of stress was shown as evidence of sleeplessness and taking “mental health” leave. Sleeplessness has been shown to be a normal psychological symptom of stress; (Buus-Frank, 2002; Olofsson et al., 2003; Soderfeldt, 2000). Staff absenteeism and frequent sick calls are indicative of occupational stress (Buus-Frank, 2002; Clegg, 2001; Cosentino, 2000).

In summary the data suggest that the respondents were:

- more likely to experience sleeplessness if they worked longer hours ($p<0.01$); and
- less likely to take “mental health” leave if they were older ($p<0.0001$) and the longer they worked in the profession ($p<0.01$).

B. Burnout

Predicting overall burnout levels was done by analysing the data in respect of overall low or high levels. Happel, Martin and Pinikahana (2003) explored overall levels of burnout in psychiatric and mental health nurses. An overall burnout level enables formulation of a summary or ‘snapshot’ of this sample of nurses and midwives and these analyses predict and identify those more at risk of experiencing burnout in the future.

In relation to overall burnout levels, the data suggest that the respondents were:

- more likely to experience burnout if the person worked longer hours ($p<0.01$).

Predicting outcomes of burnout was done by analysing the data in respect of experiencing apathy, feeling emotionally drained at work and losing empathy for colleagues and clients. Feeling emotionally exhausted is one of the components of burnout (Maslach & Jackson, 1981). Nurses who experience burnout will be more likely to lose empathy for colleagues and to abuse other nurses (Rowe & Sherlock, 2005).

In summary the data suggest that the respondents were:

- more likely to be apathetic when “stressed” if they worked longer hours ($p<0.01$);
- less likely to feel emotionally drained at work if the person was older ($p<0.05$) and more likely to feel emotionally drained at work if they worked longer hours ($p<0.01$);
- less likely to lose empathy for colleagues if the person holds a degree or any higher qualification ($p<0.05$) and if they are living alone ($p<0.05$); and
- less likely to lose empathy for clients if the person is older ($p<0.01$) and the longer they worked in the profession ($p<0.01$).

C. Individual responses

Predicting those more likely to exhibit high or low pressure and motivation levels was done by analysing the data in respect of ‘low self-imposed work pressure and motivation’ or ‘high self-imposed work pressure and motivation’. Overall pressure and motivation levels provides information on those nurses and midwives in this study who are more likely to place unreasonable expectations on themselves in relation to work in the future.

As far as pressure and motivation levels were concerned the summary statistics indicate that they were:

- less likely to place unreasonable expectations on themselves in relation to work if the person holds a degree or any higher qualification ($p<0.05$).

As the Wald statistics are considerably different from 0, these predictors make a substantial contribution to predicting all of the above outcomes.

D. Multicollinearity for logistic regression

As stated in Chapter 3 (section 3.5.3.), variance inflation factor (VIF) values should not be greater than 10 and indicate strong relationships between predictors (Field, 2005; Myers, 1990). All VIF values for these independent variables were less than 1.9, indicating no problems with multicollinearity. Tolerance levels are related to the variance inflation factor, being its reciprocal ($1/VIF$) (Field, 2005). All tolerance levels for a multicollinearity check should be more than 0.1 (Pallant, 2005). All

tolerance levels for the independent variables used for logistic regression in these analyses were above 0.5, indicating no problems with multicollinearity (Appendix 7).

2.3. Factor analysis

This section provides results in respect of the five subscales evolved from factor analysis. Factor analysis was calculated for the pilot study and as a *post hoc* analysis to statistically define subgroups for the scores of the questionnaire (Chapter 3, Tables 3 & 4, section 2.3.3. B. & 2.3.4.). This allows measurement of stress, burnout and associated individual responses for this sample of nurses and midwives according to each of the five subscales, namely work environment, psychosocial effects, job satisfaction, exhaustion and self-imposed work pressure and motivation. Work environment, psychosocial effects and job satisfaction relate to stress; exhaustion relates to burnout; and pressure and motivation relates to individual responses.

The aim of factor analysis is to explain as much of the variance in the data as possible (Pallant, 2005). Factor analysis calculations produced the following findings in relation to these five subscales and themes.

A. Stress

The overall factor structure for stress explained 54.7 per cent of variance in the data.

- The work environment factor structure accounted for 8.3 per cent of variance in the data.
- Psychosocial effects of stress was the most dominant stress factor which accounted for 35.4 per cent of variance in the data.
- Job satisfaction accounted for 11 per cent of variance in the data.

B. Burnout

- Exhaustion accounted for 51.9 per cent of variance in the data.

C. Individual responses

- Pressure and motivation accounted for 52.5 per cent of variance in the data.

There might be other reasons why nurses and midwives were experiencing stress and burnout and behaved the way they did at work, but the above findings account for those levels related to each particular aspect of individual responses to stress and burnout. In this way, it is possible to see what was pertinent for them.

2.3.1. Development of subscales for factor analysis

The outcome of factor analysis for the entire questionnaire resulted in development of five separate subscales, namely, work environment, psychosocial effects of stress, job satisfaction, exhaustion, and pressure and motivation (see Chapter 3, section 3.5.4. E. Table 14 and Appendix 13 show all detailed calculations and explanations). These subscales allowed assessment of this sample's associated individual responses to overall stress and burnout levels. Each subscale relates to a specific area of concern or effect from the nurses' and midwives' work life. Subscales can be used to realistically assess nurses' stress levels in their working environments (AbuAlRub, 2004; Begat et al., 2005; Humpel & Caputi, 2001; Jenkins & Elliott, 2004; O'Connor & Jeavons, 2002; Snelgrove, 1998). Assessing nurses' and midwives' stress levels by subscales provides a more detailed focus on specific work issues so that solutions might target appropriate areas. As stress and burnout are multidimensional constructs, previous research has used subscales or components within questionnaires in an attempt to realistically assess stress levels; (Greenglass & Burke, 2001; Huibers et al, 2003; Mackin & Sinclair, 1998; Mansfield et al., 1989; Meltzer & Huckabay, 2004; Ryan & Quayle, 1999).

As outlined in more detail in the methods chapter (Chapter 3), the accepted ten step procedure regarding detailed factor analysis data presentation was followed in respect of developing each of the five subscales (Chapter 3, section 3.5.4. C.). For a detailed presentation of the complete factor analysis data set relating to each subscale, see Appendix 13. The following presentation of data arising out of factor analysis is limited to highlighting major critical steps in respect of each subscale.

A. Stress

Subscales: work environment, psychosocial effects of stress and job satisfaction

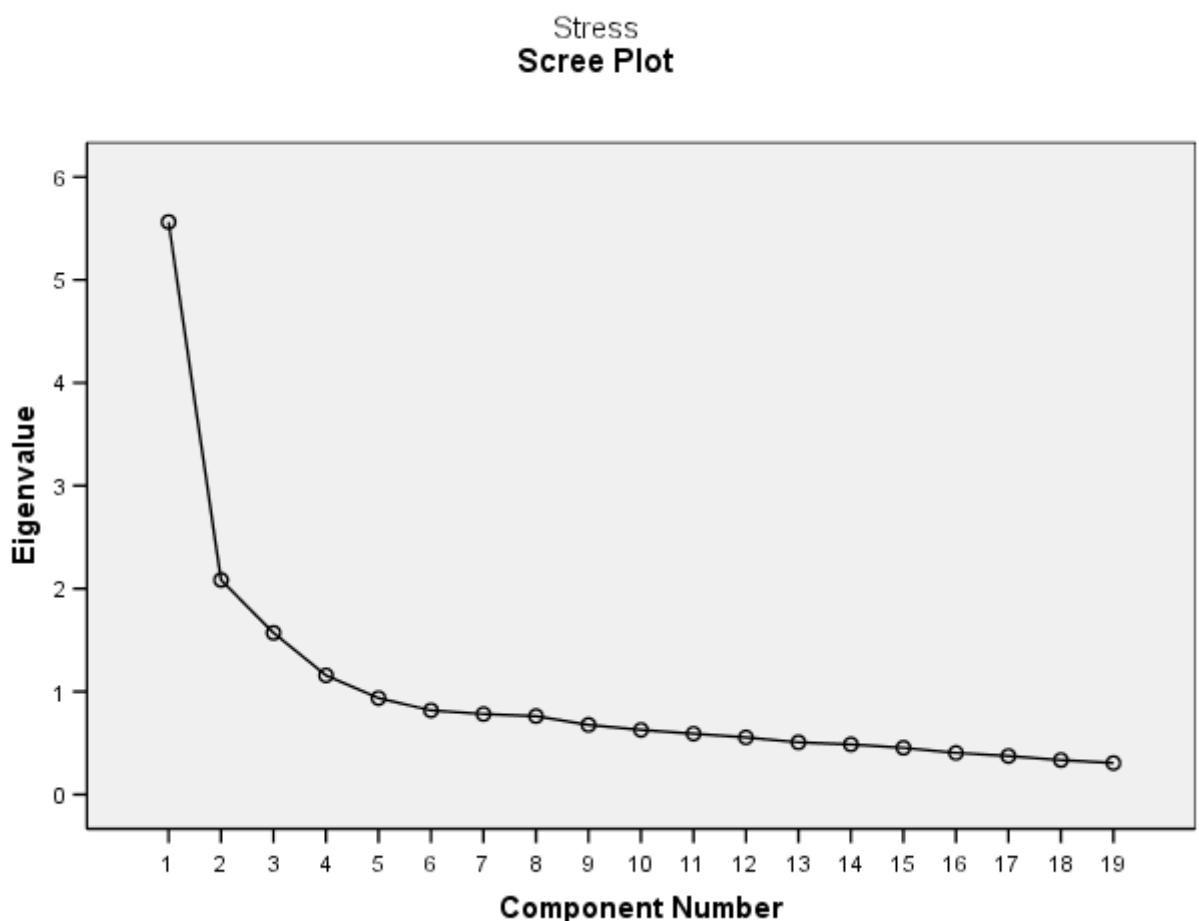
Using Kaiser's criterion, the eigenvalue associated with the first and most dominant factor was 5.6 and accounted for 29.3 per cent of variance, meaning that this factor explained 29.3 per cent of the total variance in the data. The eigenvalue for the second factor was 2.1 and accounted for 11 per cent of variance in the data. The eigenvalue for the third factor was 1.6 and accounted for 8.3 per cent of variance in the data. The eigenvalue for the fourth factor was 1.2 and accounted for 6.1 per cent of variance in the data (see Table 78).

Table 78 Principal Component Analysis for Stress: Work Environment, Psychosocial Effects and Job Satisfaction

Component	Eigenvalue	% Total Variance	Cumulative Eigenvalue	Cumulative % Total Variance	Rotation Total
1	5.563	29.278	5.563	29.278	4.142
2	2.085	10.972	7.648	40.251	3.263
3	1.571	8.270	9.219	48.521	3.561
4	1.158	6.096	10.377	54.616	2.540
5	0.937	4.932	11.314	59.548	
6	0.817	4.302	12.131	63.851	
7	0.782	4.118	12.913	67.968	
8	0.762	4.012	13.675	71.981	
9	0.677	3.564	14.352	75.544	
10	0.628	3.303	14.980	78.847	
11	0.592	3.113	15.572	81.960	
12	0.556	2.926	16.128	84.886	
13	0.507	2.671	16.635	87.557	
14	0.487	2.565	17.122	90.122	
15	0.455	2.393	17.577	92.515	
16	0.405	2.133	17.982	94.647	
17	0.375	1.971	18.357	96.619	
18	0.335	1.766	18.692	98.384	
19	0.307	1.616	18.999	100.000	

The scree plot graph prior to rotation, displayed a break following the fourth component recommending the use of three factors (see Figure 11).

Figure 11



Stress included 19 questions which were assessed as relating to four factors (see Table 79).

**Table 79 Contributory Loadings for Each Factor Before Rotation for Stress
(Cronbach's- α 0.843)**

Stress	Factor 1	Factor 2	Factor 3	Factor 4
Question or variable	Associated loading onto factor			
Incidence of stress	0.679			
Length of depression	0.641			
Depression over past decade	0.641		-0.419	
Job dissatisfaction	0.632			
Experiencing increased anxiety	0.630			
Sleeplessness over past decade	0.623		-0.448	
Stress requiring treatment	0.612			0.473
Sleeplessness over past week	0.601			
Rush to complete tasks	0.582	-0.453		
Time management- workload	0.573		0.473	
Organisational support	0.547			
Helplessness over past decade	0.469			
Mental health leave	0.434			
Suited to work		0.596		
Enjoying the type of work	0.424	0.592		
Finishing work late		-0.538		
Leave professional discipline	0.445	0.527		
Change area of practice	0.459	0.482		
Headaches requiring analgesia	0.413			0.711

The percentage of residuals was 39 per cent (less than 50%) which means that this model could be generalised beyond this sample. Oblique (direct oblimin) rotation showed that the highest loading (sleeplessness over past decade) on the first and most dominant factor seemed to relate to psychosocial effects of stress. The highest loading on the second factor (enjoying the type of work) seemed to relate to job satisfaction. The highest loading on the third factor (time management- workload) seemed to relate to the work environment. The highest loading on the fourth factor (headaches requiring analgesia) seemed to relate to physical ailments (see Table 80).

Table 80 Unique Contributions of Variables to Factors Following Oblique Rotation for Stress (Pattern Matrix)

Stress	Factor 1 Psychosocial effects of stress	Factor 2 Job satisfaction	Factor 3 Work environment	Factor 4 Physical Ailments
Question or variable	Unique contribution	Unique contribution	Unique contribution	Unique contribution
Sleeplessness over past decade	0.790			
Depression over decade	0.762			
Helplessness over past decade	0.721			
Length of depression	0.649			
Experiencing increased anxiety	0.584			
Sleeplessness over past week	0.491			
Enjoying the type of work		0.779		
Suited to work		0.720		
Leave professional discipline		0.702		
Change area of practice		0.700		
Job dissatisfaction		0.470		
Mental health leave				
Time management- workload			0.864	
Rush to complete tasks			0.824	
Finishing work late			0.743	
Incidence of stress			0.558	
Organisational support			0.432	
Headaches requiring analgesia				0.862
Stress requiring treatment				0.661

The following matrix (Table 81) displays correlation coefficients between the factors and provides information about the extent to which factors were rotated in order to obtain a solution. As oblique (direct oblimin) rotation for the theme stress resulted in most of the correlations below 0.3 (see Table 81) a reasonable assumption was that the factors were independent and not interrelated and therefore orthogonal (varimax) rotation was also used (Pallant, 2005). If constructs were independent, Table 81 should display an identity matrix (all factors equalling 0), which it does not and independence cannot be assumed (Field, 2005).

Table 81 Component Transformation Matrix by Oblique Rotation for Stress

Component	1	2	3	4
1	1.000	0.313	0.345	0.295
2	0.313	1.000	0.157	0.184
3	0.345	0.157	1.000	0.268
4	0.295	0.184	0.268	1.000

Discrepancies between the pattern matrix for oblique (direct oblimin) rotation (Table 80) and the orthogonal (varimax) rotation component matrix (Table 82) further reinforce interrelated factors (Pallant, 2005). If constructs were independent, oblique (direct oblimin) rotation would produce identical results to orthogonal (varimax) rotation (see Tables 80 & 82), which they did not. Therefore, oblique (direct oblimin) rotation is more meaningful than orthogonal (varimax) rotation (Field, 2005). This further reinforces amalgamation of the four factors into three. The fourth factor, being physical ailments, was included in the first factor, psychosocial effects of stress, as it was included in the first factor before rotation and the scree plot suggested three factors. For more detailed analysis and discussion of the factors, work environment, psychosocial effects of stress and job satisfaction, see Appendix 13.

Table 82 Rotated Component Matrix by Orthogonal Rotation for Stress

Stress	Factor 1 Psychosocial effects of stress	Factor 2 Job satisfaction	Factor 3 Work environment	Factor 4 Physical Ailments
Question or variable	Unique contribution	Unique contribution	Unique contribution	Unique contribution
Sleeplessness over past decade	0.760			
Depression over decade	0.742			
Helplessness over past decade	0.667			
Length of depression	0.656			
Experiencing increased anxiety	0.603			
Sleeplessness over past week	0.527			0.400
Availability of time- workload		0.835		
Rush to complete tasks		0.810		
Finishing work late		0.703		
Incidence of stress		0.602		
Organisational support		0.458		
Enjoying the type of work				
Suited to work			0.762	
Leave professional discipline			0.699	
Change area of practice			0.697	
Job dissatisfaction			0.692	
Mental health leave			0.504	
Headaches requiring analgesia				0.834
Stress requiring treatment				0.683

B. Burnout

Subscale- exhaustion

Using Kaiser's criterion, the eigenvalue associated with the first and most dominant factor was 3.9 and accounted for 38.8 per cent of variance, indicating that this factor for exhaustion explained 38.8 per cent of the amount of the total variance in the

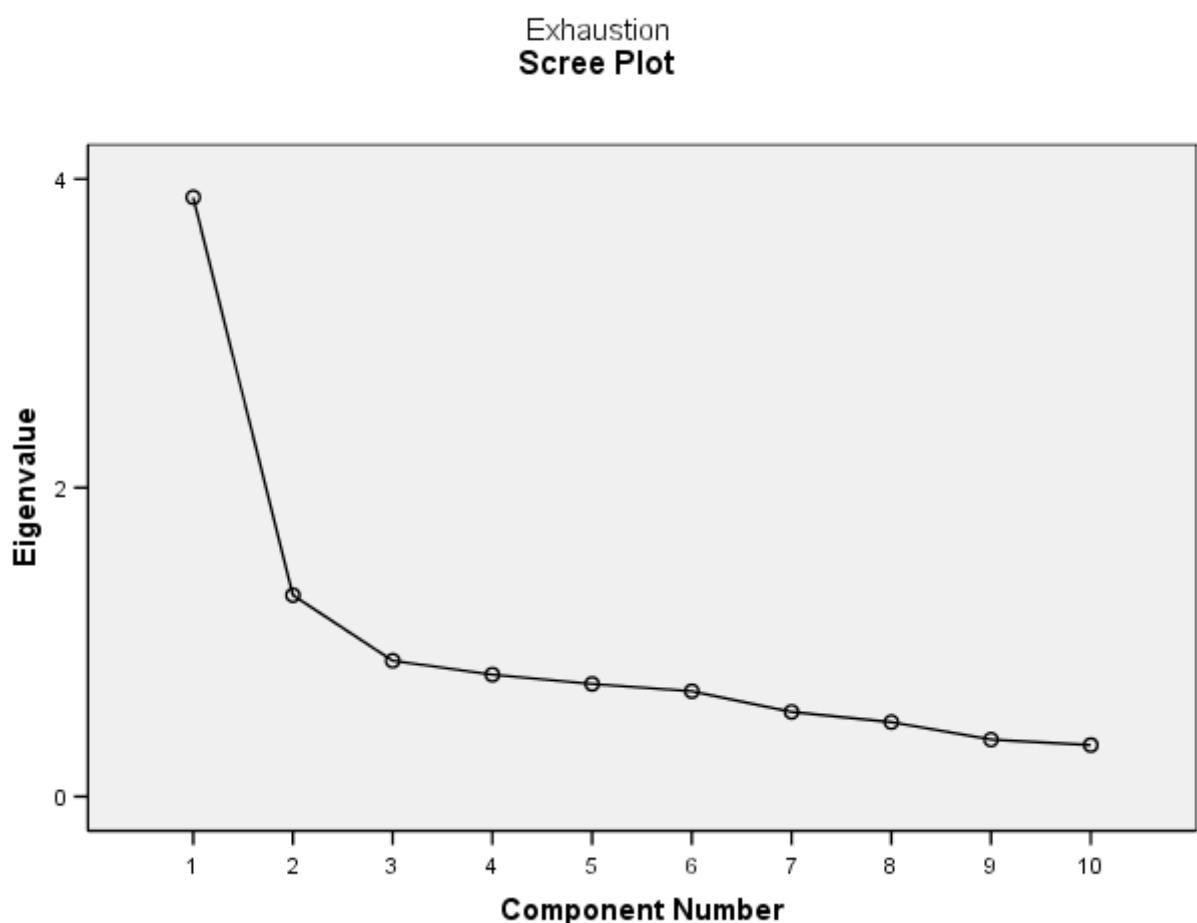
original data. The eigenvalue for the second factor was 1.3 and accounted for 13 per cent of variance in the data (see Table 83). The amalgamation of both factors accounted for 51.9 per cent of the amount of the total variance in the original data.

Table 83 Principal Component Analysis for Exhaustion

Component	Eigenvalue	% Total Variance	Cumulative Eigenvalue	Cumulative % Total Variance	Rotation Total
1	3.881	38.808	3.881	38.808	3.810
2	1.304	13.043	5.185	51.851	1.792
3	0.880	8.801	6.065	60.651	
4	0.790	7.898	6.855	68.549	
5	0.730	7.297	7.585	75.846	
6	0.682	6.823	7.618	88.151	
7	0.548	5.482	8.267	90.589	
8	0.482	4.823	8.749	92.974	
9	0.369	3.691	9.118	96.664	
10	0.334	3.336	9.452	100.000	

A scree plot graph prior to rotation, displays a break following the third component recommending the use of two factors (see Figure 12).

Figure 12



As previously mentioned in Chapter 3 (section 3.5.4.), Pallant (2005) reiterates that as factor analysis is a data exploration technique, the interpretation and judgement is left to the researcher, rather than specific statistical rules. These factors were condensed into the same factor, as only two of the factors (losing empathy for colleagues and clients) were segregated from the first factor. Ten questions for the fourth subscale, exhaustion, extrapolated two factors (Table 84). The highest loadings for the first factor are related to how the individual feels when exhausted. The second factor relates to how exhaustion affects other people.

Table 84 Contributory Loadings for Each Factor Before Rotation for Exhaustion (Cronbach's- α 0.793)

Exhaustion	Factor 1	Factor 2
Question or variable	Associated loading onto factor	Associated loading onto factor
Experiencing low morale	0.790	
Feeling powerless	0.789	
Feeling undervalued	0.726	
Feeling overwhelmed	0.671	
Feeling emotionally drained	0.649	
Apathy	0.596	
Feelings of incompetence	0.594	
Fatigue	0.504	
Loss of empathy for colleagues		0.767
Loss of empathy for clients		0.744

The percentage of residuals was 55 per cent (above 50%), which means that this model could not be generalised beyond this sample. Oblique (direct oblimin) rotation showed that the highest loading on the first and most dominant factor (which included eight variables) related to how exhaustion affected the individual and the second factor (which included two variables) was linked to other people (Table 85).

Table 85 Unique Contributions of Variables to Factors Following Oblique Rotation For Exhaustion (Pattern Matrix)

Exhaustion	Factor 1 Related to Individual	Factor 2 Related to Others
Question or variable	Unique contribution	Unique contribution
Experiencing low morale	0.815	
Feeling powerless	0.790	
Feeling undervalued	0.783	
Feeling overwhelmed	0.713	
Feeling emotionally drained	0.670	
Feelings of incompetence	0.534	
Apathy	0.518	
Fatigue	0.516	
Loss of empathy for colleagues		0.847
Loss of empathy for clients		0.832

The following matrix (Table 86) displays correlation coefficients between the factors and provides information about the extent to which factors were rotated in order to obtain a solution. As oblique (direct oblimin) rotation for the subscale exhaustion resulted in correlations below 0.3 (0.28) (see Table 86) a reasonable assumption was that the factors were independent and not interrelated and therefore orthogonal (varimax) rotation was also used (Pallant, 2005). If constructs were independent, Table 86 should display an identity matrix (all factors equalling 0), which it does not and independence cannot be assumed (Field, 2005).

Table 86
Component Transformation Matrix by Oblique Rotation for Exhaustion

Component	1	2
1	1.000	0.280
2	0.280	1.000

Discrepancies between the pattern matrix for oblique (direct oblimin) rotation (Table 84) and the orthogonal (varimax) rotation component matrix (Table 87) further reinforce interrelated factors (Pallant, 2005). If constructs were independent, oblique (direct oblimin) rotation would produce identical results to orthogonal (varimax) rotation (see Tables 85 & 87), which it does not. Therefore, oblique (direct oblimin) rotation is more meaningful than orthogonal (varimax) rotation (Field, 2005). This further reinforces amalgamation of the two factors into one. For more detailed analysis and discussion for the factor exhaustion, see Appendix 13.

Table 87 Rotated Component Matrix by Orthogonal Rotation for Exhaustion

Exhaustion	Factor 1 Related to Individual	Factor 2 Related to Others
Question or variable	Unique contribution	Unique contribution
Experiencing low morale	0.801	
Feeling powerless	0.783	
Feeling undervalued	0.760	
Feeling overwhelmed	0.695	
Feeling emotionally drained	0.658	
Feelings of incompetence	0.546	
Apathy	0.536	
Fatigue	0.508	
Loss of empathy for colleagues		0.837
Loss of empathy for clients		0.870

C. Individual responses

Subscale- pressure and motivation

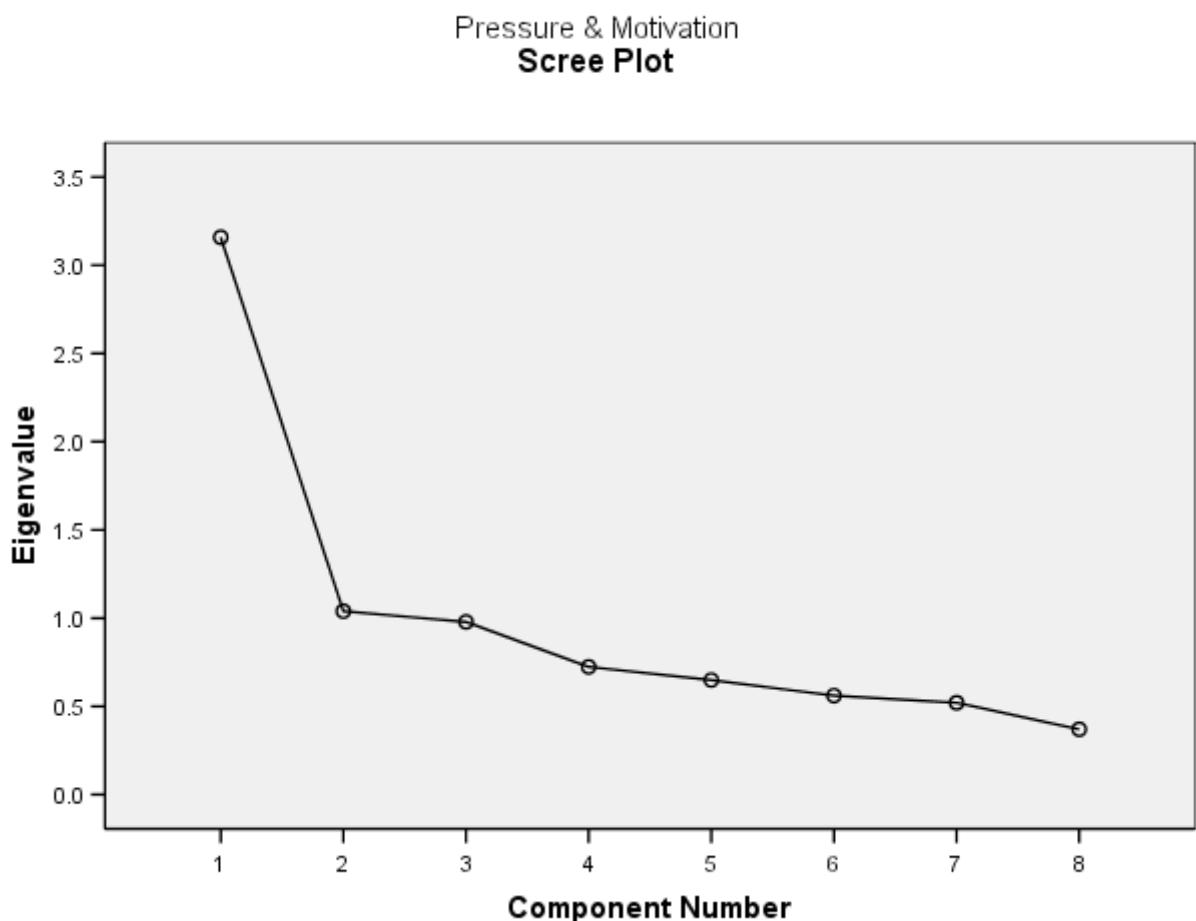
Using Kaiser's criterion, the eigenvalue associated with the first factor was 3.2 and accounted for 39.5 per cent of variance pointing out this factor for pressure and motivation explained 39.5 per cent of the amount of the total variance in the original data. The eigenvalue for the second factor was 1.1 and accounted for 13 per cent of variance in the data (see Table 88). The amalgamation of both factors accounted for 52.5 per cent of the amount of the total variance in the original data.

Table 88 Principal Component Analysis for Pressure and Motivation

Component	Eigenvalue	% Total Variance	Cumulative Eigenvalue	Cumulative % Total Variance	Rotation Total
1	3.158	39.475	3.158	39.475	2.858
2	1.142	12.686	4.300	52.467	2.196
3	0.979	12.232	5.279	64.699	
4	0.724	9.049	6.003	73.748	
5	0.649	8.112	6.652	81.86	
6	0.561	7.010	7.213	88.87	
7	0.521	6.507	7.734	95.377	
8	0.370	4.624	8.104	100.000	

The scree plot graph prior to rotation shows a break following the second and third components, justifying retaining either one or three factors (Figure 13).

Figure 13



Field (2005) states that, as factor analysis is used as a guide about patterns within the data, researchers might exercise their own discretion and the decision on the number of factors to extract depends on the reasons for initial analysis. As all the variables were included in the first factor and the percentage of variance was higher for the first factor, a decision was made to leave these variables as one factor. This means that an overall combined factor score was obtained for pressure and motivation from all of the loadings from the first factor instead of separating the scores between factor one and factor two. Factor analysis identified two factors concerning the subscale, pressure and motivation (Table 89).

Table 89 Contributory Loadings for Each Factor Before Rotation for Pressure and Motivation (Cronbach's- α 0.772)

Pressure and motivation	Factor 1 Pressure	Factor 2 Motivation
Question or variable	Associated loading onto factor	Associated loading onto factor
Pushed for time	0.736	
Achieving more in less time	0.729	
Unreasonable expectations	0.724	
Keyed up	0.624	0.405
Irritability	0.590	
Multi-tasking	0.573	0.581
Difficulty slowing down	0.514	
Working at high performance	0.480	0.450

The percentage of residuals was 57 per cent (above 50%) which means that this model could not be generalised beyond this sample. Oblique (direct oblimin) rotation resulted in a pattern matrix (see Table 90). The first factor with the highest loading (unreasonable expectations) seems to relate to the individual and the second factor with the highest loading (multi-tasking) seems to relate to outcomes of pressure. (For more information on factor rotation for pressure and motivation see Appendix 13).

Table 90 Unique Contributions of Variables to Factors Following Oblique Rotation for Pressure and Motivation (Pattern Matrix)

Pressure and motivation	Factor 1 Related to individual	Factor 2 Outcomes
Question or variable	Unique contribution	Unique contribution
Unreasonable expectations	0.780	
Irritability	0.755	
Achieving more in less time	0.740	
Pushed for time	0.674	
Difficulty slowing down	0.508	
Multi-tasking		0.836
Keyed up		0.676
Working at high performance		0.662

The following matrix (Table 91) displays correlation coefficients between the factors and provides information about the extent to which factors were rotated in order to obtain a solution. As oblique (direct oblimin) rotation for the subscale pressure and motivation resulted in correlations above 0.3 (0.431) (see Table 91), this means that the factors are interrelated and this was the most accurate rotation to use (Field, 2005). This further reinforces amalgamation of the two factors into one. For more detailed analysis and discussion for the factor pressure and motivation, see Appendix 13.

Table 91 Component Transformation Matrix by Oblique Rotation for Pressure and Motivation

Component	1	2
1	1.000	0.431
2	0.431	1.000

2.4. Group comparisons

2.4.1. Kruskal-Wallis test

Group differences between predominant areas of work with continuous variables such as age and hours worked were calculated. The statistically significant results are as follows:

- Age was highly significantly different among all predominant areas of practice ($H(13) = 34.986$, $p<0.0001$). Nurses working in aged care and accident and emergency were the oldest group, with the youngest working in oncology.
- Hours worked were highly significantly different among all predominant areas of practice ($H(13) = 35.159$, $p<0.0001$). Nurses and midwives working in management and oncology worked the longest hours, whereas nurses working in the operating theatre worked the least amount of hours.
- Years in the profession were significantly different among all predominant areas of practice ($H(13) = 23.954$, $p<0.05$). Nurses and midwives working in nursing management and accident and emergency have spent the highest number of years in the profession, with nurses working in oncology having spent the least number of years in the profession.
- Incidence of stress at work was significantly different among all predominant areas of practice ($H(13) = 22.566$, $p<0.05$). Operating theatre

and surgical areas had the highest scores, with recovery area reporting the lowest.

- Experiencing anxiety as a psychosocial effect of stress was significantly different among all predominant areas of practice ($H(13) = 22.036$, $p<0.05$). Accident and emergency and aged care areas reported experiencing most anxiety, with critical care area reporting the least anxiety.
- Feelings of powerlessness as a factor linked with burnout were significantly different among all predominant areas of practice ($H(13) = 23.129$, $p<0.05$). Accident and emergency and oncology areas had the highest scores, with recovery area reporting the lowest.

The groups of nurses and midwives working in higher risk workplaces or practice specialties experiencing stress and burnout are those working in operating theatre, surgical, accident and emergency and aged care. However, as these groups were relatively small, generalisations cannot be applied for the existing nursing and midwifery workforce. For more detailed results concerning all relevant and appropriate Kruskal-Wallis test calculations, see Appendix 14.

3. Summary

The factors linked with stress for this study related to environmental, organisational and psychosocial aspects and job dissatisfaction. The majority (59%) of this sample experienced moderate stress levels overall with 76 per cent of nurses and midwives experiencing moderate stress levels related to the work environment, which included almost half (49.7%) either occasionally or never receiving sufficient organisational support. The majority (56%) of this sample of nurses and midwives experienced minimal psychosocial effects of stress, with 44 per cent experiencing moderate to excessive psychosocial effects of stress. The majority (96%) of this sample of nurses and midwives showed moderate to high job satisfaction levels, however the majority (57.6%) reported experiencing job dissatisfaction at least once a month.

Factor analysis identified three factors as contributing to overall stress levels being the work environment, psychosocial effects and job dissatisfaction. When all factors are

considered together, the most dominant stress factor was identified as psychosocial effects of stress for this sample of nurses and midwives, reinforcing this important aspect of stress (accounted for 35.4% of variance in the data compared to 8.3% for work environment and 11% for job dissatisfaction). However, when all these subscales are considered separately in relation to overall percentages, stress related to the work environment was identified as the area of concern (83% moderate to excessive levels as compared with 44% moderate to excessive levels for psychosocial effects and 4% job dissatisfaction). These results differ as factor analysis performs distinct functions of principal component analysis identifying factors representing relationships between variables, whereas overall percentages of subscales are calculated from respondents' scores.

The factors linked with burnout and exhaustion for this study related to apathy, low morale, powerlessness, feeling undervalued, overwhelmed and emotionally drained, feelings of incompetence, fatigue and loss of empathy for colleagues and clients. The majority (54%) of nurses and midwives experienced moderate burnout levels. The majority (53%) of nurses and midwives scored moderate levels of self-imposed work pressure and motivation, with over half (58%) of respondents indicating that they frequently or more often placed unreasonable expectations on themselves. Other factors relating to individual responses included achieving more than time allows, irritability, being pushed for time, difficulty slowing down for procedures, working at high performance, being keyed up on most days and multi-tasking.

For this study sample of nurses and midwives, there were associations between stress, burnout and individual responses to workplace issues. Stress was positively associated with burnout. Psychosocial effects of stress, work environment stress and job dissatisfaction were all positively associated with exhaustion. Work environment stress was positively associated with psychosocial effects of stress and high self-imposed work pressure and motivation. Psychosocial effects of stress were positively associated with job dissatisfaction.

There were particular demographics which increased the likelihood of associated individual responses to experiencing stress and burnout. For this study sample of

nurses and midwives, they were more likely to experience sleeplessness and burnout if they worked longer hours. They were less likely to take “mental health” leave if they were older and if they had worked longer in the profession. If the nurse or midwife was more educated, they were less likely to place unreasonable expectations upon themselves. For this study, operating theatre, surgical, accident and emergency, aged care and oncology were identified as higher risk workplaces or practice specialties for nurses who were experiencing stress and burnout.

Chapter 5

DISCUSSION

This chapter will explore the various aspects of individual responses to stress and burnout for this sample of nurses and midwives. Firstly, questionnaire return rates and demographics will be compared with other similar published studies, and with state and national statistics. The remainder of the chapter will discuss stress, burnout and individual responses in relation to this study's specific, as well as overall results; it concludes with a discussion linking the results with the conceptual framework. As summarised in Chapters 3 and 4, the conceptual framework identified in this study relates to the work environment, psychosocial effects of stress, job satisfaction, exhaustion, and pressure and motivation. Stress relates to the work environment, psychosocial effects and job dissatisfaction; burnout relates to exhaustion; and individual responses relate to self-imposed work pressure and motivation.

This study explored workplace stress and burnout as experienced by nurses and midwives. Several variables were explored including time pressures, organisational support, sleeplessness, depression, not enjoying work, low morale, a sense of powerlessness, feeling exhausted and overwhelmed, expecting more than reasonably possible, working at high performance and multi-tasking. These issues can prevent nurses and midwives being able to empathise with colleagues and clients, leading to poor quality client care.

1. Questionnaire return rate and demographics

1.1. Questionnaire return rate

There were 1358 respondents in the study with a response rate of 562. Response rates in research studies among health professionals are usually poor (Ng et al., 1999). However, a return rate of 41.4 per cent is comparable to other published research findings with large samples investigating stress and burnout (see Appendix 15 for more detail).

1.2. Demographics - comparison of national workforce with study sample

Important to the findings of this research was the review of previous, similar studies and whether findings from this study seemed congruent or otherwise with the work of others. For instance, certain socio-demographic variables such as marital status might contribute to stress and burnout (Kotzabassaki & Parissopoulos, 2003). Makinen et al. (2003) recommend that future research examine different modes of work and client characteristics when looking at stress levels. The following demographics are therefore pertinent in relation to discussion and analysis of levels of stress and burnout for nurses and midwives from this study.

1.2.1 Gender

Nursing remains a predominantly female occupation and midwifery not unexpectedly has a disproportionately high number of females, even though the proportion and number of male nurses in the remaining general nursing populations have been increasing. The proportion of female nurses / midwives in the current study is even higher than that for Australia as a whole (98.9% compared to 91.6% respectively) (Chrisopoulos & Waters, 2003). Clearly, the high number of midwives targeted for this study accounted for this difference.

1.2.2. Area of practice

The areas of practice identified by the respondents in this study were similar to those noted in the national sample. The percentages of nurses working in the oncology area are lower for the study sample (0.4%) in comparison with the national sample (2.7%).

The percentages of nurses working in the aged care sector are also considerably lower in the study sample (0.6%) compared with the national sample (23.7%), possibly because midwifery conferences were primarily used to access respondents. Due to the sampling method applied in this project / study, percentages of the midwifery sample (48.8%) are substantially greater than the national (10.2%) sample. The percentage of the community nursing study sample (21.9%) is also much larger than the national sample (6.3%), possibly because the wound conference (one of the conferences at which respondents attended) consisted mainly of community nurses. The numbers of nurses / midwives working in all areas, in all jobs, for this study sample; the national sample (Chrisopoulos & Waters, 2003); and for nurses and midwives working in their main clinical job in the NSW (Workforce Planning NSW Health, 1999-2003) samples in 2003 are compared in Appendix 12.

1.2.3. Age in years

The following information regarding age highlights the escalating issue of the ageing nurse and midwife workforce and its contribution to the severe nursing shortage, with the average age of registered nurses being 45.4 years (Chang et al., 2005; Goodin, 2003). The NSW Nurses Association (2008h) reports that those nurses and midwives currently working in Australia, aged 45 years and over, will retire in the following ten to 15 years. The age range for this study is similar to national statistics. In 2005, the average age in this study was 45 years which was also similar to national statistics (43.2 years in 2004) (AIHW, 2006). Again, these comparisons included the large sample size for the national sample, being 228,230, compared with 552 for this study (see Appendix 16 for more detail).

1.2.4. Hours worked per week

The questionnaire identified that nurses and midwives in this study worked slightly more average (fulltime, part-time and casual) hours per week (34.5 hours) as compared with the national sample (33.1 hours) (AIHW, 2006). Sydney University is currently undertaking research with nurses working in the public health system and their study has shown that fulltime nurses work an average of 43 hours per week and part-timers work an average of 29 hours per week (NSW Nurses Association, 2008i). These figures are comparable with this study of nurses and midwives identifying an

average of 42.5 hours per week for fulltimers and an average of 27.7 hours per week for part-timers.

As hours worked per week for all employed nurses and midwives was compared with total number of nurses and midwives by age for Australia, comparisons were also made with this study sample (Table 92) (Chrisopoulos & Waters, 2003). When comparing this study sample and the national sample for the age groups, less than 25 years of age, and 25-34 years of age, the same proportions (14.3% and 18.3%) work an average of 25-34 hours per week. Similar proportions (71.4% compared to 72.4% and 50% compared to 49.1%) of this study sample and the national sample aged less than 25 years of age and 25-34 years of age work an average of 35-44 hours per week. For the age groups, 35-44 years of age, 45-54 years of age and 55+ years of age, similar proportions (25.4% compared to 21.8%, 24% compared to 25.1% and 29.4% compared to 23.8%) work 25-34 hours per week and 35-44 hours per week (30.1% compared to 36.1%, 46.9% compared to 45% and 42.6% compared to 40.8%). This study also found that percentages of nurses and midwives of all ages working 45 hours or more were generally higher in comparison to the national sample. This could be associated with the ‘specialty’ nature of this sample in that almost half (46.3%) of this sample worked in the specialty area of midwifery.

Table 92 Comparison of Age and Hours Worked Per Week Between Study and National Samples

Age %	Hours worked per week %					Total %	Total number
	<25	25-34	35-44	45+			
<25	S = 0 N = 10.5	S = 14.3 N = 14.3	S = 71.4 N = 72.4	S = 14.3 N = 2.7	100	S = 7 N = 8,512	1.3% 3.7%
25-34	S = 18.3 N = 29.4	S = 18.3 N = 18.3	S = 50 N = 49.1	S = 13.3 N = 3.2	100	S = 60 N = 47,958	10.9% 21%
35-44	S = 34.1 N = 39.3	S = 25.4 N = 21.8	S = 30.1 N = 36.1	S = 10.4 N = 2.8	100	S = 173 N = 76, 556	31.5% 33.5%
45-54	S = 18.7 N = 26.7	S = 24 N = 25.1	S = 46.9 N = 45	S = 10.4 N = 3.1	100	S = 241 N = 68,304	43.9% 30%
55+	S = 13.2 N = 33.3	S = 29.4 N = 23.8	S = 42.6 N = 40.8	S = 14.7 N = 2.1	100	S = 68 N = 26,899	12.4% 11.8%
Total %	S = 22.6 N = 31.7	S = 24.4 N = 22	S = 41.7 N = 43.4	S = 11.3 N = 2.9	100	S = 549 N = 228,230	100% 100%

Legend = S = this study sample

N = national sample

The national sample did not collect information on years in profession and qualifications so comparisons were only made with other studies.

1.3 Demographics - comparison of other studies with this study

1.3.1. Years in profession

Nurses and midwives in this sample had an average of 22 years' experience. This is comparable to Laschinger et al's (2001b) study which showed nurse managers had an average of 25 years and Cohen-Katz et al's (2005) study on nurse stress and burnout who had an average of 21 years of experience. For this project, those nurses working in accident and emergency were found to have spent the most years in the profession compared with all other areas of practice (Appendix 14). No other studies investigated years in profession in relation to the predominant areas of practice. Those nurses and midwives who were older in this study had spent more years in the profession, indicating that the older nurses and midwives were more likely to be experienced. Kent and Lavery (2007) found the same results in a nurse sample in Victoria; that older nurses had spent more years in practice.

1.3.2. Qualifications

Forty-seven per cent of this study sample of nurses and midwives holding a degree or higher was comparable with Morrow, McElroy and Elliott's (1994) sample of hospital nurses (48.8%) with the same qualifications. The majority (73%) of Laschinger et al's (2006) sample of nurse managers also held a degree, the percentage being much higher as the study specifically focused on managers rather than clinicians. The majority (62%) of all nurses in Cohen-Katz et al's (2005) study on hospital stress also held a degree.

2. Stress, burnout and individual responses

The conceptual framework linking stress, burnout and individual responses will now be explored in further detail. Themes, categories and subscales relate directly to the conceptual framework developed for this study (see Chapter 3, Table 14). Themes include stress, burnout and individual responses and categories include occupational

stress, stress leading to ill health, job compatibility, prolonged exposure to stress and work behaviours such as self-imposed work pressure and motivation. As presented in Chapters 3 and 4, the five main subscales are work environment, psychosocial effects of stress, job satisfaction, exhaustion, and pressure and motivation. This conceptual framework relates to the three major work theories. The three major work theories include the Effort-Reward Imbalance (Vroom, 1964), Karasek's (1979) Demand-Control Model and the Person-Fit Theory (Mansfield et al., 1989) (Chapter 2, section 2). Table 93 displays a representation of how the themes, categories and subscales are linked within this conceptual framework.

Table 93 Work Theories Relationship with Conceptual Framework for Stress, Burnout and Individual Responses Developed for Current Project

Work Theory	Theme	Category	Subscale
Karasek's* Demand-Control Theory Person-Fit Theory	Stress	Occupational stress	Work environment
Karasek's* Demand-Control Theory Person-Fit Theory	Stress	Stress leading to ill health	Psychosocial effects
Person-Fit Theory	Stress	Job compatibility	Job satisfaction
Vroom's ^ Motivational / Expectancy Theory or Effort / Reward Theory Karasek's* Demand-Control Theory Person-Fit Theory	Burnout	Prolonged exposure to stress	Exhaustion
Vroom's ^ Motivational / Expectancy Theory or Effort / Reward Theory	Individual Responses	Work behaviours such as self-imposed work pressure and motivation	Pressure and motivation

* (1979) ^ (1964)

2.1. Factors linked with stress

For this study, the factors linked with stress related to the work environment, psychosocial effects and job dissatisfaction. Stress related to the work environment included time pressures and insufficient organisational support. Psychosocial effects of stress related to physical and emotional ailments, which were the most dominant factors relating to stress. Even though these nurses and midwives were stressed, it was evident that they enjoyed their work and this enjoyment was possibly one of the reasons why they had not left their profession.

As previously defined, for the purpose of this study stress is:

an inability to control the work environment which leads to considerable pressure and job dissatisfaction amongst working team members. This might contribute to feelings of unease at the initial episode of stress and involve an array of symptoms characteristic of ill health over a prolonged period of time in the helping professions.

Overall, the majority (59%) of nurses and midwives in this sample reported moderate levels of stress. McGrath, Reid and Boore (2003) also found that the majority of their sample of nurses reported moderate to high levels of stress resulting from insufficient time to perform tasks to their satisfaction.

Very few (4%) nurses and midwives in this study reported high levels of stress. Considering anecdotal reports by nurses and midwives about high levels of stress, this is a surprising finding. Wheeler and Riding (1994) and Ryan and Quayle (1999) also came to the same conclusions that few of their nurses reported their job as extremely stressful which would suggest that they, also, are not experiencing high levels of stress.

2.1.1. Work environment

Nurses and midwives face numerous challenges within the work environment which affects their work lives. Few studies have specifically examined nurses' and midwives' work environments. Beaudoin and Edgar (2003) and Chang et al. (2005) recommend studying various aspects of these environments. Many aspects of stress in the work environment relate to the work theory of demand and control which is Karasek's (1979) Demand-Control Model. If demands on an individual are excessive, this seems to place their environment out of control and an individual loses the ability to control or cope with the situation. The environment in the healthcare system incorporates a range of work-related hazards, including frequent patient transfer and nurses interacting with varied healthcare providers (Stringer, 2001). Processes within

the healthcare system could perhaps be streamlined to reduce these occupational hazards in recognition of the stress associated with inefficient or less than optimum processes.

Karasek's (1979) Demand-Control Model shows that job demands are expected and present within the work environment. These stressors consist of: how hard and how fast one performs tasks, the chaotic nature of the work, whether there is sufficient time to perform tasks, time pressure deadlines, amount of work, level of concentration, conflicting demands and frequency of work interruptions. All of these factors can be found in large measures in nursing and midwifery workplaces. Karasek's (1979) findings and the current study would support the importance of understanding the inter-relationships of the various work demands in the healthcare workplace.

Results of this and other similar studies could help develop quality work environments on which retention of nurses and midwives in the profession depend. It is imperative to construct a working environment promoting the health of nurses and midwives. As results of this study from the work environment related to time pressures (for example, due to excessive workloads), this information informs the profession to target these areas. In conjunction with developing quality work environments and ensuring safe and working equipment, moderating workloads is necessary to retain the existing workforce. The NSW Nurses Association (2007a) has already initiated a workloads breakthrough for nurses in emergency departments, community health and mental health. This allows nurses' input into workload assessment and provides them with the power to address these workload issues. With ongoing liaison, dialogue and contact between all interested parties, be that policy makers, senior management and clinical nurses and midwives, these breakthroughs can hopefully infiltrate into other areas of nursing and midwifery. Monitoring and evaluating the effects of these new 'workload' arrangements is not only essential in order to document any positive consequences, but, should any positive effects be able to be documented and well communicated throughout the relevant health services, this will also facilitate implementing such workload strategies throughout the nursing profession.

The work environment also relates to, and overlaps somewhat with, the Person-Fit Theory. The literature review identified that if excessive demands are continuous stress levels gradually increase and might indicate a poor fit between an individual's abilities and their work environment. The literature also found that inappropriate and heavy workloads and low levels of control over work lead to emotional exhaustion and stress is a result of friction between the environment and the individual. In contrast, if personal expectations and work environment conditions fit together, nurses can engage with their work and work effectively. The results of this nurse and midwife study support the findings of these other studies.

As the majority (76%) of this study's respondents experienced moderate stress levels related to the work environment (this being different from overall (59%) stress levels, which includes work environment, see Chapter 4, section 1.2.1.), there is a need for nurses and midwives to work closely with policy makers and managers so that an attempt to improve their working environments can be prioritised. This involves constant discussions and regular meetings with nurses and midwives working in clinical areas so that problems pertaining to the work environment can be identified. Other studies have identified that environmental work-related and social issues such as organisational, interdepartmental relations and nurse / client relations are the most frequent stressors and nurses' experience of stress were related to the social environment where they worked. As suggested by this study and these other previous studies, -it is imperative to construct a working environment promoting the health of nurses and midwives.

This stress and burnout questionnaire for nurses and midwives addressed not only the perceived severity of stressful events in the work environment but the frequency of these events. The fact that no nurse or midwife answered 'never' to the question, 'In your work environment, how often have you experienced stress?', indicates that their work environments always have an element of stress or that they anticipated a certain level of stress associated with their work environment. According to the results of this particular question, the majority (65.1%) of this sample of nurses and midwives reported that they frequently or more often encountered stress in their work

environment. It is well recognised in the stress literature that nurses' work environments are stressful (Humpel & Caputi, 2001).

For most of this sample stress is intermittent, as only a small proportion (1.3%) of nurses and midwives in this sample stated that they always encounter stress. It is essential for managers to identify and work with nurses and midwives who are continually encountering stress and this might simply mean assessment by face-to-face interaction in the clinical areas. Nurses and midwives, then, might at least feel that their stress is being addressed in the workplace. Similarly, nurses and midwives in the clinical areas need to be outspoken and alert their managers if their stress levels are becoming unmanageable before they reach the stage of burnout. When health professionals experience stress, it is usually accompanied by coping efforts to overcome sources of stress, in an attempt by the person to regain a stable level of productivity. If demands are continuous, the stressed nurse or midwife could be susceptible to burnout. Bailey (1985) found that continuous environmental demands being placed upon nurses at any time eventually lead to burnout.

Inefficient time management (for example, due to excessive workloads), was a double-barrelled question and it was difficult to ascertain whether the issue was time management or excessive workload. Despite this shortcoming, the majority (69.7%) of nurses and midwives in this sample reported that they were frequently or more often dealing with inefficient time management (for example, due to excessive workloads). If workloads are excessive, nurses and midwives will be continually dealing with inefficient time management. The literature urges the profession to review various aspects of the work environment that will in turn reduce stress, affect job satisfaction and influence quality care. Work overload and all its implications is a primary factor for nurses leaving their profession (Chang et al., 2005).

Job design and workload should be rescheduled in novel ways so that work pressures are reduced for nurses and midwives (Stordeur, D'Hoore & Vandenberghe, 2003). Nurses' and midwives' workloads could be managed effectively so that they work as a team. This means addressing staff issues by looking at the skill mixes of those particular nurses and midwives working on the same shift. There needs to be a

balance of all skill mixes on all shifts so that junior nurses and midwives have some form of leadership so that they can function effectively and feel competent with their assigned workload. If some shifts are staffed with all junior nurses and midwives, they might be dealing with situations with which they cannot cope, as they do not have the experience, and they therefore become stressed. If other shifts are staffed with all senior nurses and midwives, their experience is not being utilised effectively and their leadership skills and experience are being wasted. More senior and experienced nurses and midwives need to consider the ‘big picture’ and not only ‘look after their own welfare’. It is the responsibility of nurses and midwives working in the clinical areas when they are self-rostering that they take their own experience into consideration and roster themselves accordingly, to reduce the possibility of workplace stress.

Commissioner Garling (The Garling Inquiry) is currently recommending an action plan to provide training and mentoring to younger nurses with more senior staff. The healthcare system will see a changing role for Nursing Unit Managers in the future. The key objectives are to decrease paper workloads and free up senior nurses such as nursing unit managers to provide more clinical support and nurse leadership where they are needed. Garling (Nurses Association NSW, 2008k) also addresses better team-based education in the recommendations to increase power and responsibility for nurses and midwives and evidence-based nursing practice.

Nurses and midwives can also distribute workloads more effectively on each particular shift. For example, especially if staffing levels are low or inadequate, nurses and midwives can address patient acuity, not just patient numbers and allocate accordingly. Nurses and midwives as part of their labour-intensive role and responsibility, are expected to deal with people’s emotions about what is happening to their bodies, as opposed to what is happening with their material possessions such as their car being serviced. Due to the nature of this work, nurses and midwives expect and require quality time with patients to allow patients to digest information about their own health and well-being. Nurses and midwives often act as counsellors for their patients so that the patient can debrief about their health experience. If as the majority of this study has reported, there is insufficient time to allow for this

interaction and healing process to occur, nurses and midwives are likely to consider their work futile and of little value, both for their clients and themselves.

There might be other reasons why the majority (69.7%) of this sample of nurses and midwives are frequently or more often reporting inefficient time management. It is unknown whether these respondents' inefficient time management was due, for example, to having not been educated adequately to do their work effectively with their workload or other stressors in their personal and family lives. This was not investigated as part of this research; however this study suggests that inefficient time management is most likely due to excessive workloads. Initial and subsequent educational programs could include strategies for multi-tasking, setting priorities and fostering team support. Importantly, however, previous research (Cohen-Katz et al., 2005; Goodfellow et al., 1997) has shown that family support buffers stress, meaning that those nurses who have support from family at home were less likely to be stressed in their work environment.

Rushing to complete tasks was also identified by three-quarters of respondents as contributing to stress in the work environment. If there are too many tasks in nurses' and midwives' working environments, one could correctly surmise that these tasks are then rushed and the quality of care is diminished, leading to poor job satisfaction. Other studies such as Barling's (2001) highlights stressors related to the work environment for mental health nurses included having so much to do that everything could not be done well; completion of too much paper work; insufficient staff and knowing patient care was being sacrificed due to insufficient staff numbers. As noted earlier, nurses and midwives could feel that they own the 'problem' because they feel responsible for completing the work on their shift due to insufficient staff or peer pressure to do so.

The fact that three-quarters of this sample of nurses and midwives reported that they frequently or more often rushed to complete tasks might indicate time pressures and expected deadlines with which they were working. The literature identified that time pressures were also considered to be extensive and insufficient time impinged on nurses' work practices. The lack of adequate staff means that they are working longer

hours than they planned. Job demands are psychological stressors in work environments (Laschinger et al., 2001a).

The reason for many nurses and midwives rushing to complete tasks could be reduced staffing levels resulting in an increased pace of work (Billeter-Koponen & Freden, 2005). The majority (60.9%) of nurses and midwives in this study reported that they frequently or more often finished work late, suggesting lack of staffing to cope with excessive workloads or lack of training in working effectively resulting in further disorganisation in the workplace. Data from this study confirm other studies' findings that nurses working overtime is likely to occur in excessive workload situations (Morgan et al., 2002; Stordeur, D'Hoore & Vandenberghe; Van der Hulst & Geurts, 2001). It is believed that those nurses and midwives who remain in the system will continue to work short-staffed (Bergen & Fisher, 2003).

It is unknown whether the majority (60.9%) of this study of nurses and midwives indicated that they were frequently or more often finishing work late because of their own expectations. They might also have been finishing late so that they could physically accomplish their work tasks or counselling of clients. They might also have been inadequately educated and prepared to deal with their existing tasks in the workplace. Billeter-Koponen and Freden (2005) showed that nurses in their study felt that it was an expectation from management that nurses automatically take on more work without extra payment. Nurses reported they often did overtime to attend to medical tasks, patients' relatives and documentation for continuous care. They felt stressed because there was an expectation that they would finish work on time even though they perceived they were working understaffed.

Excessive workloads are a major concern for both nurses and midwives. There are reports that nurses and midwives work through meal breaks and incur unpaid overtime to complete their workloads (Barrett & Yates, 2002). For this study, it is also unknown whether these extra hours were paid or unpaid but finishing work late has a connotation of unpaid work whereas overtime is usually regarded as paid work. These unknown issues could possibly be addressed by adding 'beyond paid hours' onto the

already existing question ‘At work, how often do you finish late?’ or exploring these concepts for future research.

Half (49.7%) of this sample of nurses and midwives reported never or occasionally having organisational support indicating that these nurses and midwives are probably dissatisfied with this lack of support from management. Organisational support might include support from supervisors or managers in the organisation; other nurses and midwives might find organisational support includes peers and other professional colleagues. There is evidence suggesting that there is lack of organisational support for nurses and midwives (Barling, 2001; Curtis, Ball & Kirkham, 2006b; Fagin et al., 1995; Gillespie & Melby, 2003; Severinsson, 2003). Feeling encouragement and support from supervisors is imperative for motivating nurses to stay in their profession (Olofsson, Bengtsson & Brink, 2003). Nurses and midwives working in a hospital environment might rarely have contact with management and when they do it might be in the context of a meeting which is significantly different from working alongside colleagues on a daily basis. This reinforces the need for managers to communicate with clinical nurses and midwives on a face-to-face daily basis.

However, this study also found that half (50.3%) of this sample reported that they were frequently or more often supported by the organisation in which they worked. Barrett and Yates’ (2002) respondents were also satisfied with organisational, professional support. Similarly, Laschinger et al’s (2006b) study found that nurse managers reported receiving moderate levels of organisational support. It is possible that nursing unit managers are also better equipped than colleagues when providing higher levels of support for clinical nurses and midwives with stressful situations, perhaps because of more education or experience.

In summary, the factors linked with stress which related to the work environment for this study included frequency of stress, inefficient time management, rushing to complete tasks, finishing work late and inadequate organisational support. The majority (76%) of this study’s respondents experienced moderate levels of stress related to the work environment. For this study then, stress relating to the work environment was a major concern. It involved mainly dealing with time constraints

and pressures as well as lack of organisational support. In line with Karasek's (1979) Demand-Control Model, if there is insufficient time and conflicting demands in the workplace, there is an imbalance between an individual's available time and workplace demands made on that particular individual, leading to work environment stress. Work environments for nurses and midwives could be prioritised as an area on which to work to alleviate some of these problems, whether by way of continual assessment of stress in the workplace or continuous efforts by nurses and midwives in clinical areas to prioritise workloads, assess patient acuity, support each other and work as a team.

2.1.2. Psychosocial effects of stress

This study's results have identified that two-fifths of nurses and midwives are experiencing moderate psychosocial effects of stress. Psychosocial effects was the most dominant factor relating to stress. Like the work environment subscale, psychosocial effects of stress are a result of disharmony within discrete elements of each of the two work theories, Karasek's (1979) Demand-Control Model and the Person-Fit Theory (Mansfield et al., 1989). The Demand-Control Model theorises that lack of autonomy and involvement in decision-making, combined with stressors or workload, leads to ill health and psychological strain (Karasek, 1979). The Person-Fit Theory shows that a mismatch between a person and the environment in which they work leads to dissatisfaction and job stress (Mansfield et al., 1989). Psychosocial effects of stress include anxiety, disturbed sleep patterns, constant headaches and muscular and back pains (Singh, 2002). Persistent stress places people at risk of developing poor health.

Nurses and midwives are vulnerable to traumatic workplace stress which involves experiencing extreme emotional and physical anxiety (Bergen & Fisher, 2003). Almost a third (30.2%) of this study's respondents reported that they had experienced increased anxiety in relation to work over the past year, possibly due to unhealthy levels. If nurses and midwives are able to discuss confidential and sensitive issues with managers or supervisors, this might prevent further anxiety (Edwards et al., 2006). Wong, Leung and So (2001) investigated mental health issues in Chinese nurses working in Hong Kong and found that anxiety was the second most reported

complaint. Mental health criteria included the presence or absence of psychological and somatic symptoms of anxiety, life dissatisfaction and unhappiness. Assessment of anxiety and stress in the workplace is warranted. For example, if nurses and midwives are encouraged to take (and offer) the opportunity to debrief with their colleagues or manager following each shift, anxiety levels might decline. Nurses and midwives are often dealing with life and death critical incidents with patients, the effects of which could be ameliorated by collegial or management support.

Over a quarter (25.9%) of this sample of nurses and midwives reported that they experienced sleeplessness at least once or twice a week; however, the majority (63%) of nurses and midwives reported nil to occasional sleeplessness. Data from this study confirms Sherer's (1993) findings that nearly one out of four nurses experience sleeplessness. The difficulty is establishing who in the workplace is experiencing sleeplessness, which reinforces the need for continual assessment of psychosocial ailments, possibly by way of assessment tools, questionnaires or by simply engaging in informed dialogue with peers as a routine practice.

This study found that 15.5 per cent of nurses and midwives experienced depression at times in relation to work over the past year. This is not an unexpected finding, considering the type of work with which nurses and midwives are involved, often dealing with grief, counselling and sometimes death. Depression as a psychological effect on individuals has been associated with excessive demands of stress that might evolve from environmental stress triggers (Delvaux, Razavi & Farvacques, 1988; Gunlicks & Weissman, 2008; Penson et al., 2000; Rada & Johnson-Leong, 2004).

The majority (67.2%) of nurses and midwives in this sample stated that the length of time they experienced depression at one time in relation to work was either never or for one day. This study found that the majority (63.9%) reported experiencing depression related to work never or occasionally. For this sample of nurses and midwives, depression did not seem to be particularly prevalent as a psychosocial effect of stress. Nurses in Wong, Leung and So's (2001) study also exhibited only a few depressive symptoms. Several nurses in McKenna et al's (2003) study

experienced depression as a psychological consequence in their first year of nursing practice.

Almost two-fifths (38.5%) of nurses and midwives in this study reported experiencing headaches requiring analgesia once or more times a week. It is unknown for this study whether these headaches are a direct result from work stress or other causes but headaches are generally reported as symptoms of stress (Bergen & Fisher, 2003; Cohen-Katz et al. 2005; Ekstedt & Fagerberg, 2005, Jamal & Baba, 2000; Rada & Johnson-Leong, 2004; Sherer, 1993). The Australian Council of Trade Unions (1997) study also found the majority of their respondents reported sometimes or frequently experiencing headaches related to stress at work.

The majority (69%) of this study's respondents reported experiencing stress requiring treatment at least once every six months or more, with over two-fifths (42.9%) at least once a month or more. It is not an unexpected finding that the majority of nurses and midwives would be having some type of treatment as this might only be taking panadol for a headache. However, for 15 per cent of nurses and midwives reporting treatment for stress at least once a week or more, this is more of a concern, especially when they are providing care for patients who are either ill or require counselling. Again, this reinforces the need for continual assessment of stress in the workplace.

People who are experiencing stress at work are more liable to take a day off or call in sick (Westman & Etzion, 2001). "Mental health" leave conjures images of psychological reasons for absenteeism as opposed to physical symptoms. To reinforce the problem of taking "mental health" leave, almost half (45.2%) of this study of nurses and midwives indicated that they took at least one day off for this reason over the past year, with a small percentage (2.5%) taking leave of absence 11 to 100 times over the past year. These results suggest that this small percentage (2.5%) of nurses and midwives see themselves as dealing with serious psychosocial issues and stress and perhaps already experiencing burnout. Reinforcing this study's results, nurses in Ekstedt and Fagerberg's (2005) study had taken more than three months' sick leave due to unspecified maladjustment disorder as a result of experiencing high levels of burnout. The Australian Council of Trade Unions (1997) survey also found that over a

quarter of employees took stress leave over the past year (number of times not stated). Employers have started to recognise that employee health initiatives alleviate sickness absence often caused by preventable illness and inflexible working hours (Harris, 2001). Better, more flexible working hours could be considered, for example part-time and job-sharing hours. Physical stretching and breathing exercises at the commencement of each nurses' and midwives' shift could be of benefit to prepare staff members mentally and physically for their day ahead.

This questionnaire also enquired about frequency of sick leave when the nurse or midwife felt unwell as opposed to "mental health" leave. The majority (74.2%) of nurses and midwives in this study stated that they never or occasionally reported sick if unwell (Appendix 9, Table 10), suggesting that they are going to work even when they are feeling unwell. Baldwin (1999) also found that nurses did not take care of themselves and did not take sufficient time off when sick. They often attended work even though they were unwell. Absenteeism was also not apparent in McGrath, Reid and Boore's (2003) study, showing that three days off within a six month period was the average. It is worrying that nurses and midwives seem to not care for themselves appropriately when they are ill, especially (as stated previously) when they are providing care for patients who are ill. Nurses and midwives need to be continually reminded about the risk of working when ill, not only for themselves but for others who come into contact with them.

It is imperative to focus on factors associated with mental breakdowns such as helplessness and hopelessness (Severinsson, 2003). This study found that almost half (45.5%) never or occasionally reported experiencing feelings of helplessness in their work environment. Over a quarter (25.8%) of this study's respondents reported experiencing feelings of helplessness at least once over the past few months, which is not an unusual finding. In contrast, midwives in Mackin and Sinclair's (1998) study provided examples of feeling helpless and unable to change the course of events affecting women in labour. Midwives were frustrated when unable to change a poor outcome created by medical colleagues. This was evident, for example, when registrars were pushing women to continue labour when the midwife felt that an emergency Caesarean should have occurred at that time.

In summary, factors linked with stress which related to psychosocial effects for this study included experiencing anxiety, sleeplessness, depression, headaches requiring analgesia, stress requiring treatment, taking “mental health” leave and feeling helpless. The majority (56%) of nurses and midwives experienced minimal psychosocial effects of stress, however, two-fifths (40%) experienced moderate effects. The fact that two-fifths of this study’s respondents are experiencing moderate psychosocial effects of stress alerts the profession as to the magnitude of the situation. Involving nurses and midwives in decision-making and increasing their autonomy could help prevent psychosocial effects of stress (Karasek, 1979). Physical ailments predominate these psychosocial effects and result in nurses and midwives resorting to taking special leave to overcome these effects of helplessness. If nurses and midwives could be encouraged to work in areas of their choice and to believe they can function most effectively and efficiently, psychosocial effects of stress could be reduced (Mansfield et al., 1989).

2.1.3. Job satisfaction

Job satisfaction aligns with the Person-Fit Theory which suggests that tension arising from a mismatch between an individual nurse and the workplace is likely to result in job stress and job dissatisfaction (Mansfield et al., 1989). Mansfield et al.’s (1989) Job Content Index gives guidelines for nurses selecting different clinical areas. Mansfield et al. (1989) contend that nurse administrators might be able to obtain more satisfying and stable job placements by referring to the Job Content Index. Mansfield et al. (1989) suggest this strategy coupled with appropriate rewards and adequate staffing should result in lower stress, better morale and reduced staff turnover.

The overall level of job satisfaction for this sample of nurses and midwives identified that the majority (96%) showed moderate to high satisfaction levels and only a small percentage (4%) were dissatisfied in their job. Generally, the nurses and midwives in this study were satisfied with their work. The majority (57.6%) of nurses and midwives reported that they experienced job dissatisfaction at least once a month. Job dissatisfaction is one of the leading causes of nurses leaving the profession (Edwards & Burnard, 2003); however for this study this level of dissatisfaction was not

apparent. Other studies have expressed positive job satisfaction (Billeter-Koponen & Freden, 2005; Wheeler & Riding, 1994).

This study suggests that even though a large number of nurses and midwives experienced stress, they seem to be content with their work. The findings that nurses and midwives are dealing with moderate effects of stress and burnout do not reflect as job dissatisfaction, but as stress related to the work environment, psychosocial effects and exhaustion contributing to burnout. Similarly, Barrett and Yates (2002) found that while oncology / haematology nurses in their study demonstrated high emotional exhaustion levels, paradoxically many nurses obtained high levels of personal accomplishment as a result of their work. It might also imply that nurses have developed coping strategies to deal with stressful situations, which includes talking to other colleagues (Wong, Leung & So, 2001).

The overwhelming majority (96%) of this study's respondents stated that they frequently or more often thought they were suited to their work. This could be an explanation as to why the majority (96%) of this study's respondents are satisfied in their work. Stress-related conditions might be warning signs that there is a mismatch between certain individuals and their jobs (Toohey, 1996). This runs parallel with the Person-Fit Theory in that the better the match between an individual's needs and environmental attributes, the more likely the potential for an individual's satisfaction and performance (Furnham, 1992). This highlights the need for education and training as less hardy nurses might then be directed towards less stressful environments (Flowers, 2004).

The vast majority (94.8%) of this study of nurses and midwives stated that they frequently or more often enjoyed their work. The inference that can be drawn from this is that, even though they are experiencing moderate levels of stress and burnout, they remain in the profession as they basically enjoy their work. Running parallel with these results, the NSW Health Ministerial Standing Committee Report (2002-2003) on nurses' practice identified that the top reason which keeps nurses in nursing was job satisfaction and enjoying the work. These responses indicate that if nurses and midwives self-assess as being suited to their work they might also enjoy their work.

McGrath, Reid and Boore (2003) found that although nurses generally felt positive towards nursing, they self-report as experiencing extensive work-related stress. Pinikahana and Happell (2004) also found that, despite significant levels of stress and burnout in rural psychiatric Victorian nurses, the majority were satisfied with their current work situation. The NSW Nurses Association (2008l) has recently presented a submission which identifies nurses remaining in the profession because of rewards gained from their caring professional work, although this might not be enough to retain nurses in the workforce over the long term.

Changing the area of practice has been seen as a specific solution to stress and this has been evident in previous research (McGrath, Reid & Boore, 2003). This study was unable to ascertain whether nurses or midwives did change their area of practice, as the questionnaire asked whether the nurse or midwife would have liked to change their area of practice. Further research could include questions aimed at obtaining information relating to whether nurses and midwives have changed their area of practice, and reasons for such changes. This study found that over a tenth (10.4%) did want to change their area of practice with nearly two-fifths (37.6%) sometimes wanting to change. Other nurse studies found similar results (McGrath, Reid & Boore, 2003; McKenna et al., 2003; Pinikahana & Happell, 2004). Wanting to change the area of practice could be seen either as time for a new change, a sign of boredom or wanting a new challenge, or as an outcome of job dissatisfaction.

The majority (55.2%) of this study's respondents did not want to leave their professional discipline. This reinforces the view that, even though the nurses and midwives in this study seem to be dealing with stress issues, they are content in their workplace and / or professional choices. They perhaps are comfortable in their profession and to leave might result in untenable financial consequences. They might have also become accustomed to the stress and burnout that they are experiencing, thinking that it is the 'norm' and are oblivious to their situation. Similarly, the majority of nurses in Pinikahana and Happell's (2004) study indicated that they do not often think about searching for another nursing job or an occupation outside nursing. If nurses and midwives do not cope with stress and burnout, they might leave the profession entirely (Maslach & Jackson, 1981).

Only a small proportion (7.6%) of this study's respondents wanted to leave the professional discipline. So, even though almost half (48%) of this sample of nurses and midwives at least sometimes did want to change their area of practice, the majority (55.2%) did not want to actually leave their professional discipline, indicating that they might need to change their own area of nursing or midwifery, rather than leave the profession entirely. Alternatively, midwives in Curtis, Ball and Kirkham's (2006a) study described the absence of autonomy, support and flexibility in their work which influenced these midwives to leave the profession. Ames et al's (2004) study with perfusionists found that those experiencing higher burnout levels had a greater intention to leave their job within a six month period.

Over a third (33.6%) of this study's respondents had at some time (no time frame stated) considered leaving the profession, implying a certain amount of job dissatisfaction, paralleling other studies (McGrath, Reid & Boore, 2003; McKenna et al., 2003; Oloffson, Bengtsson & Brink, 2003). Improving working conditions for nurses and midwives might not only reduce stress levels but might also encourage nurses and midwives to stay in the profession (Healy & McKay, 2000). This could include better pay rates, flexible working hours and self-rostering.

Even though a large majority (94.8%) of these nurses and midwives frequently or more often enjoyed their work, a third of them considered leaving. It is evident from these results that nurses and midwives enjoying their work is not enough to prevent them from thinking about leaving the profession entirely. Based on these findings, the data support the forecast of mass departures of nurses and midwives from the workforce over the next ten to 20 years (Goodin, 2003). Even though Hall's (2001) New Zealand sample of nurses enjoyed their work, they also felt powerless within the management system. Other measures are required to address stress levels, whether that be at ward level, as better communication between managers and clinical nurses, or better support for currently practising registered nurses and midwives in the field. Further exploratory, qualitative research could pursue this factor.

The factors linked with stress which relate to job dissatisfaction for this study include not enjoying and not being suited to the work, wanting to change the area of practice

and wanting to leave the professional discipline. This study has confirmed that the nurses and midwives have stayed in their profession as they enjoy their work. The majority (96%) of the respondents scored moderate to high levels of job satisfaction, even though they are dealing with moderate levels of stress and burnout. Appropriate rewards and adequate staffing should result in lower stress, better morale and reduced staff turnover (Mansfield et al. 1989). Autonomy, support and flexibility in the workplace could influence job satisfaction and prevent further nurses and midwives leaving the profession (Curtis, Ball & Kirkham, 2006a).

Family-friendly working environments and increased control over working hours could prevent nurses and midwives exiting the profession. Shift patterns and difficult working hours could be key factors in nurses' and midwives' decisions to leave the profession (Curtis, Ball & Kirkham, 2000b). Better communication between administrative, senior staff and clinical nurses and better support for currently practising registered nurses and midwives in the field could enhance job satisfaction. This would involve education and training as part of the profession's routine practice. Additionally, as noted earlier, continual assessment of stress and levels of job satisfaction in the workplace still needs to be developed and refined.

2.2. Factors linked with burnout

For this study, factors linked with burnout related to exhaustion. Exhaustion relates to low morale, feeling powerless, incompetent, emotionally drained and loss of empathy for colleagues and clients. As previously defined, for the purposes of this study burnout is:

an emotional state experienced over a prolonged period of time by those in the helping professions resulting in feelings of powerlessness and being emotionally exhausted and overwhelmed. This contributes to lack of empathy towards colleagues and clients and feelings of incompetence and lack of achievement in one's work with people.

Overall, slightly over half (54%) of this sample of nurses and midwives scored moderate burnout levels with over two-fifths (44%) scoring low burnout, and a small

percentage (2%) experiencing high burnout. The literature review noted similar conclusions.

2.2.1. Exhaustion

The three major work theories describe issues associated with exhaustion and thus burnout. The Effort-Reward Theory describes increased efforts and low rewards leading to stress responses in vulnerable people (Heine, 2006). The Demand-Control Theory suggests that if the individual cannot overcome the stressors, unresolved tension and psychological strain can occur. Karasek (1979) linked this with burnout. Jamal and Baba (2000) conceptualise the Person-Fit Theory as an individual's reaction to a perceived threatening work environment. This portrays a poor fit between the work environment and the individual's abilities, in which extreme workplace demands are made, with which the individual has difficulty coping.

Exhaustion paralleling burnout can prompt individuals to distance themselves cognitively and emotionally from their work, presumably as a coping mechanism to deal with excessive workloads (Maslach, Schaufeli & Leiter, 2001). A characterising aspect of exhaustion is a significantly reduced energy level. Individuals might alienate themselves and withdraw from work activities (Randolph et al., 1986). The results on the following variables related to exhaustion introduce clues for consideration, discussion and future research.

Apathy can result from burnout and would be evident in nurses' and midwives' work performance. Apathy might accompany depersonalisation, also a component of burnout. An unsympathetic and uncaring attitude might predominate in their demeanour. Nurses and midwives are likely to distance themselves from their clients and treat them as objects rather than as fellow humans (Maslach, 1986). This study of nurses and midwives found that generally over a fifth (21%) reported at least frequently or more often feeling apathetic when stressed. It was unclear whether the apathy was linked to work or non-work situations. Randolph, Price and Collins (1986) mention a common nursing stressor as apathetic, incompetent staff, so, as well as apathy being a result of stress, nurses and midwives might find others who are apathetic quite stressful. There were no other studies assessing apathy specifically;

however apathy could be interpreted as being a component of depersonalisation and closely linked to burnout (Maslach, 1986).

Low morale relates to the third component of Maslach's (1986) definition of burnout: feelings of reduced personal accomplishment. Morale has a significant influence on coping with stress (Jonsson & Segesten, 2004). This study found that nearly a third (32.7%) indicated that they frequently or more often experienced low morale in relation to work. These results suggest that these particular nurses and midwives are not working to their full capacity if they are not feeling fulfilled in their work. Other studies also identified low morale as a particular stressor and reinforce the notion that people with high self-esteem are more likely to deal with stressors more confidently (Buus-Franc, 2002; Jenkins, 1996; Jonsson & Segesten, 2004; Olofsson, Bengtsson & Brink, 2003). Nurses and midwives can be rewarded and praised by their managers and colleagues for good work to enhance morale and camaraderie.

Over two-fifths (44%) of this study's respondents reported frequently or more often feeling undervalued in their work. Perhaps these nurses value themselves, but feel undervalued by their colleagues and workplace. Hall (2001), Taylor and Barling (2004) and Laschinger and Finegan (2005) all found that nurses and mental health nurses felt undervalued in their work. Feeling undervalued also relates to the third component of Maslach's (1986) definition of burnout: feelings of reduced personal accomplishment. Laschinger and Finegan (2005) found that empowering workplaces resulted in greater recognition and rewards for contributions made by staff. This could be made possible by nurses and midwives instigating a reward system in their workplace, for example, the worker of the month, so that staff in some respect feel that their work is being recognised and valued.

Feeling overwhelmed also relates to the first component of Maslach's (1986) definition of burnout: emotional exhaustion. Slightly less than a third (31%) of nurses and midwives in this study stated that they frequently or more often felt overwhelmed. Future qualitative research could pursue the reasons for their feeling overwhelmed; however other aspects of this research point to some reasons why feeling overwhelmed might escalate into feeling emotionally drained and create a sense of

low self-esteem. Barrett and Yates (2002) also found that their oncology / haematology nurses felt like they were ‘at the end of their rope’ at least once a week. This was a variable used on the Maslach Burnout Inventory identifying emotional exhaustion and burnout.

Feeling incompetent, reduced personal accomplishment and low morale are closely linked with burnout (Maslach, 1986). As the nature of nursing is demanding, it is crucial that nurses feel competent in their clinical accomplishments (Boey, 1998). This study found that the majority (78.4%) of respondents indicated that they never or occasionally felt incompetent within themselves when working with other people. This might be due to the fact that the older nurses and midwives in this study identify being less stressed, so they probably have been working in the profession for many years and therefore were experienced and unlikely to feel incompetent. Similarly, Happell, Martin and Pinikahana (2003) found that the majority of their sample of mental health nurses scored feelings of high personal accomplishment. Contrary to these results, McGrath, Reid and Boore (2003) found that the vast majority of their nursing sample was identifying low personal accomplishment related to burnout.

This project found that nearly two-thirds (59.6%) of nurses and midwives stated that they felt emotionally drained at work at least once a week. This implies regular occurrences of intense emotional fatigue for these nurses and midwives, indicative of burnout. In comparison, Barrett and Yates (2002) found that over a third (39%) of their sample of oncology / haematology nurses felt emotionally drained in their work at least once a week. Similarly, Fagin et al. (1995) and Payne (2001) found that their community and psychiatric ward and hospice nurses experienced high emotional exhaustion levels related to burnout. As nurses and midwives are often dealing with sickness and death, feeling emotionally drained is not an uncommon or unexpected finding. Emergency episodes and unexpected outcomes such as unexplained neonatal deaths could also account for nurses and midwives feeling emotionally drained, contributing to burnout.

This study found that over a third (34.9%) of nurses and midwives indicated that they frequently or more often felt powerless in their work as a factor linked with burnout.

Nearly two-fifths (38.3%) also never or occasionally felt as though they had control over their work, suggesting lack of choice or autonomy in their working conditions and reinforcing feelings of powerlessness. Similarly, McGrath, Reid and Boore's (2003) respondents also felt powerless to make decisions and unable to change unsatisfactory conditions. Lazarus and Folkman (1984) theorised about developing problem-focused strategies by examining the problem in the environment. They identified internal and environmental demands which can tax a person's resources, endangering their well-being. If nurses and midwives have little control over their working environment, for example, lack of functioning work equipment such as sphygmomanometers to assess blood pressure readings, this might place unnecessary stress on the already busy nurses' and midwives' workloads. Lack of equipment and equipment that does not function properly increases workloads even further (Wheeler & Riding, 1994). Up to date and safe working equipment is a priority for both patients and staff in the healthcare system.

Fatigue, exhaustion and feeling overwhelmed are closely linked to burnout (Maslach, 1986). In comparison to Barrett and Yates' (2002) study, this study found that more than double (91% compared to 40.4%) the proportion of nurses and midwives were experiencing fatigue at least once a week or more. The majority of respondents from this study then were experiencing fatigue on a regular basis. Possible explanations for this finding would be inefficient time management, for example, due to excessive workloads and rushing to complete tasks. Similarly, continual tiredness was the most stress-related ailment in Weekes, Peterson and Stanton's (2001) study of medical scientists. Forming special and close relationships with patients and families, as health professionals often do, might cause fatigue (Lyckholm, 2001).

Almost half (47.2%) of this study sample of nurses and midwives felt loss of empathy for colleagues at work, which runs parallel to the findings of almost half (49.7%) of the nurses and midwives who received sufficient organisational support never or occasionally. Over a tenth (12.9%) of this study's respondents stated that they were unsure as to whether they felt loss of empathy for colleagues, perhaps subliminally not wanting to admit their feelings or they might not have felt empathy for them in the first instance. It could be surmised that nurses who experience burnout might lack

sympathy towards or mistreat other nurses. This threatens the notion of a nurturing and caring profession (Rowe & Sherlock, 2005). Alternatively, Spooner-Lane and Patton (2008) found that colleague support did not have an effect on reducing burnout, perhaps because nursing colleagues do not have the power to change the workplace situation. Colleagues might provide better immediate support but cannot change the heavy workloads.

If nurses and midwives are feeling supported by their immediate colleagues, their job strain might be reduced as there is a certain cameraderie which is shared and might even reduce each individual's stress levels. Nurses and midwives tend to consult colleagues to obtain a second opinion (Begat, Ellefsen & Severinsson, 2005) which also might be an unconscious way of seeking social support. Consistent with previous work, seeking social support at work and talking about stress indicates adaptive coping strategies.

Almost half (45.5%) of this study's respondents reported that they felt loss of empathy for clients at work, implying a considerable number of nurses and midwives experiencing depersonalisation, a component of burnout. Similarly, Happel, Martin and Pinikahana (2003) and McGrath, Reid and Boore (2003) found that their nursing samples experienced moderate to high levels of depersonalisation as loss of empathy for clients relating to burnout. As nursing and midwifery are vocations which involve close interactions with people, it is discouraging that nearly half of this study sample are exhibiting signs of distancing themselves from the people (both colleagues and clients) with whom they work.

In summary, factors linked with burnout which relate to exhaustion for this study include apathy, low morale, feeling powerless, undervalued and overwhelmed, and feelings of incompetence. In line with the Effort-Reward Theory, increased, unrewarded efforts lead to stress responses in vulnerable people which eventually leads to burnout (Heine, 2006). These include fatigue, feeling emotionally drained and loss of empathy for colleagues and clients in these nurses' and midwives' work. These results portray a group of nurses and midwives who have lost control over their work situation in line with the Demand-Control Theory which suggests that if the individual

cannot overcome the stressors unresolved tension will lead to burnout (Karasek, 1979). It has affected the way they relate to others in the workplace, be that colleagues or clients.

The majority (54%) of this study's respondents experienced moderate levels of burnout. This finding has a number of implications, including quality patient care, as nurses and midwives who experience burnout find it difficult to provide quality care for patients. In line with the Person-Fit Theory (Jamal & Baba, 2000) extreme demands are made and the individual is incapable of handling the situation, portraying a poor fit between the work environment and the individual's abilities. It is essential that senior management have some way of identifying stress levels before they reach this burnout phase so that quality patient care is not affected. Other implications relate to the health and well-being of the nurses and midwives experiencing burnout. Clinical supervision is one way of reducing levels of burnout (Edwards et al., 2006).

2.3. Factors linked to individual responses

As previously defined, for the purposes of this study individual responses are:

how an individual reacts in a particular work situation depending upon self-imposed work pressure and motivation.

Overall, the majority (53%) of this sample of nurses and midwives scored moderate self-imposed work pressure and motivation levels according to their individual responses, with nearly a third (29%) scoring low pressure and motivation, and nearly a fifth (18%) scoring high pressure and motivation levels. The following individual response variables related to work behaviours such as self-imposed work pressure and motivation, indicating useful perspectives for future research.

Nurses and midwives need to explore what stressful work behaviours mean for them. They can then examine their own individual responses to workplace issues and how they interact with their own and their organisation's nursing and midwifery practices

and values. This then, might be a way to reduce or prevent prolonged stress that can lead to burnout (Salvage, 2003).

2.3.1. Pressure and motivation

Pressure and motivation levels are an inherent predictor of Vroom's (1964) Expectancy Theory of Motivation which is guided by the premise that an individual's efforts will result in accomplishments or outcomes; an individual's performance will reap rewards; and motivation parallels the value of rewards to the individual. This theory also shows that people's role perceptions will influence work performance and poor performance might result from role misunderstanding. The theory also shows that unlimited workplace opportunities will likely increase performance levels (Furnham, 1992). If the reward is positive, the employee will most likely be highly motivated and if the reward is negative, the employee will not be motivated (Lindner, 1998). If control and reward is removed from nurses' and midwives' work, motivation is decreased (Curtis, Ball & Kirkham, 2006a).

Stressors are required to motivate people to 'get them going' (Schultz & Schultz, 1997). Motivation in the work setting is described as what a person is doing (direction), how hard a person works (intensity) and how long a person works (persistence) (Kanfer, 2002). There are various reasons why people are motivated to work and they work because of certain rewards. People experience different types and amounts of motivation to work. The quality and quantity of productivity and enthusiasm shown at work is most likely a function of motivation (Furnham, 1992).

Almost two-thirds (65.3%) of this study's respondents reported that they frequently or more often tried to achieve more than their time allowed, implying that either they were placing unnecessary pressure upon themselves or there was external pressure in their working environment. Certain factors, such as external pressures of the working environment, are already known to impact on workplace stress. Perhaps there is an expectation that nurses and midwives should be continuously professionally effective and efficient, thereby another reason why they try to achieve more than their time allows (Billeter-Koponen & Freden, 2005).

High or unmet expectations of work challenge, recognition, rewards and career advancement can create intrinsic stress leading to burnout (Cordes & Dougherty, 1993). This also runs parallel with the majority (58%) of this study's respondents reporting that they placed unreasonable expectations on themselves, suggesting unnecessary stressors. Individuals who place unreasonable expectations on themselves often fail to meet these high expectations (Gillespie & Melby, 2003), which eventually leads to exhaustion (Maslach, Schaufeli & Leiter, 2001).

The majority (55.7%) of this study's respondents reported either frequently or most of the time working at high performance levels even when no time deadline was involved. Over two-fifths (43%) of this study's respondents frequently or more often reported being keyed up (or restless) most of the time on most days. This behaviour is indicative of 'Type A' competitive behaviour (Boey, 1999).

Behavioural manifestations of stress can be difficult to identify and can include irritability (Delvaux, Razavi & Farvacques, 1988). Almost two-fifths (35%) of this study's nurses and midwives reported that they became irritable frequently or more often, due to constant interruptions in their workplace, suggesting that their work environments seemed hectic in nature. Other studies have found constant interruptions stressful (Coffey, 2000; Gillespie & Melby, 2003).

The majority (65.4%) of this study's respondents frequently or more often reported being pushed for time. This result is synonymous with the majority (65.3%) of this study's respondents trying to achieve more than time allows. The majority (89.3%) of this study's respondents reported that they had difficulty slowing down. Difficulty slowing down as an individual response linked to work behaviours is difficult to interpret. It either suggests that there was no time to slow down in their work due to workload pressures and the nurse or midwife was always 'rushed off their feet' or that difficulty slowing down was an inherent part of how they behave generally.

The majority (75.4%) of this study's respondents frequently or more often reported that they had a tendency to multi-task. Boey (1999) studied a group of distressed and stress-resistant nurses in Hong Kong and she specifically researched the variable, 'try

to do many things at once' or 'push myself very hard' which indicated 'Type A' behaviour. She found no difference between the two groups. As Boey's (1999) average for 'trying to do many things at once' was high (45 out of a possible 65), these results are congruent with this study's results.

In summary, work behaviours such as self-imposed work pressure and motivation linked to individual responses to workplace issues for this study include trying to achieve more than time allows and being pushed for time, which runs parallel with time pressures. Expecting more than reasonably possible, being keyed up (or restless) on most days and feeling irritable are examples of self-imposed pressures. Other behaviours include difficulty slowing down for procedures, working at high performance, and multi-tasking which are examples of individual reactions in the workplace. In line with Vroom's (1964) Expectancy Theory of Motivation, all these workplace behaviours speak to increased motivation with positive reward and also reduced motivation without reward.

The majority (53%) of nurses and midwives scored moderate levels of self-imposed work pressure and motivation. For this study of nurses and midwives, it would seem that the majority place unnecessary stress upon themselves related to work by way of working at an increased speed, which results in feelings of irritability. For these nurses and midwives an inherent part of their nature could then influence how they behave at work as well as away from work. Nurses and midwives can be more aware of and self-assess their own individual responses to workplace issues.

2.4. Relationships between stress, burnout and individual responses

Investigation of relationships and associations between stress, burnout and how nurses and midwives react and behave is an important aspect when prioritising which areas to target when seeking solutions in the workplace. This study contributes to the body of knowledge about stress and burnout as links are found between these significant and problematic workplace stressors and particular individual responses. The associations or relationships developed from this questionnaire could provide

information to enable appropriate and targeted solutions to workplace stress to be identified.

2.4.1. Stress relationships with other variables

Stress was positively associated with burnout for this study. This result highlights the continuum between stress and burnout and suggests that nurses' and midwives' experiences of stress might increase burnout levels. If initial action plans to alleviate stress can be instigated in the workplace, further exposure and progression to burnout could be prevented. Spooner-Lane and Patton (2008) reinforce the importance of exploring work stressor factors which contribute to burnout.

The results from this sample of nurses and midwives suggest that those who were experiencing stress related to the work environment and job dissatisfaction were also experiencing exhaustion (a component of burnout), which is not an unexpected finding. This reinforces the notion that experiencing regular or continuing stress and job dissatisfaction can lead to burnout. Other studies (Billeter-Koponen & Freden, 2005; Healy & McKay, 2000; Maslach, Schaufeli & Leiter, 2001; McGowan, 2001; Stordeur, D'Hoore & Vandenberghe, 2003) -have found consistent results and suggests that the energy and inadequate time to manage high workloads and the experience of conflict with colleagues are factors that could lead to emotional exhaustion (Stordeur, D'Hoore & Vandenberghe, 2003).

The relationship between stress, exhaustion, and the work environment is not simple as each individual will manage stress in different ways. There might be differences, including workplace or individual disorganisation, not being suited to the work or not doing the work they like (Goodfellow et al., 1997). Greenglass and Burke (2001) and Barrett and Yates (2002) also found the greater the workload, the greater the emotional exhaustion for the nurses. Factors including mandatory overtime and increased pressure to complete work have contributed to increased nurses' and midwives' dissatisfaction in their work environments (Goodin, 2003).

This study found that those nurses and midwives who were experiencing stress related to the work environment were also experiencing such psychosocial effects as ill

health, which includes depression. This relationship between work environment stress and ill health might also be interchangeable, meaning that stress predisposes to ill health and ill health predisposes to experiencing stress. This suggests that if the nurses and midwives are stressed in their work environments, they will most likely be experiencing physical and emotional effects of stress in their personal lives. On the other hand, it could also mean that those nurses and midwives who are already experiencing psychosocial effects away from work are also experiencing stress in their workplace. Samuelsson et al. (1997) also found that negative work environments were associated with depression and burnout. Similarly, De Lange et al. (2004) found that one basic assumption is that health and work characteristics influence each other. De Lange et al. (2004) found that unhealthy workers were more likely to view their work environment negatively over time.

Nurses and midwives in this study who were experiencing stress related to the working environment were working longer hours. Importantly to this issue, Iskra-Golec et al. (1996) also found that nurses had higher anxiety scores when working longer hours. If health organisations could adopt better work practices, such as introduction of part-time hours and better pay rates, overtime and stress could be reduced in nurses' and midwives' work environments.

For nurses and midwives in this study, the workplace pressure of rushing to complete tasks was positively associated with stress; inefficient time management (for example, due to excessive workloads); and being pushed for time. This suggests that this sample of nurses and midwives try to function under heavy work overload and have insufficient time available to complete their work in the specified time. Work overload can lead to emotional exhaustion and possible burnout (Cordes & Dougherty, 1993).

These workplace pressures were pertinent in relation to stress levels in the work environment and they had a contributing effect over the way in which these nurses and midwives work. Nurses are treating more patients in shorter periods of time and yet the nursing and midwifery profession demands meeting patients' needs on an individual level (Penson et al., 2000). If these demands exceed the nurses' or

midwives' own reasonable limitations, they will continue to find themselves rushing to complete tasks and quality care of patients could diminish.

Finishing work late was also linked with inefficient time management (for example, due to excessive workloads), and rushing to complete tasks further reinforcing time issues. Nurses and midwives might find the workloads unmanageable, and if they are working with unreasonable workloads they might not have time to provide essential education, support and counselling for their clients. Zapf et al's (2001) study also identified time pressure as a significant issue for health professionals' work.

For this study, the results suggest that those who were experiencing psychosocial effects of stress were also dissatisfied in their work and exhausted. This implies that detrimental health effects experienced by those nurses and midwives were related to their job dissatisfaction. One important finding of this study showed that job dissatisfaction was positively associated with incidence of stress.

This study also found that being older was associated with job satisfaction, meaning that older nurses and midwives were more satisfied in their work than younger ones. This finding complements other results in this study, specifically that younger nurses and midwives were experiencing more stress and burnout than older ones. Other studies have found that stress appears to be a major determinant of nurses' job dissatisfaction levels and increased stress levels in nurses leads to career dissatisfaction (Delvaux et al., 1988; Hoffman & Scott, 2003). These findings equate to Beaudoin and Edgar's (2003) and Healy and McKay's (2000) studies which found that those who were satisfied in their work were less stressed than those who were dissatisfied.

This study found that those nurses and midwives experiencing sleeplessness were also experiencing anxiety in relation to work, were depressed and felt emotionally drained. There was a positive relationship between short and long-term sleeplessness, suggesting nurses and midwives experiencing sleeplessness will continue to experience this symptom. These results imply that these nurses and midwives are experiencing long-term effects of stress and / or burnout. This suggests that for this

sample of nurses and midwives experiencing anxiety was closely related to how often they experienced sleeplessness. Levin, Hewitt and Misner's (1998) nurses also reported experiencing physical and emotional effects from verbal and physical assaults while working in accident and emergency. These nurses complained of sleeplessness and nightmares. Frequent insomnia is a symptom which has been associated with depression (Gale, 1998; Gorter et al., 1999; National Institute of Mental Health, 2004 cited in Rada & Johnson-Leong, 2004:791). No other studies have specifically associated sleeplessness with feeling emotionally drained although, according to Maslach (1986), these symptoms suggest burnout.

As far as nurses and midwives being treated for stress was concerned, there was a positive relationship between stress requiring treatment and headaches requiring analgesia and feeling emotionally drained. These results imply that these work-related psychosocial factors are encroaching into nurses' and midwives' personal lives. It suggests that headaches were mostly due to stress (be that work or personal) and not other causes. Mackin and Sinclair's (1998) sample of labour ward midwives had experienced ill health related to stress before and during the six months of their study. The cost of stress for nurses can include injury or work-related illness (Buchan, 1995).

For this study, as far as job compatibility was concerned there was a positive relationship between being suited to the particular type of work and enjoying the work. This runs parallel with the Person-Fit Theory (Mansfield et al., 1989) which shows that if a person is suited to a particular type of area of work, job satisfaction will be enhanced. Those nurses and midwives who were wanting to leave the professional discipline were also wanting to change the area of practice for this study suggesting that those wanting to change their area of practice were dissatisfied in their current area of practice.

In summary, identification of stress in the workplace is required to prevent burnout occurring. This might involve regular identification of stressors in the workplace by way of assessments, meetings and offering debriefing following critical incidents. Identifying stress in nurses' and midwives' work environments might then prevent psychosocial effects of stress including sleeplessness, depression and headaches

requiring analgesia. This could include identifying those most at risk of ill health, such as nurses and midwives who are requiring treatment for stress. Unhealthy workers might also create negative work environments over time for co-workers and monitoring the work environment is necessary to prevent this from occurring (De Lange et al., 1994).

If nurses and midwives continue to experience stress in the workplace and these psychosocial effects are left untreated, physical ailments such as sleeplessness might continue the longer nurses and midwives work in the profession. For this study, sleeplessness was not an isolated symptom and accompanied other ailments such as anxiety, depression and feeling emotionally drained (which is related to burnout). As this study shows, job satisfaction could be improved by diminishing psychosocial effects of stress. There might also be existing psychosocial effects of stress in the workplace but assessment and treatment of these signs and symptoms could limit their progression to burnout. Job satisfaction could be improved by way of rewards and involving nurses and midwives in clinical areas in management decisions.

As working long hours and time management issues were positively associated with stress in the work environment for this study, reduction of overtime and addressing more work-friendly hours such as part-time and job-sharing work could be the answer. Staffing issues, prioritising workloads and targeting patient acuity could also alleviate stress in the workplace. As older nurses and midwives were less stressed than younger ones in this study, targeting younger workers by way of education, support and mentoring with a more experienced nurse or midwife, might provide more support to this younger cohort so they can develop better coping skills for dealing with stress. If nurses and midwives are able to work in areas to which they are suited, job satisfaction could be improved.

2.4.2. Burnout relationships with other variables

The nurses and midwives in this study who were exhausted were also experiencing stress from the work environment, psychosocial effects of stress and job dissatisfaction, further emphasising the detrimental effects of stress and burnout. It is evident for respondents in this study that exhaustion pervades these nurses' and

midwives' daily lives and is associated with poor psychological and physical health. The nurses and midwives who were exhausted were also dissatisfied in their work. Similarly, other nurse research has found that overall burnout was moderately correlated with the variables emotional exhaustion, job dissatisfaction and health problems (Jamal & Baba, 2000) and as burnout increases, job satisfaction decreases (Ames et al., 2004).

The negative association between exhaustion and age might be due to the fact that older nurses and midwives have developed better coping strategies to deal with stress and burnout. Kent and Lavery (2007) highlight that the influence of years in the profession and age partially explains why being hospital educated as a nurse was associated with lower exhaustion levels (compared to university educated colleagues). They confirm this by finding that because hospital education was phased out ten years ago or more, hospital educated nurses were older than their university educated colleagues. They highlight that more years in the profession is beneficial for the nurse.

Nurses and midwives in this study who were working longer hours were also exhausted. Iskra-Golec et al. (1996) and Kent and Lavery (2007) also found that working longer hours was associated with higher levels of emotional exhaustion. As nurses and midwives usually work the majority of their shifts either standing or walking in their work environments, and are rarely sedentary, it is not unusual to find that longer hours would increase exhaustion. The type of work can also be mentally exhausting as they often act as counsellors in their roles dealing with patients' grief and poor health.

As far as prolonged exposure to stress is concerned, the nurses and midwives in this study who were feeling powerless were also experiencing low morale, suggesting that feeling powerless or helpless in their work environment also determined feelings of low morale as an intrinsic component of burnout. The nurses and midwives in this study who were dissatisfied in their job were also experiencing low morale. Jenkins (1996) also found that job dissatisfaction became increasingly evident, resulting in low morale, in her study with community nurses. Nurses and midwives could be rewarded and praised for good work to enhance morale in the workplace.

Nurses and midwives in this study who were feeling powerless were rushing to complete tasks, suggesting increased workloads in an uncontrollable environment or nurses and midwives at risk for burnout. Billeter-Koponen and Freden (2005) and Olofsson, Bengtsson and Brink (2003) also identified nurses feeling powerless due to heavy workloads and insufficient time to provide quality patient care. They also found that valuation of professional experience and knowledge is negated if nurses start feeling worthless when being replaced by nurses with less experience or education, or requiring less monetary compensation. They note that powerlessness is the inability to change one's situation. At the other end of the spectrum of powerlessness is empowerment and this might be important to nurses and midwives with high needs for achievement, since empowerment helps provide conditions for success. Nurses and midwives benefit when empowerment is inherent in their workplace, and they are disadvantaged if that is not present, making them feel powerless (Laschinger et al., 2001b).

This study also found many other associations which were not found in other literature. As far as workplace pressures and prolonged exposure to stress was concerned, low morale was also positively associated with incidence of stress, inefficient time management (for example, due to excessive workloads), feeling undervalued and feeling emotionally drained. This suggests nurses' and midwives' morale levels contribute to the detrimental effects of stress and burnout.

Those who were feeling undervalued were also feeling powerless in this study. Hancock (1998) highlights that feeling powerless and feeling undervalued are major factors in stress-related problems. She concludes that free flowing information and good communication with managers are essential.

In this study, for those people who were dissatisfied in their job, they were also feeling undervalued, suggesting that they were feeling that their contributions in their workplace were not worthwhile. Feeling overwhelmed was also positively associated with incidence of stress, feeling undervalued and feeling emotionally drained. These other specific associations were not found in other literature, but generally contribute to a picture of exhaustion leading to burnout.

Feelings of incompetence might lead to performing poorly on the job (Maslach, 1986). The nurses and midwives in this study who were feeling overwhelmed were also experiencing feelings of incompetence, implying that the nurses or midwives might blame themselves for not managing or coping with their workloads. As the question relating to feeling incompetent in one's work with people was not clearly restricted to one's work environment, it was difficult to distinguish whether respondents in this study were commenting on feeling incompetent in the home, work and / or social environment. Wong, Leung and So (2001) also found nurses feeling incompetent generally in relation to every-day life. It is an unreasonable expectation for an individual to separate their work lives from their private lives and research is recommended to identify how private lives exacerbate workplace stress (McVicar, 2003). As stated previously, it is possible that family and friends are instrumental in buffering effects of stress and burnout for nurses and midwives (Spooner-Lane & Patton, 2008). A question for future research could focus principally on the area of work, although research concentrating on the home / work interface is an important aspect for future stress and burnout studies.

It is common to find that job demands are highly associated with being emotionally exhausted (Brenninkmeijer & VanYperen, 2003). Feeling emotionally drained was positively associated with incidence of stress and rushing to complete tasks for this study of nurses and midwives, implying that stress and burnout levels were high. Barrett and Yates (2002) found that nurses felt emotionally drained and burdened with excessive workloads and unpaid overtime which contribute to increasing turnover and dissatisfaction.

The findings from this study support the work of other researchers (Laschinger & Finegan, 2005; Zapf et al., 2001) in relation to the positive association between inefficient time management (for example, due to excessive workloads), and feeling emotionally drained. In these other studies (Laschinger & Finegan, 2005; Zapf et al., 2001), the highest correlations were identified as time pressure relating to workload which was the most important predictor of emotional exhaustion. These results provide evidence to pursue positive workplace conditions such as effective equipment

and good communication and team-work in order to enhance nurses' and midwives' health.

This study did not show any associations of fatigue with burnout; however fatigue was identified as a factor of exhaustion which can ultimately lead to burnout. Kant et al. (2003) and Huibers et al. (2003) also found moderate intercorrelations existed between fatigue and burnout in the working population. Health professionals who have the capacity for expressing and feeling empathy are at higher risk of physical and emotional exhaustion associated with compassion or empathy fatigue (Stebnicki, 2000). When burnout reaches severe proportions, nurses and midwives feel very tired when interacting with other people, as their emotional resources are depleted (Koivula, Paunonen & Laippala, 2000).

In summary, for this study, if stress in the work environment, psychosocial effects and job dissatisfaction are reduced, the resultant exhaustion might decline. As well, targeting and monitoring younger nurses' and midwives' stress levels and redesign and reduction of working hours could reduce exhaustion. According to this study, nurses' and midwives' feeling powerless and undervalued in their workplace adds to further low morale and job dissatisfaction. If nurses and midwives can become empowered in the workplace by taking control of somewhat frenetic work environments, morale and job satisfaction could be enhanced. If nurses and midwives have more control over their workload and do not settle for inadequate staffing, perhaps these small steps will contribute to their empowerment in the workplace.

These nurses and midwives feeling overwhelmed in their workplace added further to their feeling incompetent in their work with people, whether this occurred at home or at work. Powerlessness, low morale and feeling emotionally drained were also linked with inefficient time management and rushing to complete tasks, further reinforcing workload issues. If workloads can be shared and prioritised amongst suitable working team members, nurses and midwives might not have to face the impending emotional drain.

2.4.3. Individual response relationships with other variables

Those nurses and midwives in this study who were experiencing stress from the work environment were also displaying high levels of self-imposed work pressure and motivation, ultimately leading them to place unreasonable expectations upon themselves. It is difficult to assess which direction the association travelled - for example, if the work environment accounted for high pressure and motivation or whether high levels of pressure and motivation accounted for work environment stress. If they strived for perfection within themselves they might have experienced stress related to the work environment because they were unable to provide excellent, quality client care. Similarly, Balevre's (2001) research suggested that nurses who demand control and perfection in themselves create unrealistic expectations and demands that cannot be achieved in reality and ultimately lead to burnout. In today's working health environment excessive workloads might mean that these goals are possibly unattainable but they might be considered desirable, nevertheless.

As far as work behaviours such as self-imposed work pressure and motivation are concerned, those nurses and midwives who placed unreasonable expectations on themselves also tried to achieve more than time allowed and were also pushed for time, again reinforcing the time issue and suggesting a time urgency or deadline. For this study, those nurses and midwives who were keyed up (or restless) also had a tendency to multi-task. These results run parallel with the majority (69.7%) of the respondents in this study identifying inefficient time management (for example, due excessive workloads). Strategies to address such matters need to target individual responses to workplace issues and focus on educating nurses and midwives to realistically deal with their workloads and not to place unnecessary pressure upon themselves.

2.5. Demographic factors contributing to stress, burnout and individual responses

2.5.1. Demographic factors contributing to stress

This project found that the older the person was and the longer they worked in the profession, the less likely they were to take "mental health" leave, which suggests that

older nurses and midwives might be less subject to stress than their younger counterparts and, because of their age, be expected to be able to cope. This finding complements other results in this study related to older nurses and midwives being more satisfied, less stressed and less exhausted in their work. This study indicated that older nurses and midwives are more likely to be experienced, so (as stated previously) they might have developed better coping mechanisms over the years to deal with continued stress, or that personal or professional expectations dissuade them from taking “mental health” leave. Some people are hesitant to report stress at work as there might be fear of retribution or difficulty in obtaining acceptance from employers that stress in the workplace is a legitimate reason for “mental health” leave. Therefore, they rarely claim workers’ compensation, using another type of leave instead (Australian Council of Trade Unions, 1997).

Older nurses and midwives might not want to admit to being stressed because they have always been taught to endure the stress and not debrief about extenuating circumstances, for example, ‘survival of the fittest’. Similarly, Balevre’s (2001) study found that nurses with over ten years of experience, were less likely to have been suffering burnout compared to those with less than ten years of experience. Humpel and Caputi (2001) state that past research has shown that as years of work experience increases, stress levels decrease. It might also relate to the fact that experience does relate to competence. It might also suggest that those nurses and midwives experiencing burnout might leave the profession altogether, therefore never becoming ‘older nurses and midwives’.

Nurses and midwives in this study who worked longer hours were more likely to experience sleeplessness. This finding complements other findings in this study associated with increased incidence of stress related to the work environment and exhaustion with working longer hours. As stated previously (Chapter 2, section 4.4), nurses in Iskra-Golec et al’s (1996) study also reported worse sleep quality and were more tired following sleep, even though they had slept longer, when working longer hours. A psychosomatic sign such as sleeplessness is a health problem related to stress (Bailey, 1985; Brenninkmeijer & VanYperen, 2003; Buus-Frank, 2002; Jamal & Baba, 2000; Schwarz, 2005).

In summary, these results point to the fact that younger nurses' and midwives' stress levels need to be targeted and managed so they do not resort to taking increased periods of "mental health" leave. As stated previously, working longer hours can be reduced to prevent detrimental effects such as sleeplessness, a psychosocial effect of stress. This might take on the form of part-time or job-sharing hours and discouraging overtime in the workplace.

2.5.2. Demographic factors contributing to burnout

Nurses and midwives who were older in this study, were less likely to experience aspects of burnout. Older nurses and midwives were less likely to feel emotionally drained and less likely to lose empathy for clients than younger nurses and midwives, paralleling other research. These findings complement previous results of this study related to older nurses and midwives experiencing less stress and exhaustion, and more job satisfaction than younger ones. Younger nurses have exhibited stronger burnout behavioural trends than older nurses (Balevre, 2001; Maslach & Jackson, 1981). Balevre's (2001) study also showed that nurses aged 40 years and over were less likely to burn out than their younger colleagues. Spooner-Lane and Patton (2008) also found that younger nurses reported higher depersonalisation levels than older nurses. The relationship between age and stress suggests that individuals gain competency and skill through experiences linked to ageing, helping them to deal with stressors (Younger et al., 1995). As stated previously, it could also mean that those nurses and midwives who could not cope have already left the profession.

Losing empathy for clients is related to depersonalisation, which is one of the components of burnout (Maslach, 1986). This study's findings support other evidence that the older the person, the less likely they were to lose empathy for clients. Age is associated with work experience and burnout occurs earlier in nurses' careers (Maslach, Schaufeli & Leiter, 2001). Edwards et al. (2006) and Kent and Lavery (2007) also found that as nurses grew older they were less likely to experience one aspect of burnout, namely depersonalisation.

This study found that the longer the person had spent in the profession the less likely they were to lose empathy for clients, which is consistent with the study's findings

related to age. Development of coping strategies over time, ‘survival of the fittest’ and more experience could account for these results. Burnout seems to manifest about one year into the health professional’s career (Bailey, 1985). Schiacchitano, Goldstein and DiPlacido (2001) found in their study with radiographers that years in profession correlated positively with personality hardiness. They report that perhaps people spending longer in the profession have a more realistic perspective about life and are not as prone to burnout. They note that long-time members of professions might have learned coping skills for their work demands and are more satisfied with their achievements. On the other hand, Koivula, Paunonen and Laippala (2000) and Chang et al’s (2005) studies’ findings that older nurses distanced themselves from others to cope with stressors differs from this study’s results.

Those nurses and midwives working longer hours in this study were more likely to experience burnout. This is not an unexpected finding as nursing and midwifery are fairly demanding physical vocations and working longer hours would increase the likelihood of fatigue predisposing to burnout. This study also found that the more hours that nurses and midwives worked the more apathy they experienced. These results parallel other findings in this study relating to stress and exhaustion from working longer hours. This suggests that fatigue and exhaustion at work played a major role in their apathy. Van der Hulst and Geurts (2001) note that employees who are involuntarily working overtime are more prone to fatigue and poor recovery as opposed to those who choose to do so. They also found that overtime might lead to poor psychological health in situations where there is a lack of motivation. Nurses have been known to experience adverse health effects induced from the longer 12 hour shifts (Kundi et al., 1995).

As Schwarz (2005) states, a major reason for the shortage of nurses is a state of physical and emotional depletion caused by unrelieved workplace stress leading to burnout. This study found that the more hours the nurse or midwife worked the more likely they were to feel emotionally drained at work, which is not an unexpected finding. Working longer hours would seem detrimental towards these nurses’ and midwives’ health. Kent and Lavery (2007) also showed a positive association between expectations of working overtime and working longer hours with emotional

exhaustion. Hoffman and Scott (2003) found that the longer the hours the nurse works, the more fatigued they were in relation to the clinical environment. Other studies (Iskra-Golec et al., 1996; Kundi et al., 1995; Van der Hulst & Geurts, 2001) have found that emotional exhaustion and increased risk of poor psychological health were more significantly pronounced when working longer shifts and overtime.

This nurse and midwife study predicts that the more educated the person the less likely they are to experience one aspect of burnout, losing empathy for their colleagues, so less likely to experience depersonalisation. They might also be better prepared for dealing with stress and burnout. Similarly, Maslach and Jackson (1981) found there was a tendency for depersonalisation to decline with higher education levels. Wong, Leung and So (2001) also found that nurses with higher education levels were significantly less depressed and more likely to cope with stressful situations than those with secondary school qualifications.

Some studies have shown that burnout scores increase with education levels and though difficult to interpret, this might occur as a result of greater responsibility (Maslach & Jackson, 1981; Maslach, Schaufeli & Leiter, 2001). This could be explained by the fact that highly educated nurses and midwives have higher expectations, and are therefore more likely to become distressed if their expectations are not realised (Maslach, Schaufeli & Leiter, 2001). Koivula, Paunonen and Laippala's (2000) study found that burnout was highest among those possessing a secondary level education.

This study also found that if the person lived alone they were less likely to lose empathy for their colleagues. Goodfellow et al's (1997) study showed that having children and having a partner acted as buffers against stressors of work. They commented that this could be due to work providing a welcome escape from their home life or having multiple roles protecting them against stress within any of their roles. Boey's (1999) study on distressed and stress resistant nurses in Hong Kong also identified that when nurses are confronted with high levels of stress those with more family support enjoy better mental health than those with fewer family supports. When distinguishing between stress and prolonged exposure to stress resulting in

burnout, this might be explained by the fact that the respondents welcome the interaction with people at work if they are living alone and perhaps not dealing with added stressors at home such as cooking, cleaning and washing for other people. It could also mean that they are unaware of how stressed they really are, juggling many roles. No other study linked living alone with lower burnout levels. People living alone might be more likely to want to converse and interact with people at work because they do not receive that same interaction at home. Therefore they might be less likely to distance themselves from their colleagues.

Those people who are unmarried are more likely to experience burnout than those people who are married (Maslach, Schaufeli & Leiter, 2001). The questionnaire developed for this study of nurses and midwives did not obtain information about marital status. A spouse might impose a more balanced lifestyle by requiring the nurse or midwife to spend more time away from work. The family might help an individual cope by providing a balanced perspective (Cordes & Dougherty, 1993). Kotzabassaki and Parissopoulos (2003) also highlighted that married people with children were more resilient against burnout. Marital status is consistently under-investigated. On one hand there might be security and support from a partner and home life, but there might also be extra strains which are caused by marital relationships (Rhead, 1995). A person living alone might not have the opportunity to communicate as closely with other people and is a possible explanation why they are more likely to be empathic towards colleagues in their workplace.

The implications of these results also reinforce other findings in this study which show that younger nurses' and midwives' stress levels can be targeted to prevent burnout. Younger nurses report higher stress levels leading to their leaving the profession and one effective way to address this is by way of an appropriate and / or relevant education syllabus. As this study reconfirms, longer hours can be discouraged to prevent burnout signs such as apathy and feeling emotionally drained. This study also predicts that the more educated the person is, and if they live alone, the less likely they are to lose empathy for colleagues (which is an aspect of burnout). This finding substantiates the positive effect of being better prepared and educated, and reduces the

need to target those people who live alone in the prevention and management of burnout.

2.5.3. Demographic factors contributing to individual responses

This study found that working longer hours was associated with high levels of self-imposed work pressure and motivation, suggesting those placing unreasonable expectations on themselves or experiencing pressure related to work are more likely to work longer hours. They might also work longer hours or overtime because they are afraid that in failing to do so they will not be seen as a dedicated nurse or midwife. In *Catalyst*, Cooper (video recording, 2007) stated that there was now clear evidence that working longer hours causes stress and a lack of control over working life. He reports that workplaces in the United Kingdom are now acknowledging stress for the first time and implementing management standards for reduction of stress.

Individual differences such as education have an effect on the association between strains and stressors (Maslach, Schaufeli & Leiter, 2001; O'Donnell & Stephens, 2001). For this sample of nurses and midwives, those who possessed a degree or higher qualification were less likely to place unreasonable pressure on themselves in relation to work than those who possessed either a hospital certificate or diploma. These nurses and midwives might have developed better coping skills because of their education. Running parallel with these findings, other research indicates those who are less educated are more likely to experience burnout than those who are more educated (Balevre, 2001).

These demographic findings regarding individual responses, run parallel with the previous findings related to stress and burnout which found that deleterious effects of working longer hours leads to increased levels of self-imposed work pressure and motivation. Again, working longer hours can be discouraged. The prediction that if the person is more educated, they are less likely to experience high levels of self-imposed work pressure and motivation also reinforces the benefit of education. These results run parallel with other findings in this study, which found that if a person possessed a degree or higher qualification, they were less likely to lose empathy for colleagues.

2.6. Higher risk practice specialties for stress and burnout

Previous research on nursing stress has examined stress and area of clinical practice (McGrath et al., 2003). The following provides information on particular groups of nurses and midwives who are experiencing stress and burnout and identifies higher risk workplaces or practice specialties. This study found that accident and emergency nurses experienced the most anxiety and the highest levels of feeling powerless compared to all other areas of practice. Given that there were only 20 nurses working in the accident and emergency department in this study, further research could investigate individual responses to stress and burnout in different areas of practice.

The nursing profession's status in an organisation, its lack of autonomy in decision-making for provision and planning of care possibly influences nurses' and midwives' experiences of powerlessness (Severinsson, 2003). Alternatively, Gillespie and Melby (2003) found that nurses working in accident and emergency experience lower levels of exhaustion compared to those working in acute medicine. There might be specific issues re stress and burnout concerning nurses working in accident and emergency, but as this study was not designed to deal with this aspect, other studies might want to pursue this. The implications of this could mean that because accident and emergency nurses are dealing with incoming admissions, lack of beds in hospitals render them powerless in an already overworked and under-resourced system. Even though other areas of nursing are dealing with similar issues, they perhaps have more control over incoming admissions into their ward areas. Research attended by the NSW Nurses Association (2008j) has shown that nurses from accident and emergency report that their workloads are unrealistic, seeing between 150 to 170 clients per day, and with five to six clients awaiting evaluation and treatment at any one time.

Browning et al. (2001) also found that emergency nurses reported experiencing stress more frequently compared with nurses not working in emergency. They reported higher levels of emotional exhaustion and depersonalisation. Similarly, Levin, Hewitt and Misner (1998) found that emergency nurses' stress levels are rising due to an emphasis on client satisfaction, which contributes to a risk of being subjected to violence by clients.

For this study, nurses from accident and emergency were also one of the oldest groups compared to other areas of practice. Nurses from accident and emergency had also spent significantly more years in the profession compared to all other groups. Years in profession helps explain these nurses' ages. Ng et al. (1999) found differences in tasks performed and work conditions could be responsible for dissimilarities in stress levels in nurses working in different settings. Marshall (1980) and Slater's (1993) research suggests stress in nursing could fluctuate as a function of a particular specialty. No other study could be found comparing years in profession among different areas of practice except for Wheeler and Riding (1994), who found that midwives had spent many more years in the profession compared to general nurses.

Commonality of factors of stress cannot be assumed for nurses and midwives within the same areas of practice. The impact of stress and perceptions of nurses and midwives varies considerably within the same workplace. Consequently, an evaluation of stress for nurses working in any area cannot predict ensuing distress within an individual (McVicar, 2003). Due to the small numbers in this study more comparative studies in Australia are recommended, as nurses' and midwives' needs might vary between areas of practice.

Also important to these findings are the areas of stress and burnout which do not differ significantly between the areas of practice (see Appendix 14, section 2). This information pinpoints those areas which do not need attention. Strategies to reduce stress and burnout would then not need to be differentiated to meet such subgroups in order to be effective. These areas of stress include depression, helplessness and job dissatisfaction. It would seem that all areas of practice, then, have similar job dissatisfaction levels. For burnout these include apathy, low morale, fatigue and feeling emotionally drained. These areas of burnout highlight nurses' and midwives' resultant fatigue with no differentiation between groups of practice.

3. Limitations of study

Despite careful piloting, some problems with the questionnaire were encountered. Inefficient time management (for example, due to excessive workloads) was a poor

choice of question as it was double-barrelled and difficult to ascertain whether the issue was time management or excessive workload. Even though Pinikahana and Happell (2004) have shown that inefficient time management goes hand in hand with excessive workloads, future research could separate these issues into two questions and investigate associations or relationships between the two. As the question relating to feeling incompetent in one's work with people was not clearly restricted to one's work environment, the respondents' answers might reflect their feeling incompetent in the work, home and / or social environment. A future question could focus on the area of work; research concentrating on the home and work interface is an important reference for future stress and burnout studies. A further limitation of the questionnaire included eight questions in the first section with 'never / occasionally' in the same box. This made it impossible to separate those respondents who wanted to answer 'never' and those whose answer was meant to signify 'occasionally'. Future questions should separate the options 'never' and 'occasionally'.

For factor analysis, residuals were calculated between reproduced and observed correlations. Residual values were large for factor analysis calculations for exhaustion and pressure and motivation subscales performed as part of this study, and so generalisations could not be made beyond this study for those particular subscales. Any conclusions reached for exhaustion and pressure and motivation subscales must then be restricted to this sample (being used). Even though there are no set rules in factor analysis about what residual proportions should be, the percentage of residuals with values over 0.05 ought to be less than 50 percent to make a possible generalisation beyond that sample (Field, 2005).

The questionnaire also asked whether the nurse or midwife worked permanent, fulltime, part-time or casual so they could specify their employment status. This allowed ambiguous interpretation resulting in 44 nurses and midwives specifying permanent hours but without distinguishing if they worked fulltime or part-time. In future, this question should ask for distinct categories such as if they worked permanent fulltime, permanent part-time, temporary fulltime, temporary part-time, casual fulltime or casual part-time.

Given that this study was exploratory, included a convenience sample of 562 nurses and midwives from a national population of 228,230 working in Australia and information was obtained by volunteers who participated, ability to generalise is limited (Mackin & Sinclair, 1998; Schneider et al., 2003). Convenience sampling uses those conveniently available people. The problem is that these people could be atypical of nurses and midwives in the general population in so far as critical variables measured (Polit & Hungler, 1999). It was also unknown for more than two-fifths (44.1%) of the sample which state or territory they worked in as nurses or midwives, as the questionnaire asked for country of practice only. As nurses and midwives who participated in this study were self-selected from attendees at professional conferences, it could be that respondents were more motivated and willing and perhaps less stressed than other work colleagues who were not present at these conferences. The fact that respondents volunteered to complete the questionnaire could cause underestimation of adverse results of stress and burnout (Zhao & Turner, 2008).

It is acknowledged that high achievers might also be more likely to attend conferences and participate in research questionnaires. Other work colleagues might not have been financially able to attend and / or had family commitments preventing them from attending the conferences. Those nurses and midwives who attended these conferences and did not complete the questionnaire, might have been too disaffected and exhausted to participate in this research or too interested in other topics and stands at the conferences, which could have resulted in underestimation of real trends. The response rate (41.4%) raises concern about the remaining nurses' and midwives' stress levels. Those nurses and midwives experiencing high burnout levels might have been too fatigued to participate in this study. It was not possible to determine if there were multiple responses from the same respondents, as respondents voluntarily picked up the questionnaires from a conference stand. While it seems unlikely that, during the data collection time-frame from April to November 2005, a nurse or midwife would have attended two conferences dealing with similar themes, let alone would have chosen to complete the same questionnaire twice, this possibility cannot be entirely discounted. As the conference organisers neither collected nor released

relevant data pertaining to conference respondents there was no opportunity to assess non-response bias (Polit & Hungler, 1997).

All data were based on self-assessment and there was no substantiation of data to confirm and validate number of hours worked as used in triangulation methods. De Lange et al. (2004) argue that findings from self-report data ‘could be more useful than is frequently assumed’. They assert that discussions concerning ‘objective’ measures as being superior to self-report data are not very constructive. The fact that self-appraisal plays a major role in determining stress levels makes it suitable to use self-report tools to assess stress at work (Williams & Cooper, 1998). Self-report questionnaires are probably used most frequently in stress studies and the results can therefore be compared with other studies (Ryan & Quayle, 1999). As this questionnaire did not assess personality types, individual responses were assessed which might relate somewhat to their personality. The question remains, whether personality types affects nurses’ and midwives’ perception of stress (Wheeler & Riding, 1994).

A complete assessment of stress and burnout would include biochemical blood analyses, physiological measurements as detected by Ng et al’s (1999) study evaluating changes in immunoglobulin-A in saliva and an assortment of rating methods measuring mental and physical health status. Better psychological tools are needed, as well as an assortment of rating methods for physiological measurements (McVicar, 2003). These resources were unavailable for this study, although a follow-up study could now be undertaken. This study did not specifically focus on coping strategies used by nurses and midwives but future research could pursue this aspect of the stress and burnout phenomena.

4. Summary

This research, with the findings from the questionnaire, has, by way of factor analysis, been able to show the different variables which distinguish stress and burnout from each other. It is simplistic to claim that one, two or three factors of stress relate to all nurses and midwives (McVicar, 2003). The phenomena of stress and burnout are

multifaceted and cannot be explained without some overlap (Ootim, 2001). Some of the stress variables include time pressures and organisational support related to the work environment. Other stress variables include psychosocial effects such as sleeplessness and depression. The other stress variables relate to job dissatisfaction and not enjoying the work. Burnout variables include low morale, a sense of powerlessness, feeling exhausted and overwhelmed. This prevents nurses and midwives from being able to empathise with colleagues and clients, leading to poor quality client care. Individual responses to workplace issues include such variables as expecting more than reasonably possible, working at high performance and multi-tasking.

The main difference between stress and burnout is that stress begins as a feeling of unease in the workplace, as being unable to control the working environment demands, leading to a build up of pressure and job dissatisfaction. This then leads to symptoms of ill health over a prolonged period of time. Burnout ensues as an emotional state from prolonged exposure to stress which leads to exhaustion and feeling overwhelmed. This then interferes with quality of client care by way of poor communication with clients and colleagues and a sense of not achieving in the workplace, leading to low morale. Understanding individual and workplace responses to various stressful issues can limit burnout in the nursing and midwifery professions.

Chapter 6

CONCLUSION

The central components of various individual responses to stress and burnout for this sample of nurses and midwives related to the work environment, psychosocial effects, job dissatisfaction, exhaustion levels and work behaviours such as self-imposed work pressure and motivation. As there are reported high levels of stress and burnout in the nursing and midwifery profession, the goal of this study was to investigate, as well as document, nurses' and midwives' awareness of stress, burnout and individual responses to enable an accurate self-assessment of their own as well as workplace stress. For nurses and midwives to be able to do this, appropriate training, tools, time and support (by management and peers) would need to be implemented. New tools might also still need to be developed to assess and manage workplace stress and burnout for nurses and midwives. These actions by senior management and nurses and midwives in clinical areas might need to be included as part of one's routine professional practice.

This study has shown that it is possible to develop a questionnaire specifically related to nurses and midwives working in Australia. Since beginning this study, there have been significant changes within the nursing and midwifery working environments, with a real focus on reducing workloads and introducing tools to assess nurse / midwife / patient ratios and patient acuity (Achterstraat, 2007; NSW Health Department, 2002-2003; NSW Nurses Association, 2007). These improvements in the workplace and the information generated from this questionnaire could foster improved quality care for patients and ideally reduce stress and burnout levels within the profession.

Similar percentages of respondents experienced stress as well as burnout. The three factors linked with stress for this study, being work environment, psychosocial effects

and job dissatisfaction were all positively associated with exhaustion, a factor linked with burnout. The information on the subscales, exhaustion relating to burnout, and pressure and motivation relating to individual responses, introduce tantalising clues for consideration, discussion and future, more focused research.

1. Stress

The fact that the majority (59%) of nurses and midwives in this study identified moderate levels of stress overall highlights that the stress phenomenon should not be taken lightly. Stress was positively associated with burnout for this study, suggesting a continuum between stress and burnout. Working longer hours was also positively associated with incidence of stress, highlighting the negative impact of long hours in the workplace. Incidence of stress was significantly different among the various practice specialties, highlighting the importance of assessment of stress for separate areas within nursing and midwifery. If organisations do not address and recognise stress in the workplace, nurses and midwives might continue to leave the profession and quality of patient care could decline.

Developing quality work environments is a priority for both patient care and the healthcare system in general. This includes targeting increasing staffing levels, ensuring use of safe, effective equipment in the workplace and the enhanced empowerment and control over workloads, as shown by the results of this research. Debriefing with managers and / or co-workers following each shift, especially when dealing with life and death situations, should be part of routine nursing and midwifery practice. This could include assessment of psychosocial effects of stress, such as sleeplessness, by way of questionnaires and informed, thoughtful dialogue with clinical nurses and midwives. Better support for currently practising nurses and midwives which includes education and training about continual assessment of stress and developing coping mechanisms as part of their professional practice could enhance job satisfaction.

1.1. Work environment

For this study of nurses and midwives, the majority (76%) experienced moderate stress specifically related to the work environment and important issues related to inefficient time management, possibly due to excessive workloads. Rushing to complete tasks was also positively associated with incidence of stress, suggesting workplace pressures contributing to stress experiences. This information informs the profession to target these areas and increase staffing levels to retain the existing workforce. The NSW Nursing Practice and Process Development Survey has addressed some concerns relating to workload issues by supporting existing senior and educated staff. This initiative is a result of previous research identifying excessive workloads as a factor which influences provision of quality care for patients (NSW Health Department, 2002-2003). Excessive workloads can be shared and prioritised amongst working team members with appropriate control and authority, in order to relieve some burden and tension. Assessing skill mix and patient acuity and allocating workloads accordingly depending on each nurse's and midwife's experience could be an effective workplace strategy when under the control of the nurses and midwives.

Those nurses and midwives experiencing work environment stress were also experiencing exhaustion, psychosocial effects and displaying high self-imposed work pressure and motivation. This highlights the added physical, emotional and psychological effects with which these nurses and midwives contended. Those nurses and midwives who worked longer hours also experienced stress related to the work environment. Since commencing this study, the NSW Nurses Association has implemented steps to be taken in both public and private hospitals to address unreasonable workloads, so that nurses and midwives can act upon these issues. This study suggests the importance of such strategies and the need to assess that the promised changes actually occur. Organisational support was also perceived as lacking for the respondents from this study, and this runs parallel with the number who felt loss of empathy for their colleagues. This highlights the need for improvement of managers', supervisors' and team members' support for their colleagues in the clinical areas.

1.2. Psychosocial effects

It is evident from this research that a significant proportion (40%) of nurses and midwives are experiencing an array of psychosocial effects associated with stress. Psychosocial effects such as anxiety, sleeplessness, depression, headaches and helplessness were the most dominant factors relating to stress. This research provides information so that nurses and midwives can become aware of these effects, thereby reducing the risk of ill health. If nurses and midwives are made aware of these effects as part of their education and syllabus they might make more informed decisions about where they want to work.

A focus on developing coping skills for the future and the importance of debriefing with colleagues following critical incidents would be a valuable strategy to incorporate into the workplace. This research found that nurses and midwives are going to work even though they are ill, thus putting not only themselves at risk, but their patients as well. Those nurses and midwives experiencing psychosocial effects of stress were also experiencing work environment stress, exhaustion and job dissatisfaction, implying that physical and mental ailments that these nurses and midwives were experiencing were related to their workplace. Those nurses and midwives who experienced stress requiring treatment and sleeplessness, were also feeling emotionally drained, indicative of psychosocial effects related to stress and moving towards burnout. Nurses and midwives who experienced stress requiring treatment were also experiencing headaches requiring analgesia, further highlighting psychosocial effects of stress in this study. The older the person was and the longer they worked in the profession, the less likely the nurse or midwife was to take “mental health” leave, which runs parallel with other results from this study.

Those nurses and midwives working longer hours were more likely to experience sleeplessness, which is an area that could be focused upon for future research, especially with the introduction of 12 hour shifts to promote continuity of care for patients. A quarter of this sample of nurses and midwives reported that they experienced sleeplessness at least once or twice a week. This is a substantial proportion of nurses and midwives experiencing sleeplessness, considering short-term sleeplessness was associated with long-term sleeplessness, meaning that these nurses

and midwives could be dealing with sleeplessness for some time. Working longer hours might serve the purpose of better continuity of care for patients but ultimately might be deleterious for the ability of the nurse or midwife to provide high quality care for an extended period. Managers fostering autonomy and involving nurses and midwives in decision-making in the workplace and preventing overtime could help reduce these psychosocial effects of stress. Nurses and midwives could have increased control over better working hours by job-sharing which could reduce the incidence of “mental health” leave and reduce other effects such as sleeplessness. Nurses and midwives experiencing sleeplessness were also dealing with depression and feeling emotionally drained, suggestive of long-term effects of stress and burnout.

Managers, educators and supervisors must continually assess their staff and consider the psychosocial effects that stress in the workplace might generate. This would involve continual assessment of issues such as treatment for stress and job satisfaction by way of questionnaires (which could still need to be developed), and ensuring that communication lines are open between all colleagues as part of daily professional practice. If nurses and midwives can work in areas where they feel comfortable, job dissatisfaction levels might then decrease as nurses and midwives address their psychosocial situation.

1.3. Job satisfaction

The majority (57%) of this sample of nurses and midwives were moderately satisfied with their work. Enjoying the work and perceiving themselves as suited to their particular type of work related to nurses’ and midwives’ job satisfaction. Job dissatisfaction is another factor linked with stress and in fact, nurses and midwives who were experiencing psychosocial effects of stress were also experiencing work environment stress and job dissatisfaction. Those nurses and midwives who were dissatisfied in their job were also exhausted, suggesting they were discontented in their work due to their fatigue levels moving well within the definition of burnout. Being younger was also associated with job dissatisfaction for this sample of nurses and midwives.

It is evident that the nurses and midwives in this study, despite their experiences of stress and burnout, continue to work in their profession as they enjoy what they do. Managers could foster collegial and respectful relationships with those nurses and midwives presently in the workforce to reduce the likelihood of their leaving the profession. Nurses and midwives currently working in the system also need to be appropriately praised and rewarded by senior management for their good work to enhance morale and camaraderie so that they feel that they are being recognised and valued for the work they do. Anecdotal reports of nurses and midwives only receiving feedback for negative complaints should be an occurrence of the past.

2. Burnout

The majority (54%) of this study of nurses and midwives scored moderate burnout levels, which indicates that a substantial proportion of those in the workplace were already dealing ineffectively with what they described as continuous stress. Nurses or midwives subjected to working longer hours, were more likely to experience burnout, apathy and feel emotionally drained, highlighting this pertinent issue in the prevention and management of burnout. This study identified some of the characteristics of nurses and midwives less likely to suffer burnout. Being older, and having spent more years in the profession lessened their chances of losing empathy for clients which is a component of burnout. Being older they were also less likely to feel emotionally drained, suggesting development of coping mechanisms and higher tolerance of burnout levels as they age. As these nurses and midwives become more experienced in dealing with continued stress they reduce the likelihood of moving into burnout. A more educated person was less likely to lose empathy for colleagues, suggesting development of coping skills and better education to provide more camaraderie and support from work colleagues. If they were living alone, they were also less likely to lose empathy for colleagues. These people, then, were probably more likely to develop close harmonious working relationships. Clinical supervision could be made available to all nurses and midwives working in the healthcare system so that they have an outlet to diffuse stress which accumulates over time, thereby preventing burnout.

2.1. Exhaustion

The main factor linked with burnout for nurses and midwives in this study was exhaustion. There were strong links between experiencing low morale, feelings of powerlessness and exhaustion relating to prolonged exposure to stress in the workplace. These results suggest that, overall, these nurses and midwives have become overtired possibly from working in an environment which restricts autonomy and decision-making, resulting in low self-esteem. Nurses and midwives might need encouragement to accurately assess their own workplace stress as those who were exhausted were also experiencing work environment stress, psychosocial effects of stress, job dissatisfaction and working longer hours. It seems that for these nurses and midwives, exhaustion pervades their personal and professional daily lives.

3. Individual responses

The majority (53%) of nurses and midwives showed moderate levels of self-imposed work pressure and motivation. As noted before, the more educated nurses and midwives were less likely to place unreasonable pressure on themselves. Being more educated suggests that those people are less likely to inflict unnecessary pressures on themselves or, as previously noted, might be better prepared to cope in the first place. This also suggests development of better coping mechanisms or the fact that they were more educated to deal with internal or external pressures. Further research could focus on the interrelationship between stress and self-induced pressure, job compatibility and the type of person entering the profession. The findings might then highlight how a person might be expected to behave, and subsequently respond and perform in the healthcare workplace.

3.1. Pressure and motivation

If stressors are absent there is no motivation, and if they are excessive nurses and midwives might place unreasonable expectations on themselves, either as a result of the work environment or themselves. As far as work behaviours such as self-imposed work pressure and motivation were concerned, those nurses and midwives who wanted to achieve more in a short space of time also placed unreasonable expectations on themselves, highlighting self-imposed time urgency and unnecessary deadlines.

Those nurses and midwives experiencing work environment stress also displayed high levels of self-imposed work pressure and motivation, suggestive of the workplace pressures faced by these nurses and midwives. This could also mean that the more pressure nurses and midwives impose upon themselves the more likely they were to feel stressed in their work environment. Those nurses and midwives who worked longer hours also scored high self-imposed work pressure and motivation levels, which suggests that those who placed unreasonable expectations on themselves or felt pressure from work are more likely to work longer hours. Future research focusing on nurses and midwives placing unnecessary pressure upon themselves might shed light on the relationships between excessive workloads preventing them from achieving their goals and providing quality care.

4. Implications for nursing and midwifery policy and practice

Detecting stress in the nursing and midwifery profession is not easy but this might be able to be achieved by continually updating professional practices and promoting awareness of the difficult conditions in which health professionals work. Nurses and midwives also need positive reinforcement. Relationships between the individual responses to stress and burnout have been presented, as well as the effect of individual differences such as demographics on stress-related areas and higher risk workplaces. These pertinent areas relate to this study's nurses' and midwives' issues, concerns, expectations, effects and satisfaction as they deal with stress and burnout in their healthcare workplace.

Nurses and midwives need to be continually reminded and educated about the possibility of stress and burnout within the profession. They need to assess their own workplace stress and heighten their awareness so they can reduce occupational hazards and reduce the likelihood of developing health problems related to stress and burnout. As shown by this research, there are many types of stress and burnout that nurses and midwives encounter in their daily working lives.

If novice nurses have the appropriate information concerning major issues they are likely to have to deal with in their chosen career, and are provided with effective strategies to address stress and burnout, their improved and more realistic understanding and expectations of the nursing and midwifery working environments will assist them throughout their professional lives. This research will make nurses and midwives aware of their own personal attributes, matching them to a particular work environment appropriate to individual needs of skill, experience, choice and suitability. Individual potential can then be fully maximised. This research will provide line and senior health managers and other key stakeholders with relevant information as to a range of appropriate workplace strategies which, if implemented effectively, reduce stress and burnout within the nursing and midwifery workforce.

Employers, both governmental and private, need to continually address issues of excessive workloads and enhance the quality of work environments so that nurses and midwives can work effectively. If senior management and policy advisors can acknowledge and assess stress and burnout within the nursing and midwifery profession this might be enough to eradicate increased levels of burnout and prevent nurses and midwives leaving the profession. Even if assessment of stress and burnout is addressed, for example, on a monthly basis, with any of the reliable tools available, at least nurses and midwives might feel as though their stress and burnout is being acknowledged and monitored.

If nurses and midwives are able to work effectively and efficiently in their workplace, retention rates will possibly improve. Targeting workplace and occupational stress will thereby minimise future burnout and the associated psychosocial effects, exhaustion and job dissatisfaction, as this research found that nurses and midwives do enjoy their work. Other factors linked with stress relate to psychosocial effects which include psychological and physical ailments requiring treatment and “mental health” leave. If managers can be aware of these signs and symptoms in the workplace these problems can be addressed before they lead to burnout.

It seems that, according to this study, older and more educated nurses and midwives are less stressed than their younger counterparts. It could be that they have developed

better coping mechanisms. As far as job compatibility was concerned, they might have stayed in the profession because they perceive that they are suited to the particular type of work and enjoy what they are doing. Marketing strategies might attract younger nurses and midwives into the profession but the problem then is retaining this workforce. Retaining this dedicated workforce and attracting and nurturing younger nurses and midwives into the profession will be a challenge for future employers if they do not address the stress and burnout phenomena. Those nurses and midwives living alone were identified as less likely to experience ill effects of burnout which provides some information for the nursing and midwifery profession and the health professions when they are dealing with stressful issues.

This study found that accident and emergency nurses experienced some aspects of stress and burnout more than other areas of practice, suggesting that research into stress and burnout in the various speciality areas of nursing practice would be useful. This research informs people who design nursing and midwifery curricula so that they can make stress and burnout a priority within their education syllabus. Education including awareness of signs, symptoms and prevention of stress strategies might improve retention rates. If nurses and midwives are educated about these issues at the outset of their careers, they will be able to develop their own coping strategies early enough to reduce the likelihood of leaving the profession. This might then also reduce ill health and treatment of nurses and midwives for stress. It seems that shorter working hours, improved pay and better working conditions are components of excellence in quality of care; these issues need to be considered in attempts to reduce the likelihood of ill health in the nursing and midwifery profession.

Nurses and midwives must have realistic expectations of themselves so they can provide quality care for their clients in their workplace. This research could also inform career counselling to address individual responses to stress and burnout of the future nurse and midwife workforce. Future nurses and midwives entering the profession need to be aware of the present status of the healthcare system so that they can prepare themselves for their professional lives.

The literature and this research identifies that clinical supervision might become routine for the nursing and midwifery profession; this supervision could focus on the professional and personal development of the nurse or midwife, encouraging reflective clinical practice to promote quality care for the patient. If nurses and midwives are able to debrief about their workplace problems and issues, as in clinical supervision, either as part of their paid work time or if preferred in an external source of individual counselling, the impact of stress and burnout might diminish. Dealing with critical incidents at the time they are encountered might lessen the impact of those incidents.

5. Summary

This research has shown that nurses and midwives are experiencing problematic stress issues associated with their workplace and the psychosocial effects that accompany stress and burnout. Increased exhaustion levels were a result of a combination of work environment stress, psychosocial effects and job dissatisfaction. Even though these nurses and midwives are working with moderate levels of stress and burnout, the majority enjoy their work and do not want to leave their profession. Considering the levels of stress and burnout that these nurses and midwives describe, these results display a dedicated workforce, and possibly explain why they have not left the profession. It also might mean that they have become accustomed to their stressful work environment and are not acknowledging and dealing with their stress and burnout, as most do not feel supported by their colleagues to do so.

It seems that inefficient time management (for example, due to excessive workloads); and time pressures or deadlines, were important issues for this study of nurses and midwives, and if governments and employers focus on alleviating workload issues stress and burnout might decline. For nurses and midwives working in the healthcare system, if time management issues, such as excessive workloads, team-work and patient acuity can be prioritised, work environment stress could be lessened. Particular demographics increased the likelihood of experiencing stress, burnout and high self-imposed work pressure and motivation with working longer hours being one of the most deleterious causes. Working longer hours for these nurses and midwives

increases the likelihood of experiencing stress and burnout in the workplace and was responsible for detrimental effects including sleeplessness and feeling emotionally drained. Consequently a focus, by employers on the duration of shifts is warranted. If policy makers and senior management could concentrate on reducing working long hours in the workplace, levels of stress and burnout might be lessened. Increasing staff numbers and streamlining services would ameliorate some of these effects so that nurses and midwives can provide quality care.

According to this research, organisational support needs to be improved so that nurses and midwives can support their colleagues and feel recognised and valued with the best outcomes for patient care. Increased organisational support, both by senior nurse and health care managers could reduce work environment stress. It is therefore essential for managers to identify and work with nurses and midwives who are constantly encountering stress, by way of better communication, by face-to-face interaction in the clinical areas. This could be addressed by simply monitoring nurses' and midwives' stress levels through administration of questionnaires to assess stress, and through formal and informal enquiries. This could include frequent discussions, dialogue and regular meetings with clinical practising nurses and midwives. Nurses and midwives might then feel that their stress is being addressed and acknowledged. Likewise, nurses and midwives need to be outspoken without being ashamed, to alert their managers about increasing stress levels before they reach burnout.

If this research's findings are made available to other nurses and midwives in the profession by way of publications or conference presentations it would hopefully enable them to make informed choices for the workplace and professional development. Nurses and midwives need opportunities for training, education and support in these areas, to enable them to make informed choices so they are not oblivious to the obvious stressors which lie ahead of them. Clinical supervision is one way of addressing the outcomes of stress and burnout, and even though it is only a relatively new phenomenon for the nursing and midwifery profession it might be a useful method of confronting and dealing with problems caused by excessive levels of stress and burnout.

If nurses and midwives are to continue to provide quality care, a reduction of work hours, increasing morale and developing strategies to reduce feelings of being powerless, as well as attention to proper staffing, would likely contribute to reducing stress and burnout. Future research could focus on in-depth interviews which would complement this quantitative study to further explore specific reasons why nurses and midwives work the way they do and pursue the phenomena of associated individual responses to stress and burnout. Results of this research highlight the need for policy makers to address the workload issue so that individual responses to stress and burnout could be continually assessed for the existing nurse and midwife workforce. Those nurses and midwives found to have problems could be treated and counselled, instead of attempting to deal with the aftermath of a stressful workplace. Future resources could be targeted at retaining this dedicated existing workforce and attracting younger nurses and midwives into the profession. If all relevant stakeholders implemented these above recommendations stress and burnout levels should then become more manageable. This study has provided further evidence in the area of stress, burnout and individual responses to workplace issues, adding to the body of existing information which will hopefully further inform nursing and midwifery practice.

6. Recommendations for further research

Long-term effects such as sleeplessness and feeling emotionally drained were deleterious effects of stress and burnout for this study. An understanding of the association of these deleterious effects with working longer hours could assist nurses and midwives to make better choices regarding time spent in the workplace. It is unknown whether working these longer hours was voluntary for these nurses and midwives. This could be pursued in further research, to compare if those working longer hours voluntarily are more stressed than those working longer hours involuntarily.

Individuals might behave differently in various situations and this research has shown that the workplace had a significant effect on nurses and midwives placing unreasonable expectations on themselves. This might be due to the excessive

workload or the type of personality likely to self-impose pressures and deadlines. Nurses and midwives possibly feel that they own the ‘problem’ rather than the organisation owning it. The idea that nurses internalise the responsibility for workplace stress is one worth examining. This is an area which could be targeted for identifying solutions.

This study did not research coping mechanisms, focusing more on the sources and effects of stress and burnout. Coping mechanisms could be investigated further as relating to stress and burnout. The challenge is to investigate how coping strategies used by nurses and midwives in managing stress influence reduced stress as well as affect patient care.

Consideration should be given to pursuing further research into those nurses and midwives who have already changed their area of practice or left the profession as to reasons why they made this change. If their reasons for leaving the profession include experiences of stress and burnout, these could be focused on for future research. Changing the area of practice could also be seen as a solution to addressing stress and burnout and investigation into these areas is worth pursuing. Clinical supervision is an area where further research is warranted, once it has been implemented and whether it has made a significant difference to nurses’ and midwives’ experiences of stress and burnout.

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Appendix 1 Ethics approval

Dear Dr J Madison, Dr J Harris, Ms V Skinner

HREC has given approval for the following.

Individual reactions to stress within Nursing and Midwifery professions and their correlation to burnout

Your HREC approval number is: **HE03/201 valid from 23rd July 2003 to 23rd July 2007**

The Human Research Ethics Committee may grant approval for up to a maximum of three years.

For approval periods greater than 12 months, researchers are required to submit an application for renewal at each twelve-month period. All researchers are required to submit a Final Report at the completion of their project. The Renewal/Final Report Form is available at the following web

address: http://rs-nt-10.une.edu.au/Home/V_2_1/ecforms.html

The NHMRC National Statement on Ethical Conduct in Research Involving Humans requires that researchers must report immediately to the Human Research Ethics Committee anything that might affect ethical acceptance of the protocol. This includes adverse reactions of participants, proposed changes in the protocol, and any other unforeseen events that might affect the continued ethical acceptability of the project.

In issuing this approval number, it is required that all data and consent forms are stored in a secure location for a minimum period of five years.

These documents may be required for compliance audit processes during that time. If the location at which data and documentation are retained is changed within that five year period, the Research Ethics Officer should be advised of the new location.

Best Wishes,
Belinda

Appendix 2 Conferences and distribution / return rates for main study

Conference /Seminar, 2005	Population (Number)	Responses (Number)	Response Rate (Percentage)
Legal Issues for Midwives Seminar, Westmead, Sydney, NSW, April 28	66	51	77.2%
Lactation conference, Sydney, NSW, May 27-28	199	82	41.2%
Obstetric & Accident & Emergency Update, Brisbane, QLD, June 14-15	167	81	48.5%
Paediatric Update, Sydney, NSW, June 18	142	50	35.9%
Legal Issues Seminar, Perth, WA, June 18	180	38	20.6%
Nurses Electrocardiograph & Pacemaker Seminar, Gosford, NSW, June 27-28	45	24	51.1%
Dilemmas of the Newborn Seminar, Parramatta, NSW, July 29	38	10	26.3%
Lactation Seminar, Gosford, NSW, August 2	45	25	55.6%
Neonatal Seminar, Westmead, NSW, August 30	56	33	58.9%
International Breastfeeding Conference, Hobart, Tasmania, September 28, 29 & 30	197	80	40.6%
Annual State Midwifery Conference, Bondi, NSW, October 21 & 22	73	32	43.8%
Annual Wound Conference, North Sydney, NSW, November 11 & 12	141	53	37.6%
Cardiotocographic Seminar, Gosford, NSW, November 22	9	3	33.3%
Total	1358	562	41.4%

Appendix 3 Questionnaire



School of Health
Armidale, NSW 2351,
Australia

Dear Colleague,

As part of my research doctoral studies at the University of New England, Armidale, I am studying how individuals with different personality types within the nursing and midwifery profession deal with “stress” and “burnout” and how this is related to control over their work environment.

Considering your present role as a midwife or nurse, I am most interested in obtaining your views and believe that you will give me great insight and individual perspective on this issue. I hope you will enjoy completing the questionnaire for your own thoughts and feelings about stress and burnout and associated personality types.

For the purposes of this research, these definitions are given.

DEFINITION OF STRESS

Inability to control work environment in such a way that it causes considerable pressure amongst working team members. This may contribute to feelings of unease at the initial episode of stress and involve an array of symptoms characteristic of ill-health over a prolonged period of time in helping professions, ultimately leading to burnout.

DEFINITION OF BURNOUT

Over a prolonged period of time burnout is experienced by those in helping professions resulting in feelings of helplessness and being emotionally exhausted and overwhelmed. This contributes to lack of empathy towards clients and feelings of incompetence and unsuccessful achievement in ones' work with people.

Once you have completed the enclosed questionnaire, you may be asked to be involved in an interview with the researcher. The interview will be audiotaped and transcribed by the researcher. The interview can take place at your residence or any other place you choose. If you do not live in Australia, it will be by phone. If you are willing to return for an interview, you will be given another information sheet and consent form for that purpose.

The research data for this questionnaire will be locked in a cabinet at my private residence during the research project and kept for a period of 5 years following the research. The data will then be destroyed. Your participation is strictly voluntary and you may withdraw at any time. All aspects of this research project will remain confidential and all questionnaires and interviews will contain a number instead of a name. Only the researchers will know your identity.

The material revealed in this questionnaire may be disseminated by publication in professional journal articles and papers presented at nursing professional conferences. Once again, your identity will be protected at all times and not disclosed.

The UNE Ethics approval number for this research project is HE03/201.

As the questionnaire may raise personal or upsetting issues, counselling services may be contacted at your local Health Service.

If you have any questions regarding the research project please contact my supervisors, Dr Jeanne Madison, School of Health, University of New England, Armidale, NSW, 2351, telephone (02) 6773 3667, Dr Judy Harris, University of New England, Armidale, telephone (02) 6773 3953 or Trish Lee-White, Obstetric Unit Clinical Nurse Consultant, Central Coast Health, Holden Street, Gosford, NSW, 2250, telephone (02) 4320 2397. Further information may be gained by contacting me, Virginia Skinner, 46 Holcombe Ave, Narara, NSW, 2250, telephone (02) 4323 4962.

Should you have any concerns or complaints concerning the manner in which this research is conducted, please contact the Human Research Ethics Committee at the following address

The Secretary
Human Research Ethics Committee
Research Services
University of New England
Armidale, 2351
Telephone: (02) 6773 3449

When you have completed the questionnaire, please place the three sections of the questionnaire in the addressed envelope supplied and mail them by

Date.....

The questionnaire will take approximately 35 minutes to complete. If you are willing to be involved in an in-depth interview, please complete the last page of the questionnaire to provide your contact details. I will also provide you with feedback information on the results of your questionnaire. Thank you for your time and co-operation.

Virginia Skinner RN CM BHSc MNH

CONSENT FORM FOR QUESTIONNAIRE

**TITLE: INDIVIDUAL REACTIONS TO STRESS AND BURNOUT WITHIN
NURSING AND MIDWIFERY PROFESSIONS AND THEIR CORRELATION
TO PERSONALITIES.**

I have read and understand all the information describing this study in the attached Cover Letter to Questionnaire Participants. I understand the nature of the study; purpose and possible consequences and that I may withdraw at any time. All my questions have been answered to my satisfaction. I voluntarily consent to participate in this study and acknowledge that I have received a copy of this agreement and information sheet. Completing this questionnaire is an indication that I wish to participate.

It has been explained to me that the research project has been approved by the University of New England Human Research Ethics Committees.

I have fully explained the above study to the participant.

NAME OF INVESTIGATOR: VIRGINIA SKINNER

SIGNATURE: 

DATE:

Should you have any concerns or complaints concerning the manner in which this research is conducted, please contact the Human Research Ethics Committee at the following address:

The Secretary
Human Research Ethics Committee
Research Services
University of New England
Armidale NSW 2351
Telephone: (02) 6773 3449

COVER SHEET TO EXPLAIN QUESTIONNAIRE**Example of completing the questionnaire:**

In your work environment, how often have you experienced “stress”?

Definition of stress: Inability to control work environment in such a way that it causes considerable pressure amongst working team members. This may contribute to feelings of unease at the initial episode of stress and involve an array of symptoms characteristic of ill health over a prolonged period in helping professions, ultimately leading to burnout.

Occasionally	Frequently	Most of the time	Always
	✓		

If your answer is Frequently tick the appropriate column. Please ONLY TICK ONE BOX FOR EACH ANSWER.

APPENDIX ONE
QUESTIONNAIRE
PART ONE-STRESS AND BURNOUT

Please tick the most correct answer to the following questions.

1) In your work environment, how often have you experienced ‘stress’?

Never	Occasionally	Frequently	Most of the time	Always

2) In your work environment for your organisation, have you experienced inefficient time management? For example, is your workload too excessive at times to provide quality of care for clients?

Never	Occasionally	Frequently	Most of the time	Always

3) In your work environment, how often do you rush to complete things?

Never	Occasionally	Frequently	Most of the time	Always

4) At work, how often do you finish late?

Never	Occasionally	Frequently	Most of the time	Always

5) Do you become apathetic when “stressed”?

Never	Occasionally	Frequently	Most of the time	Always

6) Do you experience low morale in relation to work?

Never	Occasionally	Frequently	Most of the time	Always

7) Do you feel powerless in your job?

Never	Occasionally	Frequently	Most of the time	Always

8) Do you feel undervalued in your job?

Never	Occasionally	Frequently	Most of the time	Always

9) Have you felt overwhelmed in your job?

Never	Occasionally	Frequently	Most of the time	Always

10) Have you ever experienced feelings of incompetence within yourself in your work with people? This may occur at home, at work or in your social world.

Never	Occasionally	Frequently	Most of the time	Always

11) Are you treated with respect by your clients/patients?

Never	Occasionally	Frequently	Most of the time	Always

12) Do you have control over your work? This may involve choice in assignments, work hours and how you undertake your work.

Never	Occasionally	Frequently	Most of the time	Always

13) Do you have enough organisational support?

Never	Occasionally	Frequently	Most of the time	Always

14) Do you find your work colleagues unsupportive?

Never	Occasionally	Frequently	Most of the time	Always

15) Do you think you are suited to the particular type of work you are doing?

Never	Occasionally	Frequently	Most of the time	Always

16) Are you doing the kind of work you like?

Never	Occasionally	Frequently	Most of the time	Always

17) Have you experienced increased worry in relation to work?

Never/Occasionally	Over past few days	Over past few weeks	Over past few months	Over the past year	Over the past decade

18) Have you experienced sleeplessness in relation to work?

Never/Occasionally	Over past few days	Over past few weeks	Over past few months	Over the past year	Over the past decade

19) Have you experienced depression in relation to work?

Never/Occasionally	Over past few days	Over past few weeks	Over past few months	Over the past year	Over the past decade

20) How often do you experience sleeplessness in relation to work?

Never/Occasionally	Once or twice a week	3 or 4 times a week	5 to 6 times a week	Daily

21) How often do you feel tired?

Never/Occasionally	Once or twice a week	3 or 4 times a week	5 to 6 times a week	Daily

22) Do you experience headaches that require analgesia?

Never/Occasionally	Once or twice a week	3 or 4 times a week	5 to 6 times a week	Daily

23) How often do you feel emotionally drained at work?

Never/Occasionally	Once or twice a week	3 or 4 times a week	5 to 6 times a week	Daily

24) Would you like to change your area of practice?

Yes	No	Sometimes	Unsure

25) Would you like to leave your professional discipline?

Yes	No	Sometimes	Unsure

26) Do you think a certain amount of ‘stress’ is healthy? For example, ‘stress’ that keeps you motivated?

Yes	No	Unsure

27) Have you ever felt loss of empathy for feelings of colleagues while at work?

Yes	No	Unsure

28) Have you ever felt loss of empathy for feelings of clients while at work?

Yes	No	Unsure

29) Do you think ‘burnout’ is unavoidable in your job?

Yes	No	Unsure

30) Would you expect your work environment to be ‘stress’ free?

Yes	No	Unsure

31) Do you experience ‘stress’ that requires treatment? For example, panadol, massages.

Never	Once a year	Once every 6 months	Once every 3 months	Once a month	Once every few weeks	Once a week	Daily

32) How often do you experience job dissatisfaction?

Never	Once a year	Once every 6 months	Once every 3 months	Once a month	Once every few weeks	Once a week	Daily

33) Over the last year, have you taken leave as “mental health days”?

Never	Once	Twice	3 to 10 times	11-29 times	30 to 49 times	50 to 100 times

34) In your work environment, have you experienced feelings of helplessness?

Never/Occasionally	Yesterday	Over past few days	Over past few weeks	Over past few months	Over the past year	Over the past decade

35) For how long at one time do you experience depression in relation to work?

Never	For one hour	For one day	For two weeks	For a month	For a year	For a few years

36) How long was your longest holiday at one time over the last year?

For 7 to 10 weeks	For 5 or 6 weeks	For a month	For 2 or 3 weeks	For a week	For 3 to 5 days	For 2 days	For a day	No holiday

37) Would you prefer to work alone than with others?

Never	Occasionally	Frequently	Most of the time	Always

APPENDIX TWO
QUESTIONNAIRE
PART TWO-PERSONALITY TRAITS

Please tick the answer, which best describes your behaviour or the way you would react in that particular situation. Tick the box with which you most identify.

1) Do you try to achieve more in a short space of time, than time allows?

Never	Occasionally	Frequently	Most of the time	Always

2) Do you expect more of yourself than is reasonably possible?

Never	Occasionally	Frequently	Most of the time	Always

3) Do you get irritable when there are constant interruptions?

Never	Occasionally	Frequently	Most of the time	Always

4) Are you pushed for time?

Never	Occasionally	Frequently	Most of the time	Always

5) Do you have difficulty slowing down to attend to procedures, which require meticulous and methodical attentiveness, for example, calculating drug dosages, removing sutures, collecting blood or suturing?

Never	Occasionally	Frequently	Most of the time	Always

6) Do you work at high performance even when no time deadline is involved?

Never	Occasionally	Frequently	Most of the time	Always

7) Do you arrive early for appointments?

Never	Occasionally	Frequently	Most of the time	Always

8) If you are experiencing a cold or feeling generally unwell, would you report sick for work?

Never	Occasionally	Frequently	Most of the time	Always

9) If you become unwell while at work, would you ‘soldier on’, admitting only to yourself and not to others that you are feeling ill?

Never	Occasionally	Frequently	Most of the time	Always

10) Are you motivated by wanting to maintain control of your work environment?

Never	Occasionally	Frequently	Most of the time	Always

11) Are you keyed up a lot of the time on most days?

Never	Occasionally	Frequently	Most of the time	Always

12) Have you the tendency to perform many tasks at one time?

Never	Occasionally	Frequently	Most of the time	Always

13) Are you constantly looking for a challenge in your work?

Never	Occasionally	Frequently	Most of the time	Always

14) Do you have a strong sense of commitment to your work?

Never	Occasionally	Frequently	Most of the time	Always

15) How do you react when you are irritable?

Swear and shout	Verbalize your feelings in a disruptive manner	Verbalize your feelings in a controlled manner	Bottle your feelings inside

Please select and circle the personality traits that apply to you.

	Relaxed
	Thoughtful
	Hard-driving
	Impatient
	Aggressive
	Compliant
	Hostile
	Tense
	Ambitious
	Restless

	Easy going
	Shy
	Competitive
	Energetic
	Workaholic
	Introspective
	Introverted
	Easily angered
	Anxious

QUESTIONNAIRE
PART THREE-DEMOGRAPHIC INFORMATION

I would appreciate acquiring some information concerning your own personal details and nursing history. **Please tick your answer / answers.**

YOUR AREA OF PRACTICE. Please circle your predominant area or specify same.
**If you work in more than one area, please write the areas in the space provided,
writing the most predominant area first.**

Critical care / Midwifery / Neonatal care / Accident & Emergency / Oncology / Operating Theatre / Recovery / Medical / Surgical / Aged Care / Community / Education / Nursing Management / Other

.....

Male	Female

YOUR COUNTRY OF PRACTICE

.....

Are you permanent, fulltime or part-time or casual?

.....

How many hours per week do you work on average?

.....

How long have you been in your profession?

.....

Your professional qualifications (please specify).

Hospital certificate/s.....

Diploma/s.....

Degree / degrees.....

How old are you?

.....

Do you live alone?

Yes	No

If you answered NO to this question, please circle who else shares your household.

	Partner
	Child/ren (18yrs and over)
	Sibling
	Siblings
	Parent
	Dependent parent

	Child/ren (Up to 17yrs of age)
	Stepchild/ren (Up to 17yrs of age)
	Stepchild/ren (18yrs and over)
	Flat mate
	Flat mates
	Grandchildren

Thank you for your participation in these questionnaires.

If you are willing to participate in an in-depth interview, please provide contact details on the next page. This does not necessarily mean you will be called for these. You will be notified either way. You may receive results of this questionnaire, if you so specify.

NAME:

ADDRESS:

PHONE NUMBER:

Best time to call:

Appendix 4 Paired responses for test-retest scores for pilot study

	Part 1 – 38 questions Stress Burnout	Part 2 – 15 questions Individual Responses
ID 1	25 paired 66% the same	5 paired 33% the same
ID 2	22 paired 61% the same	9 paired 64% the same
ID 3	27 paired 76% the same	7 paired 47% the same
ID 4	26 paired 66.6% the same	9 paired 60% the same
ID 5	29 paired 73.7% the same	15 paired 100% the same
ID 6	31 paired 81.6% the same	7 paired 46.7% the same
ID 7	30 paired 79% the same	9 paired 60 % the same
ID 8	28 paired 73.7% the same	10 paired 66.6% the same
ID 9	27 paired 76.3% the same	11 paired 73.3% the same
ID 10	31 paired 84% the same	9 paired 82% the same
ID 11	21 paired 55.2% the same	10 paired 66% the same
ID 12	24 paired 63.9% the same	11 paired 73.3% the same
ID 13	23 paired 60.5% the same	8 paired 53.3% the same
ID 14	28 paired 73.7% the same	10 paired 66.6% the same
ID 15	22 paired 57.8% the same	9 paired 60% the same
ID 16	32 paired 84.2% the same	15 paired 60% the same
ID 17	31 paired 81.5% the same	10 paired 66.7% the same
ID 18	27 paired 75.6% the same	5 paired 33.3% the same
ID 19	35 paired 92% the same	10 paired 66.6% the same
ID 20	20 paired 54% the same	5 paired 33.3% the same
ID 21	34 paired 89.5% the same	14 paired 93.3% the same
ID 22	25 paired 65.8% the same	7 paired 46.7% the same
ID 23	27 paired 71% the same	8 paired 53.3% the same
ID 24	34 paired 89% the same	10 paired 66.6% the same
Average for total	27.5 paired 73% the same	9.3 paired 61 % the same

Appendix 5 Pilot study publication

The development of a tool to assess levels of stress and burnout.

Virginia Skinner RN RM BHsc MNH

Kingsley Agho Msc

Trish Lee-White RN RM BSoc Sci

Dr Judy Harris PhD

Virginia Skinner^{1,3*}, Kingsley Agho², Trish Lee-White³, Judy Harris¹.

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The development of a new tool to assess levels of stress and burnout.

Key words: face validity, internal consistency, test re-test.

ABSTRACT

Objective: To pilot test the reliability and validity of a newly developed tool measuring nursing and midwifery staff stress and burnout.

Design: Descriptive survey.

Setting: Public hospital, aged care facility and university.

Subjects: For the pilot study a total of forty-nine nurses and midwives, selected by convenience sampling, were sent an initial pilot questionnaire. The return rate was seventy per cent initially and the return rate on the second mail out was forty-nine per cent.

Main outcome measure: To determine reliability and validity of a new tool that explores nurses' and midwives' perceptions of stress, burnout and control over their working environment.

Results: Face validity, test-retest reliability, internal consistency and principal component analysis were established. Overall Cronbach's alpha was 0.87 indicating good internal consistency for the stress/ burnout element of the questionnaire. The test-retest reliability intraclass correlation coefficient reported 0.30 – 0.90 for all six subscales which were developed for both parts of the questionnaire.

Conclusion: The pilot study indicates that it is possible to construct a valid and reliable instrument to assess nurses' and midwives' perception of stress and burnout.

INTRODUCTION

There have been various tools and instruments used previously in the literature to assess stress (Maslach & Jackson, 1981; Jewell & Siegall, 1990; Stordeur, D'Hoore & Vandenberghe, 2001; Goldberg, 1978 & Rahe & Tolles, 2002). These tools were reviewed but seemed dated and no longer pertinent to current issues and concerns faced by midwives and nurses in their current clinical, challenging work environments. Tools must possess basic attributes that assure dependable measurement of the variables under investigation. These important attributes are termed validity and reliability (Waltz, Strickland & Lenz, 1991). Norbeck (1985) suggests that there are four minimum standards necessary for the adequate evaluation of an instrument for use in research. These standards should include at least one type of content validity, one type of construct (or criterion-related) validity and two types of reliability testing (internal consistency and test-retest). This paper will explore these issues concerning validity and reliability as they relate to the development of a new, original questionnaire.

RELEVANT LITERATURE

Validity and reliability

Validity is the extent to which a study using a particular tool measures what it sets out to measure (Polit & Hungler, 1997). The testing of validity is not exactly proven, but rather supported by an accumulation of evidence. A researcher does not totally validate a tool per se but more an application of the tool. Unlike reliability, there are no simple statistical calculations to assess validity (Polit & Hungler, 1997).

Polit and Hungler (1997) define content validity as the adequacy of the content area being considered. A subtype of content validity is face validity and this

investigates whether an instrument is calculating the appropriate construct (Dempsey & Dempsey, 1992). Dempsey and Dempsey (1992) define face validity as whether the items within an instrument measure the variables in a specific content area. Construct validity is another standard to be achieved in developing a new tool. It measures a specific construct or hypothetical trait, such as grief, intelligence or prejudice pertaining to an instrument (Dempsey & Dempsey, 1992). Factor analysis is one way of establishing construct validity. Factor analysis is calculated to statistically define subgroups for the indexes created by the researcher (Field, 2005).

The reliability of a tool is a criterion for assessing quality (Polit & Hungler, 1997). A tool is reliable when a repeat use of the tool consistently measures what it is measuring in exactly the same (Dempsey & Dempsey, 1992). This is also an assessment of stability of a tool. This approach has certain disadvantages. Mood, physical condition, knowledge and attitudes do change between measurements, despite the stability of a tool (Polit & Hungler, 1997). The time period for test-retest reliability was chosen (two weeks) so that individuals would not remember specific responses and not too long so that maturation and learning would most likely not occur in this time frame, affecting the answers. Reliability is expressed as a number which is called a coefficient. The higher the number the more reliable. Rarely is a tool perfectly reliable and is often reported as 0.80, 0.70 or 0.60, as opposed to 1.0 (Dempsey & Dempsey, 1992).

Other tools used in the literature

The Maslach (Maslach & Jackson, 1981) Burnout Inventory primarily studied three dimensions of burnout in nurses. These included providing nursing care in an atmosphere of depersonalisation; depicting nurses attending to tasks and patients

without any emotional feeling, emotional exhaustion and perceptions of reduced personal accomplishment; all indicative of feelings of low morale. It did not study specific stressors such as high patient acuity or low staffing levels. Jewell and Siegall's (1990) Nurse Stress Index correlated stress scores with job satisfaction, not behavioural aspects. It aimed to identify issues of occupational stress.

Stordeur, D'Hoore and Vandenberghe (2001) used a nursing stress scale which identified three sources of stress, namely, physical, psychological and social environments. They conducted their study on leadership, organization stress, and emotional exhaustion among nursing staff. These researchers did not look at the behavioural aspects of individual nurses. Goldberg (1978) designed the General Health Questionnaire-12 which detected psychological indicators of ill health. It was used in occupational and community settings as opposed to nursing workplaces. The questionnaire's main purpose evaluated psychiatric morbidity.

Aims

A pilot study before embarking on a main study is of the utmost importance (Hundley & van Teijlingen, 2002). A pilot study was undertaken to primarily establish a feedback mechanism, ensure the survey was user-friendly, ensure the items in the survey covered the content area of interest and establish a degree of reliability. This paper explores issues associated with the development of a new, original questionnaire and reports on reliability and validity determined by a pilot study. The paper discusses the imperative issues of a comprehensive pilot process that assesses not only the questionnaire but that meaningful data and analysis is possible to acquire.

METHOD

Development of survey

Generation of items for the draft questionnaire

The researcher began the process of developing a comprehensive questionnaire by accumulating literature and other questionnaires from the area of interest. The questionnaire was designed and developed specifically for the study. Items were generated from a literature review and the researcher used the search items, stress; burnout; personality and behavioural characteristics. The questionnaire consisted of three sections. The first section obtained demographic information. The second section comprised thirty-eight items related to stress and burnout. The third section comprised fifteen questions related to personality and behavioural aspects exhibited in particular scenarios, known as vignettes (Polit & Hungler, 1985). Additionally a comprehensive accumulation of information from the area of interest came from the researcher's first hand knowledge and experience in the healthcare workforce.

Expert advice from academic and clinical experts in the field included a university presentation feedback session. The questionnaire was presented for comment to a post-graduate research residential school including students and lecturers at the university in October, 2003. This university research residential school is an opportunity for students to present their research and receive feedback. The researcher thought that this would be an excellent venue to present the questionnaire in its first draft form. The original questionnaire was presented and many changes were implemented from this presentation.

Changes to questions relating to stress and behavioural aspects

The residential school feedback provided the researcher with a comprehensive list of changes and additions from the original draft questionnaire. All changes suggested were incorporated into the new questionnaire. The first addition included “Tick one box” to ensure participants answered single responses only. The word “inefficient” replaced “poor”. The words “In your work” were added onto the question, “Are you constantly looking for a challenge?” The word “suffered” as in suffering pain was changed to “experienced”, “stress that keeps you moving” was changed to “stress that keeps you motivated”.

The questions, “How long was your holiday at one time over the last year?” and “How often did you holiday for more than one day over the last year?” were condensed into one question, “How long was your longest holiday at one time over the last year?” One of the options for this question, was changed to “seven to ten weeks” from “seven or eight weeks”. The phrase “not having enough time to attend to the quality of care of clients” was changed to “is your workload too excessive at times to provide quality of care for clients”. The question “Do you think you are well-suited to this particular type of work?” was changed to “Do you think you are suited to the particular type of work you are doing?”

Changes to questions relating to demographics

Changes were made as indicated: the area of “nursing management” was included in the “areas of work”, which had not been included in the original draft questionnaire. The sentence “If you work in more than one area, please write in the space provided starting with the most predominant area first” was added to prevent

answers of many areas and the researcher not knowing the predominant area. It was recognized that nurses often work in many different specialties and it would be important to know the primary or most usual specialty work place. Added to the demographics were the hours worked and whether the nurse or midwife worked permanent, fulltime, part time or casual.

Sampling population

Forty-nine respondents were included in this pilot study. The sample size was chosen to provide adequate information on reliability and a certain degree of face validity. Respondents included eighteen registered nurses from aged care facilities, thirty midwives from the Central Coast of NSW and one doctoral student (who was a registered nurse) from the university. The subjects were selected by convenience sampling. The sample was selected because of geographical accessibility and the researcher gained ethics approval from the appropriate authorities. Although the sample was a mixture of midwives and registered nurses working in completely different arenas, the sample seemed indicative of what the main study sample could resemble. The surveys were distributed via the nursing unit managers to staff and by the researcher directly to the university student. The main study could have included some of the pilot study respondents, but the researcher was unable to determine if there was such overlap.

Classifications and coding legends for questionnaire

Classifications or categories were developed by the researcher for the first two parts of the questionnaire with numerical values attached to extreme, moderate, fair and nil / negligible levels of stress, control and self-imposed pressure. Questions from each

part of the questionnaire were categorized into the following sub-scales: work environment, burnout, control, job satisfaction, stressors and prefers working alone. For the stress / burnout and personality surveys, questions used a Likert ranking scale which designated level of stress or behaviour expected to be found in that situation. This is known as ordinal data. For example, the answers were: “never”, “occasionally”, “frequently”, “most of the time” and “always”. The researcher ranked the answers from nil stress to extremely stressed on opposite ends of the scale. There were eight questions which included “never / occasionally” in the same box as the answer or option. For example, the question, “How often do you feel emotionally drained at work?” would rate a high stress rating if the respondent answered “always” and a nil / negligible stress rating if the answer was “never / occasionally”.

All parts of the survey used different indices of coding to accommodate the varying, required levels. For both the stress / burnout and personality / behaviour components of the survey, specific indices were used for the subscales (see Table 1).

Processes for determining test-retest reliability

For test-retest reliability, scores on the two sets of responses are correlated statistically to yield a coefficient referred to as the correlation coefficient. If the results are the same or similar, the coefficient will be high – say 0.90 and the instrument is said to have high test-retest reliability. The first survey was distributed by the nursing unit manager and the second survey was mailed by the researcher. There was no way of controlling as to where the respondent completed the survey. The directions to complete the survey were exactly the same.

RESULTS

Response rate

The average age of the pilot respondent was 47.9 years and the average number of years in the nursing profession was 24.2 years. Thirty-five questionnaires were returned out of forty-nine distributed resulting in a seventy-one per cent return rate initially. A test-retest procedure was followed. Eight respondents remained anonymous and necessarily these respondents were not sent another questionnaire. Respondents were able to be identified by placing their contact details on the questionnaire. The remaining twenty-seven respondents were sent another questionnaire, two weeks later. Twenty-four respondents returned the second questionnaire, giving a test-retest return rate of forty-nine per cent of the postal questionnaires distributed. Twenty-four respondents were therefore used in the pilot data analysis.

Data analysis

As the sample was small, an average was calculated for any numerical data that were missing (also known as mean imputation method). Overall reliability of the scale was calculated by Cronbach's alpha indicating internal consistency. The Spearman's rank order correlation was employed to analyse inter-item, item-total correlation and correlations between subscales. Spearman's rank order correlation was also used with the intraclass correlation coefficient to estimate the degree of resemblance or reliability of the subscales for the preliminary and final versions of the pilot questionnaire (that is, the test and retest scores). The intraclass correlation coefficient was used with the continuous data. Principle component analysis using factor analysis was employed to produce the variables that are highly loaded or pertinent to midwives and nurses.

Internal consistency

The overall Cronbach reliability level for internal consistency for the total and subscales between the preliminary (first test) and final (second test) versions of the questionnaire were calculated. The result for the first test was 0.87 and 0.82 for the second test for the stress and burnout component of the questionnaire. The second correlation coefficient is only marginally lower than the first, to be expected when questions pertain to aspects of behaviour and stress. This level should be at least 0.70. One question was not included because one hundred per cent of the nurse and midwife participants responded “no” to the question, “Would you expect your environment to be “stress” free?” Nurses and midwives perhaps think that there is an expectancy that there will be certain levels of workplace stress with which to contend. For the personality traits component of the questionnaire, only the first five questions were used as they showed good reliability for internal consistency (> 0.70) for the preliminary (first test) and final (second test) versions of the questionnaire (see Table 2).

Test-retest reliability

Table 3 shows the test-retest reliability estimates (see column 3). From the table, all subscales in retest reliability were moderately correlated ($r = 0.47 - 0.69$) (see Table 3, column 2) and the correlation coefficients are between 0.30-0.62 (see Table 3, column 1) for the preliminary version of the test, however, stress and burnout subscales show lower correlation coefficients. This fact was supported by Stevens (1992) who reports that the strengths of the relationship or association depends on context and in some cases where the correlation is low does not imply that the outcome has no useful significance. Kline (1999) reaffirms this by reporting that when looking at

psychological constructs, realistically, lower correlation coefficients are more acceptable because of diversity of constructs being measured. This may be an indication that the data aggregated for these particular questions were multi-dimensional, not uni-dimensional. Stevens (1992) reports that most things have multiple causes, and in these cases it is difficult to account for a big variance with just one single cause.

Even though a small correlation is identified, this could make a substantial contribution for determining and evaluating strategies for reduction of stress. Losing this descriptive information might be detrimental for understanding symptoms of stress. For example, if high correlation coefficients are identified, these areas may be easier to address in possibly alleviating stress areas. The intraclass correlation coefficient ranged from 0.30 to 0.92 with stress and burnout showing a high resemblance between pre and post test (see Table 3, column 4) which indicates that the instrument has high test-retest reliability for these two subscales. Average paired responses (for test-retest scores) were 27.5 out of 38 (73%) the same for the stress / burnout component of the questionnaire and 9.3 out of 15 (61%) the same for the behavioural aspect.

Factor analysis

In social sciences issues or items are often measured that cannot be directly measured (latent variables). Stress and burnout cannot be measured directly: they have numerous facets. However, different aspects of stress and burnout can be measured. Stress levels, ideas of motivation and enthusiasm can be assessed. Factor analysis shows whether these measures reflect a single variable. Specifically, are these numerous variables driven by one underlying variable? Principal component analysis and factor analysis are techniques for identifying clusters or groups of variables (Field,

2005). The factor analysis for this pilot exercise indicated that stress and burnout had the high loading factors (see Table 3, column 4). The principal component analysis identified stress and burnout to be two major factors that nurses' and midwives' experience in their work environment.

DISCUSSION

Based on feedback from respondents in the research residential school, the format was changed to enhance user friendliness. The initial questionnaire contained the demographic information at the beginning, which was then placed at the end of the document. The residential school respondents suggested that immediately requiring personal details to be divulged might inhibit or restrict subsequent responses.

The pilot study and accompanying analysis for this newly devised questionnaire showed good overall reliability. For the personality / behaviour component of the questionnaire only the first five questions were found to be reliable based on test-retest processes. Despite this finding, the remaining eleven questions were not deleted from the final version of the questionnaire as it was believed that these questions could also provide a basis for descriptive statistics. If reliability is found to be low in the main study, this would be a limitation of this tool. It was concluded that there was a strong statistical correlation ($\alpha = 0.86$) between stress and burnout ($p<0.05$) which suggests that nurses and midwives experiences of stress may increase burnout levels.

Meticulous attention to appropriate piloting strategies identified weaknesses in the original questionnaire discussed in this paper. If not addressed, questions regarding coding, classifying, analysing and discussing subsequent findings could be expected. One of the limitations of this tool include the questions with low correlation coefficients. The sample size of the pilot survey would probably not be indicative of the

general population, but increased numbers in the main study could address this issue. The effects or reasons for non-responders cannot be analyzed as the researcher was unaware as to who was given the questionnaires. A forty-nine per cent return rate was considered adequate for this pilot study, but nonresponse bias needs to be considered (Polit & Hungler, 1997). Those who returned anonymous questionnaires, but did not want to participate in the second test were of varying characteristics to those who participated. They were mostly in the aged care, neonatal or midwifery professions and had worked in the profession anywhere from two to forty-one years.

The final questionnaire was distributed to 1366 Australian nurses and midwives and ultimately achieved a forty-one per cent response rate. The time, cost and energy to reach the distribution and collection stage of this research project warranted careful piloting as described here. It is expected that the findings will include information useful to the nursing and midwifery professions, as well as employers in the Australian health care industry.

CONCLUSION

The pilot study associated with the development of a new questionnaire demonstrated that it is possible to construct a reliable instrument to assess nurses' and midwives' perceptions of stress and burnout in their working environment. Comprehensive attention to careful survey development, adequate feedback from appropriately selected pilot respondents and detailed adherence to high quality piloting principles and strategies yielded significant information that informed the final survey. Future studies with this instrument, on bigger populations and in different cultural and socio-economic settings are needed to develop a generalized conclusion about this questionnaire as well as on nurses' and midwives' perceptions of stress and burnout.

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Table 1**Stress / burnout and personality / behaviour subscales / indices**

Subscales	Questions / Indices
Work environment	Frequency of stress / 0-4 Excessive workload / 0-4 Rush to complete tasks / 0-4 Finishing late / 0-4 Treated with respect by clients / 0-4 Organizational support / 0-4 Work colleagues unsupportive / 0-4 Expectation of “stress” free environment / 0-2
Burnout	Apathy / 0-4 Low morale / 0-4 Feeling undervalued / 0-4 Feeling overwhelmed / 0-4 Feelings of incompetence / 0-4 Increasing anxiety / 1-6 Fatigue / 1-5 Emotionally drained / 1-5 Loss of empathy for colleagues / 0-2 Loss of empathy for clients / 0-2 Burnout unavoidable / 0-2
Control	Powerlessness / 0-4 Decision-making / 0-4 Motivated by maintaining control / 0-4
Job satisfaction	Suited to work / 0-4 Enjoying type of work / 0-4 Change area of practice / 0-3 Leave professional discipline / 0-3 Frequency of job dissatisfaction / 0-7
Psychosocial stressors and symptoms	Sleeplessness / 1-6 Depression / 1-6 Frequency of sleeplessness / 1-5 Headaches / 1-5 Stress considered healthy / 0-2 Stress requiring treatment / 0-7 Mental health leave / 0-6 Helplessness / 1-7 Frequency of depression / 0-6 Length of holiday / 0-8
Personality / behaviour (all indices 0-4)	Working independently Achieving more than time allows Expect more than reasonably possible Irritability Pushed for time Difficulty slowing down for procedures Working at high performance Arriving early for appointments Reporting sick if unwell Continuing work if unwell Keyed up on most days Tendency to perform many tasks Constantly looking for challenge Strong sense of commitment Reactions when irritable

Table 2

Internal consistency reliability values (Cronbach's alpha) for preliminary and final versions of personality / behaviour component

Question	Preliminary	Final
Achieving more	0.8354	0.7957
Unreasonable expectations	0.8146	0.7671
Irritability	0.8454	0.736
Pushed for time	0.8387	0.7938
Difficulty slowing down	0.8781	0.826
Total	0.8708	0.8208

Table 3

Spearman's rank order correlation- rho, intraclass correlation coefficient (ICC) and factor analysis method for the six sub-scales

Subscales	Consistency (Spearman's rho)	Retest	ICC	Factor1
Work environment (8-item scale)	0.62	0.70	0.44	0.33
Burnout (11-item scale)	0.35	0.47	0.92	0.90
Control (3-item scale)	0.62	0.74	0.30	-0.30
Job satisfaction (5-item scale)	0.58	0.68	0.73	0.54
Stress (10-item scale)	0.30	0.50	0.81	0.91
Personality (15-item scale)	0.52	0.64	0.52	0.53

Appendix 6 Logistic regression calculations

The data lent itself to predicting outcomes of individual responses to stress and burnout and depending upon other aspects such as education, age, hours worked, years in profession and living arrangements.

1. Statistically significant findings

Statistically significant findings were found in relation to individual responses to stress and burnout.

1.1. Stress

In relation to stress, different variables predict whether respondents are more likely to experience sleeplessness and take “mental health” leave. In particular respondents were:

- more likely to experience sleeplessness if they worked longer hours ($p<0.01$) and
- less likely to take “mental health” leave if they were older ($p<0.0001$), the longer they worked in the profession ($p<0.01$) and if they lived alone ($p = 0.05$).

The following section presents more detailed information relating to stress concerning experiencing sleeplessness and taking “mental health” leave.

1.1.1. Experiencing sleeplessness (hours worked)

The results using the categorical predictor variables and the continuous predictor hours worked for the question, “Have you experienced sleeplessness in relation to work?” will be displayed. The categorical variable results are displayed in Table 1. Table 1 shows that when experiencing sleeplessness in relation to work with hours worked as the predictor, 41.7 per cent were fulltimers, 47 per cent of nurses and midwives possessed a degree and 12.1 per cent lived alone. This means that when using hours worked as the predictor in the equation for logistic regression, over two-fifths (41.7%) experiencing sleeplessness worked fulltime, almost half (47%) experiencing sleeplessness possessed a degree and a minority (12.1%) experiencing sleeplessness lived alone.

Table 1 Categorical Variable Results for Experiencing Sleeplessness in Relation to Work with Hours Worked as Continuous Predictor

Categorical results for Have you experienced sleeplessness in relation to work?			
Predictor- hours worked			
Fulltime	Yes	Number = 211	41.7%
N = 506	No	Number = 295	58.3%
Possesses a degree	Yes	Number = 238	47.0%
N = 506	No	Number = 268	53.0%
Live alone	Yes	Number = 61	12.1%
N = 506	No	Number = 445	87.9%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Have you experienced sleeplessness in relation to work?”, in the logistic regression equation (Table 2). Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives did experience sleeplessness in relation to work, it was predicted that this would be correct 189 times out of 506, that is, 37.4 per cent. If the prediction was that all nurses and midwives did not experience sleeplessness in relation to work, this prediction would be correct 317 times out of 506, that is, 62.6 per cent.

Table 2

Predictions for Experiencing Sleeplessness with Only the Constant in the Model

Question: Have you experienced sleeplessness in relation to work?			
Prediction correct for experiencing sleeplessness in relation to work	189 / 506	N = 506	37.4%
Prediction correct for not experiencing sleeplessness in relation to work	317 / 506	N = 506	62.6%

The next calculation included the categorical predictor variables and the continuous predictor hours worked for the question, “Have you experienced sleeplessness in relation to work?” Parameter codings were assigned to the categorical variables to determine the probability of outcome variables (Table 3).

Table 3 Categorical Variable Codings for “Have you experienced sleeplessness in relation to work?” with Hours Worked as Continuous Predictor

Predictor- hours worked			Parameter coding
	Category	Frequency	(1)
Fulltime	No	295	1
	Yes	211	0
Possesses a degree	No	268	1
	Yes	238	0
Live alone	No	445	0
	Yes	61	1

As hours worked was the highest score statistic (Table 4) compared to the other variables, this was entered into the model.

Table 4 Variables Not in the Equation (when only constant used) for “Have you experienced sleeplessness in relation to work?” in Calculation with Hours Worked as Continuous Predictor

Predictor- hours worked		Score	df	Sig.
Variables Step 0	Fulltime (1)	1.799	1	0.180
	Qualifications (1)	1.263	1	0.261
	Live alone (1)	2.167	1	0.141
	Hours worked	11.707	1	0.001
Overall statistics		14.613	4	0.006

The following results indicate how well this model predicts group classification. The significance of the models are displayed in the following tables (Tables 5, 6 & 7). The model for predicting sleeplessness with significant variables is displayed in Table 5. The model for hours worked (step one) (Table 5) correctly categorises 310 who do not experience sleeplessness and misclassifies seven (correctly classifies 97.8% of cases). For those who do experience sleeplessness, the model correctly categorises ten and misclassifies 179 (correctly classifies 5.3% of cases). When the constant was used only, the model correctly categorised 62.6 per cent of cases and now with hours worked added into the equation, the model correctly classifies 63.2 per cent of cases. For this question, people who work longer hours, are more likely to experience sleeplessness at the $p<0.01$ level, which was statistically significant. The other continuous predictors, age and years in the profession, were insignificant.

Table 5 Model for Predicting Sleeplessness with Significant Variables Included

Observed N = 506	Predicted no	Predicted yes	Percentage correct
Sleeplessness ^a no	310	7	97.8%
Sleeplessness ^a yes	179	10	5.3%
Overall percentage			63.2%

^a Step one- Hours worked

In Table 6, for hours worked, the *B* value is positive denoting that if the person works longer hours, they are more likely to experience sleeplessness, which is statistically significant at the $p<0.01$ level. The standard errors of the mean for these values are 0.308 and 0.008, respectively.

The Wald statistic is considerably different from 0 (Table 6), the predictor making a substantial contribution to predicting the outcome. The degree of freedom (df) is equal to 1 which relates to number of observations able to vary (Field, 2005). The $\exp b$ (1.028) for hours worked is the value of the odds ratio which is only a guess or point estimate of the true value, given the sample data. If the person works longer hours, the odds for sleeplessness is 1.028 times higher than for someone working less hours. The confidence interval (95% CI) is more accurate for the variable hours worked meaning that there is 95 per cent confidence that the value of the odds ratio in this sample population lies between 1.012 and 1.046.

Table 6 Significance of Model for Sleeplessness with Hours Worked as Continuous Predictor

N=506	B(SE)	Wald	df	exp b	95% CI
Included Predictor- hours worked					
Constant	-1.488*	23.355	1	0.226	
	(0.308)				
Hours worked^a	0.028**	11.097	1	1.028	1.012 to 1.046
	(0.008)				

*p<0.001. **p<0.01. ^a Variable entered on step one.

In Table 7, the initial -2 Log likelihood equals 668.731, which assesses the overall fit of the model when only the constant is included. The overall final fit of the model equals the second -2 Log likelihood which is 657.035. The difference in these scores equals the chi-square which is 11.696 ($p<0.01$) indicating a good fit of the model. This is the value between the initial model and the second model. This shows that more hours worked significantly predicts sleeplessness better than when only sleeplessness was used on its own in the model. The R^2 value for the Hosmer and Lemeshow (1989) is .02 which is the value of the chi-square divided by the original -2 log likelihood. The R^2 for the Cox and Snell (1989) and the Nagelkirke (1991) values are .023 and .031 for hours worked. This suggests that between 2.3 and 3.1 per cent of variability is explained by the outcome (dependent) variable when hours worked is built into the model.

**Table 7 Significance of Model with Hours Worked as Continuous Predictor
Demonstrating -2 Log Likelihood & Chi-square**

Initial -2 Log likelihood	2 nd -2 Log likelihood	Chi-square	Degrees of freedom
668.731 ^a	657.035	11.696 ($p<.01$)	1

$R^2 = .02$ (Hosmer & Lemeshow), .023 (Cox & Snell), .031 (Nagelkerke). ^a Step one (hours).

1.1.2. Taking mental health leave (age)

The results using the categorical predictor variables and the continuous predictor age worked for the question, “Over the last year, have you taken leave as “mental health days”?” will be displayed. The categorical variable results are displayed in Table 8. Table 8 shows that when considering “mental health” leave with age as the predictor, 42 per cent were fulltimers, 47 per cent of nurses and midwives possessed a degree and 12.2 per cent lived alone. This means that when using age as the predictor in the equation for logistic regression, more than two-fifths (42%) who took “mental health” leave worked fulltime, almost half (47%) who took “mental health” leave possessed a degree and a minority (12.2%) who took “mental health” leave lived alone.

Table 8 Categorical Variable Results for Mental Health Leave with Age as Continuous Predictor

Categorical results- Over the last year, have you taken leave as “mental health days”?			
Predictor- age			
Fulltime	Yes	Number = 211	42%
N = 502	No	Number = 291	58%
Possesses a degree	Yes	Number = 236	47%
N = 502	No	Number = 266	53%
Live alone	Yes	Number = 61	12.2%
N = 502	No	Number = 441	87.8%

The first analysis was calculated on a forward stepwise likelihood ratio method, so the initial model was derived using the constant, “Over the last year, have you taken leave as “mental health days”?” in the logistic regression equation (Table 9). Therefore, in this calculation all the predictor variables were omitted. If predictions were that all nurses and midwives did take “mental health” leave, it was predicted that this would be correct 230 times out of 502, that is, 45.8 per cent. If the prediction was that all nurses and midwives did not take “mental health” leave, this prediction would be correct 272 times out of 502, that is, 54.2 per cent.

Table 9

Predictions for Mental Health Leave with Only the Constant in the Model

Question: Over the last year, have you taken leave as “mental health days”?			
Prediction correct for taking mental health leave	230 / 502	N = 502	45.8%
Prediction correct for not taking mental health leave	272 / 502	N = 502	54.2%

The next calculation included the categorical predictor variables and the continuous predictor age in years for the question, “Over the last year, have you taken leave as “mental health days”?” Parameter codings were assigned to the categorical variables to determine the probability of outcome variables (Table 10).

Table 10 Categorical Variable Codings for “Over the last year, have you taken leave as “mental health days”?” with Age as Continuous Predictor

Predictor- age			Parameter coding
	Category	Frequency	(1)
Fulltime	No	291	1
	Yes	211	0
Possesses a degree	No	266	1
	Yes	236	0
Live alone	No	441	0
	Yes	61	1

As age was the highest score statistic (Table 11) compared to the other variables, this was entered into the model.

Table 11 Variables Not in the Equation (when only constant used) for “Over the last year, have you taken leave as “mental health days”?” in Calculation Using Age as Continuous Predictor

Predictor- age		Score	df	Sig.
Variables Step 0	Fulltime (1)	1.318	1	0.251
	Qualifications (1)	1.521	1	0.217
	Live alone (1)	2.753	1	0.097
	Age	17.308	1	0.000
Overall statistics		21.430	4	0.000

The model for predicting taking “mental health” leave with significant variables is displayed in Table 12. The model for age (step one) (Table 12) correctly categorises 208 who do not take “mental health” leave and misclassifies 64 (correctly classifies 58.6% of cases). For those who do take “mental health” leave, the model correctly categorises 86 and misclassifies 144 (correctly classifies 58.6% of cases). When the constant was used only, the model correctly categorised 54.2 per cent of cases and now with age added into the equation, the model correctly classifies 58.6 per cent of cases.

The model for age and living alone (step two) (Table 12) correctly categorises 211 who do not take “mental” health leave and misclassifies 61 (correctly classifies 77.6% of cases). For those who do take “mental health” leave, the model correctly categorises 87 and misclassifies 143 (correctly classifies 37.8% of cases). The model now correctly categorises 59.4 per cent of cases compared to when only the constant was used (54.2%). For this question, people who are older, are less likely to take “mental health” leave at the $p<0.0001$ level, which was highly statistically significant. Also people who live alone are less likely to take “mental health leave” at the $p = 0.05$ level, which was also just below the statistically significant level. The other continuous predictor, hours worked and the categorical predictors, employment status and qualifications were insignificant.

Table 12

Model for Predicting Mental Health Leave with Significant Variables Included

Observed N = 502	Predicted	Predicted	Percentage correct
	no	yes	
Mental health leave ^a no	208	64	76.5%
Mental health leave ^a yes	144	86	37.4%
Overall percentage			58.6%
Mental health leave ^b no	211	61	77.6%
Mental health leave ^b yes	143	87	37.8%
Overall percentage			59.4%

^a Step one- Age ^b Step two- Living alone & age

The significance of the models are displayed in the following tables (Tables 13 & 14). In Table 13, for age, the B value is negative denoting that if the person is older, they are less likely to take “mental health” leave, which is statistically significant at the $p<0.0001$ level. The standard errors of the mean for these values are 0.507 and 0.011, respectively and 0.590 and 0.011. For living alone, the B value is negative denoting that people living alone are less likely to take “mental health” leave which is just less

than statistically significant at $p = 0.05$ level. The standard errors of the mean for these values are 0.590 and 0.283, respectively.

The Wald statistics are considerably different from 0 (Table 13), the predictor making a substantial contribution to predicting the outcome. The degrees of freedom (df) are equal to 1 which relates to number of observations able to vary (Field, 2005). The exp *b* (0.955 & 0.954) for age is the value of the odds ratio which is only a guess or point estimate of the true value, given the sample data. If the person is older, the odds for not taking “mental health” leave is 0.954 to 0.955 times higher than for someone younger. The confidence interval (95% CI) is more accurate for the variable age meaning that there is 95 per cent confidence that the value of the odds ratio in this sample population lies between 0.933 and 0.976. The exp *b* (0.575) for living alone means that if a person lives alone, the odds of taking “mental health” leave decreases by a factor equalling or 0.575, all factors being equal. The confidence interval (95% CI) is more accurate for the variable living alone, being between 0.330 and 1.001.

Table 13 Significance of Model for Mental Health Leave with Age as Continuous Predictor

N=502	B(SE)	Wald	df	exp <i>b</i>	95% CI
Included Predictor- age					
Constant	1.875*	13.686	1	6.522	
	(0.507)				
Age^a	-0.046*	16.735	1	0.955	0.935 to 0.976
	(0.011)				
Live alone^b	-0.553**	3.826	1	0.575	0.330 to 1.001
	(0.283)				
Age^b	-0.047*	17.750	1	0.954	0.933 to 0.975
	(0.011)				
Constant	2.440*	17.086	1	11.478	
	(0.590)				

*p<0.0001. ** p = 0.05. ^a Variable entered on step one. ^b Variables entered on step two.

In Table 14, the initial -2 Log likelihood equals 692.402, which assesses the overall fit of the model when only the constant is included. The initial -2 Log likelihood for living alone equals 674.856. The overall final fits of the model equal the second -2 Log likelihoods which are 674.856 and 670.987. The difference in these scores equals the chi-squares which are 17.546 ($p<0.0001$) and 0.049 ($p<0.05$) indicating a good fit of the model. This is the value between the initial model and the second model. This shows that being older and living alone significantly predicts not taking “mental health” leave better than when only taking “mental health” leave was used on its own in the model. The R^2 value for the Hosmer and Lemeshow (1989) is .03 and .01 which is the value of the chi-square divided by the original -2 log likelihood, for both steps. The R^2 for the Cox and Snell (1989) and the Nagelkirke (1991) values are .034 and .046 for age and .042 and .056 for living alone. This suggests that between 3.4 and 4.6 per cent of variability is explained by the outcome (dependent) variable when age is built into the model and between 4.2 and 5.6 when living alone is built into the model.

Table 14 Significance of Model for Mental Health Leave with Age as Continuous Predictor Demonstrating -2 Log Likelihood & Chi-square

Initial -2 Log likelihood	2 nd -2 Log likelihood	Chi-square	Degrees of freedom
692.402 ^a	674.856	17.546 ($p<0.0001$)	1
674.856 ^b	670.987	3.869 ($p<0.05$)	1

$R^2 = .03 \text{ & } .01$ (Hosmer & Lemeshow), $.034 \text{ & } .042$ (Cox & Snell), $.046 \text{ & } .056$ (Nagelkerke). ^a Step one (qualifs). ^b Step two (live alone).

1.1.3. Taking mental health leave (years in profession)

The next calculation used the same question and the categorical variable results are displayed in Table 15. The continuous predictor years in profession was used for this analysis. Table 15 shows that when considering “mental health” leave with years in profession as the predictor, 42.1 per cent were fulltimers, 47.2 per cent of nurses and midwives possessed a degree and 11.9 per cent lived alone. This means that when using hours worked as the predictor in the equation for logistic regression, over two-fifths (42.1%) who took “mental health” leave worked fulltime, almost half (47.2%) who took “mental health” leave possessed a degree and a minority (11.9%) who took “mental health” leave lived alone.

Table 15 Categorical Variable Results for Mental Health Leave with Years in Profession as Continuous Predictor

Categorical results- Over the last year, have you taken leave as “mental health days”?			
Predictor- years in profession			
Fulltime	Yes	Number = 212	42.1%
N = 504	No	Number = 292	57.9%
Possesses a degree	Yes	Number = 238	47.2%
N = 504	No	Number = 266	52.8%
Live alone	Yes	Number = 60	11.9%
N = 504	No	Number = 444	88.1%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Have you taken leave as “mental health days”?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives did take “mental health” leave, it was predicted that this would be correct 230 times out of 504, that is, 45.6 per cent. If the prediction was that all nurses and midwives did not take “mental health” leave, this prediction would be correct 274 times out of 504, that is, 54.4 per cent (Table 16).

Table 16 Predictions for Taking Mental Health Leave with Only the Constant in the Model

Question: Over the last year, have you taken leave as “mental health days”?			
Prediction correct for taking mental health leave	230 / 504	N = 504	45.6%
Prediction correct for not taking mental health leave	274 / 504	N = 504	54.4%

The next calculation included the categorical predictor variables and the continuous predictor years in profession for the question, “Over the last year, have you taken leave as “mental health days”?” Parameter codings were assigned to the categorical variables to determine the probability of outcome variables (Table 17).

Table 17 Categorical Variable Codings for “Over the last year, have you taken leave as “mental health days”?” with Years in Profession as Continuous Predictor

Predictor- Years in profession		Parameter coding	
		Frequency	(1)
Fulltime	No	292	0
	Yes	212	1
Possesses a degree	No	266	1
	Yes	238	0
Live alone	No	444	1
	Yes	60	0

As years in profession was the highest score statistic (Table 18) compared to the other variables, this was entered into the model.

Table 18 Variables Not in the Equation (when only constant used) for “Over the last year, have you taken leave as “mental health days”?” in Calculation with Years in Profession as Continuous Predictor

Predictor- years in profession		Score	df	Sig.
Variables Step 0	Fulltime	1.284	1	0.257
	Qualifications (1)	1.752	1	0.186
	Live alone (1)	2.408	1	0.121
	Years in profession	10.718	1	0.001
Overall statistics		14.114	4	0.007

The following results (Tables 19, 20 & 21) indicate how well this model predicts group classification. The model for years in profession (step one) (Table 19) correctly categorises 205 who do not take “mental health” leave and misclassifies 69 (correctly classifies 74.8% of cases). For those who do take “mental health” leave, the model correctly categorises 76 and misclassifies 154 (correctly classifies 33% of cases). When the constant was used only, the model correctly categorised 54.4 per cent of cases and now with qualifications added into the equation, the model correctly classifies 55.8 per cent of cases. For this question, people who have spent more years in the profession, are less likely to take “mental health” leave at the $p<0.01$ level, which was statistically significant. The other continuous predictor, hours worked and the categorical predictors, employment status and qualifications were insignificant.

Table 19

Model for Predicting Mental Health Leave with Significant Variables Included

Observed N=504	Predicted	Predicted	Percentage correct
	no	yes	
Mental health leave ^a no	205	69	74.8%
Mental health leave ^a yes	154	76	33.0%
Overall percentage			55.8%

^a Step one- Years in profession

The significance of the models are displayed in the following tables (Tables 20 & 21). In Table 20, for years in profession, the B value is negative denoting that the longer the person works in the profession, they are less likely to take “mental health” leave, which is statistically significant at the $p<0.01$ level. The standard errors of the mean for these values are 0.224 and 0.009, respectively.

The Wald statistics are considerably different from 0 (Table 20), the predictor making a substantial contribution to predicting the outcome. The degrees of freedom (df) are equal to 1 which relates to number of observations able to vary (Field, 2005). The $\exp b$ (0.97) for years in profession is the value of the odds ratio which is only a guess or point estimate of the true value, given the sample data. If the person works longer in the profession, the odds for not taking “mental health” leave is 0.97 times higher than for someone working less years. The confidence interval (95% CI) is more accurate for the variable years in the profession meaning that there is 95 per cent confidence that the value of the odds ratio in this sample population lies between 0.952 and 0.988.

Table 20 Significance of Model for Taking Mental Health Leave with Years in Profession as Continuous Predictor

N=504	B(SE)	Wald	df	$\exp b$	95% CI
Included Predictor- years in profession					
Constant	0.493*	4.842	1	1.638	
	(0.224)				
Years in profession^a	-0.031**	10.532	1	0.970	0.952 to 0.988
	(0.009)				

*p<0.05. **p<0.01. ^a Variable entered on step one.

In Table 21, the initial -2 Log likelihood equals 694.846, which assesses the overall fit of the model when only the constant is included. The overall final fit of the model equals the second -2 Log likelihood which is 684.058. The difference in these scores equals the chi-square which is 10.788 ($p<0.01$) indicating a good fit of the model. This is the value between the initial model and the second model. This shows that years in profession significantly predicts not taking “mental health” leave better than when only taking “mental health” leave was used on its own in the model. The R^2 value for the Hosmer and Lemeshow (1989) is .02 which is the value of the chi-square divided by the original -2 log likelihood. The R^2 for the Cox and Snell (1989) and the Nagelkirke (1991) values are .021 and .028 for years in profession. This suggests that between 2.1 and 2.8 per cent of variability is explained by the outcome (dependent) variable when years in profession is built into the model.

Table 21 Significance of Model for Taking Mental Health Leave with Years in Profession as Continuous Predictor Demonstrating -2 Log Likelihood & Chi-square

Initial -2 Log likelihood	2 nd -2 Log likelihood	Chi-square	Degrees of freedom
694.846 ^a	684.058	10.788 ($p<0.01$)	1

$R^2 = .02$ (Hosmer & Lemeshow), .021 (Cox & Snell), .028 (Nagelkerke). ^a Step one (years in profession).

1.2. Burnout

In relation to overall burnout levels, the data suggest that the respondents were:

- more likely to experience burnout if the person worked longer hours ($p<0.01$).

The following section presents more detailed information relating to burnout in regard to working longer hours.

1.2.1. Burnout level (hours worked)

The results using the categorical predictor variables and the continuous predictor hours worked for the overall burnout level will be displayed. The categorical variable results are displayed in Table 22. Table 22 shows that when experiencing high burnout levels in relation to work with hours worked as the predictor, 42.8 per cent were fulltimers, 46.2 per cent of nurses and midwives possessed a degree and 11.8 per cent lived alone. This means that when using hours worked as the predictor in the equation for logistic regression, over two-fifths (42.8%) experiencing moderate to high levels of burnout worked fulltime, almost half (46.2%) experiencing moderate to high levels of burnout possessed a degree and a minority (11.8%) experiencing moderate to high levels of burnout lived alone.

Table 22 Categorical Variable Results for Burnout Levels in Relation to Work with Hours Worked as Continuous Predictor

Categorical results for Burnout Levels			
Predictor- hours worked			
Fulltime	Yes	Number = 210	42.8%
N = 491	No	Number = 281	57.2%
Possesses a degree	Yes	Number = 227	46.2%
N = 491	No	Number = 264	53.8%
Live alone	Yes	Number = 58	11.8%
N = 491	No	Number = 433	88.2%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using burnout level as the constant, in the logistic regression equation (Table 23). Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives experienced high burnout levels in relation to work, it was predicted that this would be correct 274 times out of 491, that is, 55.8 per cent. If the prediction was that all nurses and midwives experienced low burnout levels in relation to work, this prediction would be correct 217 times out of 491, that is, 44.2 per cent.

Table 23 Predictions for Burnout Levels with Only the Constant in the Model

Burnout levels in relation to work			
Prediction correct for high burnout level in relation to work	274 / 491	N = 491	55.8%
Prediction correct for low burnout level in relation to work	217 / 491	N = 491	44.2%

The next calculation included the categorical predictor variables and the continuous predictor age for burnout levels. Parameter codings were assigned to the categorical variables to determine the probability of outcome variables (Table 24).

Table 24 Categorical Variable Codings for Burnout Levels with Hours Worked as Continuous Predictor

Predictor- hours worked		Parameter coding	
	Category	Frequency	(1)
Fulltime	No	281	0
	Yes	210	1
Possesses a degree	No	264	1
	Yes	227	0
Live alone	No	433	1
	Yes	58	0

As hours worked was the highest score statistic (Table 25) compared to the other variables, these were entered into the model.

**Table 25 Variables Not in the Equation (when only constant used) for Burnout
Levels in Calculation with Hours Worked as Continuous Predictor**

Predictor- hours worked		Score	df	Sig.
Variables Step 0	Fulltime (1)	0.490	1	0.484
	Qualifications (1)	0.367	1	0.545
	Live alone (1)	0.032	1	0.858
	Hours worked	7.618	1	0.006
Overall statistics		10.452	4	0.033

The following results (Tables 26, 27 & 28) indicate how well this model predicts group classification. The model for hours worked (step one) (Table 26) correctly categorises 60 who experience low burnout levels and misclassifies 157 (correctly classifies 27.6% of cases). For those experiencing moderate to high burnout levels, the model correctly categorises 217 and misclassifies 57 (correctly classifies 79.2% of cases). When the constant was used only, the model correctly categorised 55.8 per cent of cases and now with hours worked added into the equation, the model correctly classifies 56.4 per cent of cases. For this question, people who work longer hours, are more likely to experience moderate to high burnout levels at the $p<0.01$ level, which was statistically significant. The other continuous predictors, age and years in the profession and the categorical predictors, employment status, qualifications and living alone were insignificant.

Table 26

Model for Predicting Burnout Levels with Significant Variables Included

Observed N=491	Predicted	Predicted	Percentage correct
	low	high	
Burnout level ^a low	60	157	27.6%
Burnout level ^a high	57	217	79.2%
Overall percentage			56.4%

^aStep one- Hours worked

The significance of the models are displayed in the following tables (Tables 27 & 28). In Table 27, for hours worked, the *B* value is positive denoting that the more hours the person has worked, the more likely they are to experience moderate to high burnout levels, which is statistically significant at the $p<0.01$ level. The standard errors of the mean for these values are 0.316 and 0.009, respectively.

The Wald statistics are considerably different from 0 (Table 27), the predictor making a substantial contribution to predicting the outcome. The degrees of freedom (df) are equal to 1 which relates to number of observations able to vary (Field, 2005). The $\exp b$ (1.025) for hours worked is the value of the odds ratio which is only a guess or point estimate of the true value, given the sample data. If the person works longer hours, the odds for experiencing moderate to high burnout levels is 1.025 times higher than for someone who works less hours. The confidence interval (95% CI) is more accurate for the variable hours worked meaning that there is 95 per cent confidence that the value of the odds ratio in this sample population lies between 1.007 and 1.043.

Table 27 Significance of Model for Burnout Levels with Hours Worked as Continuous Predictor

N=488	B(SE)	Wald	df	$\exp b$	95% CI
Included Predictor- hours worked					
Constant	-0.597*	0.5623	1	0.550	
	(0.316)				
Hours worked^a	0.025**	7.427	1	1.025	1.007 to 1.043
	(0.009)				

*p=0.059. **p<0.01. ^a Variable entered on step one.

In Table 28, the initial -2 Log likelihood equals 674.038, which assesses the overall fit of the model when only the constant is included. The overall final fit of the model equals the second -2 Log likelihood which is 666.252. The difference in these scores equals the chi-square which is 7.786 ($p<0.01$) indicating a good fit of the model. This is the value between the initial model and the second model. This shows that hours worked significantly predicts experiencing burnout better than when only experiencing burnout was used on its own in the model. The R^2 value for the Hosmer and Lemeshow (1989) is .01 which is the value of the chi-square divided by the original -2 log likelihood. The R^2 for the Cox and Snell (1989) and the Nagelkerke (1991) values are .016 and .021 for hours worked. This suggests that between 1.6 and 2.1 per cent of variability is explained by the outcome (dependent) variable when hours worked is built into the model.

Table 28 Significance of Model for Experiencing Burnout with Hours Worked as Continuous Predictor Demonstrating -2 Log Likelihood & Chi-square

Initial -2 Log likelihood	2 nd -2 Log likelihood	Chi-square	Degrees of freedom
674.038 ^a	666.252	7.786 ($p<0.01$)	1

$R^2 = .01$ (Hosmer & Lemeshow), .016 (Cox & Snell), .021 (Nagelkerke). ^a Step one (hours worked).

In relation to burnout, different variables predict whether respondents are more likely to experience apathy, feel emotionally drained and lose empathy for colleagues or clients. In particular, respondents were:

- more likely to be apathetic when “stressed” if they worked longer hours ($p<0.01$) and
- less likely to feel emotionally drained at work if the person was older ($p<0.05$) and more likely to feel emotionally drained at work if they worked longer hours ($p<0.01$) and
- less likely to lose empathy for colleagues if the person holds a degree or any higher qualification ($p<0.01$) and less likely to lose empathy for colleagues if they are living alone ($p<0.05$) and
- less likely to lose empathy for clients if the person is older ($p<0.01$) and the longer they worked in the profession ($p<0.0001$).

The following section presents more detailed information relating to burnout concerning experiencing apathy, feeling emotionally drained and relationships with colleagues and clients.

1.2.2. Apathy (hours worked)

The results using the categorical predictor variables and the continuous predictor hours worked for experiencing apathy when “stressed” will be displayed. The categorical variable results are displayed in Table 29. Table 29 shows that when experiencing apathy when “stressed” with hours worked as the predictor, 42 per cent were fulltimers, 46.4 per cent of nurses and midwives possessed a degree and 11.8 per cent lived alone. This means that when using hours worked as the predictor in the equation for logistic regression, over two-fifths (42%) experiencing apathy worked fulltime, almost half (46.4%) experiencing apathy possessed a degree and a minority (11.8%) experiencing apathy lived alone.

Table 29 Categorical Variable Results for Apathy with Hours Worked as Continuous Predictor

Categorical results for Apathy			
Predictor- hours worked			
Fulltime	Yes	Number = 211	42.0%
N = 502	No	Number = 291	58.0%
Possesses a degree	Yes	Number = 233	46.4%
N = 502	No	Number = 269	53.6%
Live alone	Yes	Number = 59	11.8%
N = 502	No	Number = 443	88.2%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, ‘apathy’, in the logistic regression equation (Table 30). Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives experienced apathy when “stressed”, it was predicted that this would be correct 400 times out of 502, that is, 79.7 per cent. If the prediction was that all nurses and midwives did not experience apathy when “stressed”, this prediction would be correct 102 times out of 502, that is, 20.3 per cent.

Table 30 Predictions for Apathy with Only the Constant in the Model

Apathy when “stressed”			
Prediction correct for experiencing apathy	400 / 502	N = 502	79.7%
Prediction correct for not experiencing apathy	102 / 502	N = 502	20.3%

The next calculation included the categorical predictor variables and the continuous predictor hours worked for apathy. Parameter codings were assigned to the categorical variables to determine the probability of outcome variables (Table 31).

Table 31 Categorical Variable Codings for Apathy with Hours Worked as Continuous Predictor

Predictor- hours worked			Parameter coding
	Category	Frequency	(1)
Fulltime	No	291	0
	Yes	210	1
Possesses a degree	No	268	1
	Yes	233	0
Live alone	No	443	1
	Yes	58	0

As hours worked was the highest score statistic (Table 32) compared to the other variables, this was entered into the model.

Table 32 Variables Not in the Equation (when only constant used) for Apathy in Calculation with Hours Worked as Continuous Predictor

Predictor- hours worked		Score	df	Sig.
Variables Step 0	Fulltime (1)	3.975	1	0.046
	Qualifications (1)	2.667	1	0.102
	Live alone (1)	2.952	1	0.086
	Hours worked	7.763	1	0.005
Overall statistics		10.803	4	0.029

The following results (Tables 33, 34 & 35) indicate how well this model predicts group classification. The model for hours worked (step one) (Table 33) correctly categorises no-one who does not experience apathy and misclassifies 102 (correctly classifies 0% of cases). For those experiencing apathy, the model correctly categorises 400 and misclassifies no-one (correctly classifies 100% of cases). When the constant was used only, the model correctly categorised 79.7 per cent of cases and now with hours worked added into the equation, the model correctly classifies the same percentage (79.7%) of cases. For this question, people who work longer hours, are more likely to experience apathy when “stressed” at the $p<0.01$ level, which was statistically significant. The other continuous predictors, age and years in the profession and the categorical predictors, employment status, qualifications and living alone were insignificant.

Table 33 Model for Predicting Apathy with Significant Variables Included

Observed N=501	Predicted	Predicted	Percentage correct
	no	yes	
Apathy ^a no	0	102	0.0%
Apathy ^a high	0	400	100.0%
Overall percentage			79.7%

^a Step one- Hours worked

The significance of the models are displayed in the following tables (Tables 34 & 35). In Table 34, for hours worked, the *B* value is positive denoting that the more hours the person works, the more likely they are to experience apathy when “stressed”, which is statistically significant at the $p<0.01$ level. The standard errors of the mean for these values are 0.382 and 0.011, respectively.

The Wald statistics are considerably different from 0 (Table 34), the predictor making a substantial contribution to predicting the outcome. The degrees of freedom (df) are equal to 1 which relates to number of observations able to vary (Field, 2005). The $\exp b$ (1.032) for hours worked is the value of the odds ratio which is only a guess or point estimate of the true value, given the sample data. If the person works longer hours, the odds for experiencing apathy when “stressed” is 1.032 times higher than for someone working less hours. The confidence interval (95% CI) is more accurate for the variable hours worked meaning that there is 95 per cent confidence that the value of the odds ratio in this sample population lies between 1.009 and 1.056.

Table 34

Significance of Model for Apathy with Hours Worked as Continuous Predictor

N=501	B(SE)	Wald	df	$\exp b$	95% CI
Included Predictor- hours worked					
Constant	0.322*	0.712	1	1.380	
	(0.382)				
Hours worked^a	0.032**	7.728	1	1.038	1.009 to 1.056
	(0.011)				

*p=0.399. **p<0.01. ^a Variable entered on step one.

In Table 35, the initial -2 Log likelihood equals 506.808, which assesses the overall fit of the model when only the constant is included. The overall final fit of the model equals the second -2 Log likelihood which is 498.637. The difference in these scores equals the chi-square which is 8.171 ($p<0.01$) indicating a good fit of the model. This is the value between the initial model and the second model. This shows that hours worked significantly predicts experiencing apathy better than when only experiencing apathy was used on its own in the model. The R^2 value for the Hosmer and Lemeshow (1989) is .02 which is the value of the chi-square divided by the original -2 log likelihood. The R^2 for the Cox and Snell (1989) and the Nagelkerke (1991) values are .016 and .025 for hours worked. This suggests that between 1.6 and 2.5 per cent of variability is explained by the outcome (dependent) variable when hours worked is built into the model.

Table 35 Significance of Model for Apathy with Hours Worked as Continuous Predictor Demonstrating -2 Log Likelihood & Chi-square

Initial -2 Log likelihood	2 nd -2 Log likelihood	Chi-square	Degrees of freedom
506.808 ^a	498.637	8.171 ($p<0.01$)	1

$R^2 = .02$ (Hosmer & Lemeshow), .016 (Cox & Snell), .025 (Nagelkerke). ^a Step one (hours worked).

1.2.3. Feeling emotionally drained (age)

The results using the categorical predictor variables and the continuous predictor age for the question, “How often do you feel emotionally drained at work?” will be displayed. The categorical variable results are displayed in Table 36. Table 36 shows that when considering feeling emotionally drained at work with age as the predictor, 41.9 per cent were fulltimers, 47.1 per cent of nurses and midwives possessed a degree and 12.1 per cent lived alone. This means that when using age as the predictor in the equation for logistic regression, over two-fifths (41.9%) feeling emotionally drained worked fulltime, almost half (47.1%) feeling emotionally drained possessed a degree and a minority (12.1%) feeling emotionally drained lived alone.

Table 36 Categorical Variable Results for Feeling Emotionally Drained with Age as Continuous Predictor

Categorical results- How often do you feel emotionally drained at work?			
Predictor- age			
Fulltime	Yes	Number = 211	41.9%
N = 503	No	Number = 292	58.1%
Possesses a degree	Yes	Number = 237	47.1%
N = 503	No	Number = 266	52.9%
Live alone	Yes	Number = 61	12.1%
N = 503	No	Number = 442	87.9%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “How often do you feel emotionally drained at work?”, in the logistic regression equation (Table 37). Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives did feel emotionally drained at work, it was predicted that this would be correct 298 times out of 503, that is, 59.2 per cent. If the prediction was that all nurses and midwives did not feel emotionally drained at work, this prediction would be correct 205 times out of 503, that is, 40.8 per cent.

Table 37 Predictions for Feeling Emotionally Drained with Only the Constant in the Model

Question: How often do you feel emotionally drained at work?			
Prediction correct for feeling emotionally drained	298 / 503	N = 503	59.2%
Prediction correct for not feeling emotionally drained	205 / 503	N = 503	40.8%

The next calculation included the categorical predictor variables and the continuous predictor age in years for the question, “How often do you feel emotionally drained at work?” Parameter codings were assigned to the categorical variables to determine the probability of outcome variables (Table 38).

Table 38 Categorical Variable Codings for “How often do you feel emotionally drained at work?” with Age as Continuous Predictor

Predictor- age			Parameter coding
	Category	Frequency	(1)
Fulltime	No	292	0
	Yes	211	1
Possesses a degree	No	266	1
	Yes	237	0
Live alone	No	442	1
	Yes	61	0

As age was the highest score statistic (Table 39) compared to the other variables, this was entered into the model.

Table 39 Variables Not in the Equation (when only constant used) for “How often do you feel emotionally drained at work?” in Calculation with Age as Continuous Predictor

Predictor- age		Score	df	Sig.
Variables Step 0	Fulltime (1)	1.654	1	0.198
	Qualifications (1)	0.222	1	0.638
	Live alone (1)	1.152	1	0.283
	Age	5.184	1	0.023
Overall statistics		7.805	4	0.099

The following results (Tables 40, 41, & 42) indicate how well this model predicts group classification. The model for predicting feeling emotionally drained with significant variables is displayed in Table 40. The model for age (step one) (Table 40) correctly categorises nine who do not feel emotionally drained and misclassifies 196 (correctly classifies 4.4% of cases). For those who do feel emotionally drained, the model correctly categorises 291 and misclassifies seven (correctly classifies 97.7% of cases). When the constant was used only, the model correctly categorised 59.2 per cent of cases and now with age added into the equation, the model correctly classifies 59.6 per cent of cases. For this question, people who are older, are less likely to feel emotionally drained at the $p<0.05$ level, which was statistically significant. The other continuous predictor, years in profession and the categorical predictors, employment status, qualifications and living alone were insignificant.

Table 40 Model for Predicting Feeling Emotionally Drained with Significant Variables Included

Observed N=503	Predicted	Predicted	Percentage correct
	no	yes	
Feeling emotionally drained ^a no	9	196	4.4%
Feeling emotionally drained ^a yes	7	291	97.7%
Overall percentage			59.6%

^aStep one- Age

The significance of the models are displayed in the following tables (Tables 41 & 42). In Table 41, for age, the *B* value is negative denoting that if the person is older, they are less likely to feel emotionally drained, which is statistically significant at the $p<0.05$ level. The standard errors of the mean for these values are 0.507 and 0.011, respectively.

The Wald statistic is considerably different from 0 (Table 41), the predictor making a substantial contribution to predicting the outcome. The degrees of freedom (df) are equal to 1 which relates to number of observations able to vary (Field, 2005). The $\exp b$ (0.975) for age is the value of the odds ratio which is only a guess or point estimate of the true value, given the sample data. If the person is older, the odds for not feeling emotionally drained is 0.975 times higher than for someone younger. The confidence interval (95% CI) is more accurate for the variable age meaning that there is 95 per cent confidence that the value of the odds ratio in this sample population lies between 0.954 and 0.997.

Table 41 Significance of Model for Feeling Emotionally Drained with Age as Continuous Predictor

N=503	B(SE)	Wald	df	$\exp b$	95% CI
Included Predictor- age					
Constant	1.499*	8.750	1	4.478	
	(0.507)				
Age ^a	-0.025**	5.133	1	0.975	0.954 to 0.997
	(0.011)				

*p<0.01. **p<0.05. ^a Variable entered on step one.

In Table 42, the initial -2 Log likelihood equals 680.012, which assesses the overall fit of the model when only the constant is included. The overall final fit of the model equals the second -2 Log likelihood which is 674.782. The difference in these scores equals the chi-square which is 5.23 ($p<0.05$) indicating a good fit of the model. This is the value between the initial model and the second model. This shows that age significantly predicts feeling emotionally drained better than when only feeling emotionally drained was used on its own in the model. The R^2 value for the Hosmer and Lemeshow (1989) is .008 which is the value of the chi-square divided by the original -2 log likelihood. The R^2 for the Cox and Snell (1989) and the Nagelkirke (1991) values are .010 and .014 for age. This suggests that between 1 and 1.4 per cent of variability is explained by the outcome (dependent) variable when age is built into the model.

Table 42 Significance of Model Feeling Emotionally Drained with Age as Continuous Predictor Demonstrating -2 Log Likelihood & Chi-square

Initial -2 Log likelihood	2 nd -2 Log likelihood	Chi-square	Degrees of freedom
680.012 ^a	674.782	5.23 ($p<0.05$)	1

$R^2 = .008$ (Hosmer & Lemeshow), .010 (Cox & Snell), .014 (Nagelkerke). ^a Step one (age).

1.2.4. Feeling emotionally drained (hours worked)

The results using the categorical predictor variables and the continuous predictor hours worked for the question, “How often do you feel emotionally drained at work?” will be displayed. The categorical variable results are displayed in Table 43. Table 43 shows that when considering feeling emotionally drained at work with hours worked as the predictor, 41.8 per cent were fulltimers, 46.7 per cent of nurses and midwives possessed a degree and 11.8 per cent lived alone. This means that when using hours worked as the predictor in the equation for logistic regression, over two-fifths (41.8%) feeling emotionally drained worked fulltime, almost half (46.7%) feeling emotionally drained possessed a degree and a minority (11.8%) feeling emotionally drained lived alone.

Table 43 Categorical Variable Results for Feeling Emotionally Drained with Hours Worked as Continuous Predictor

Categorical results- How often do you feel emotionally drained at work?			
Predictor- hours worked			
Fulltime	Yes	Number = 212	41.8%
N = 507	No	Number = 295	58.2%
Possesses a degree	Yes	Number = 237	46.7%
N = 507	No	Number = 270	53.3%
Live alone	Yes	Number = 60	11.8%
N = 507	No	Number = 447	88.2%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “How often do you feel emotionally drained at work?”, in the logistic regression equation (Table 44). Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives did feel emotionally drained at work, it was predicted that this would be correct 301 times out of 507, that is, 59.4 per cent. If the prediction was that all nurses and midwives did not feel emotionally drained at work, this prediction would be correct 206 times out of 507, that is, 40.6 per cent.

Table 44 Predictions for Feeling Emotionally Drained with Only the Constant in the Model

Question: How often do you feel emotionally drained at work?			
Prediction correct for feeling emotionally drained	301 / 507	N = 507	59.4%
Prediction correct for not feeling emotionally drained	206 / 507	N = 507	40.6%

The next calculation included the categorical predictor variables and the continuous predictor hours worked for the question, “How often do you feel emotionally drained at work?” Parameter codings were assigned to the categorical variables to determine the probability of outcome variables (Table 45).

Table 45 Categorical Variable Codings for “How often do you feel emotionally drained at work?” with Hours Worked as Continuous Predictor

Predictor- hours worked			Parameter coding
	Category	Frequency	(1)
Fulltime	No	295	0
	Yes	212	1
Possesses a degree	No	270	1
	Yes	237	0
Live alone	No	447	1
	Yes	60	0

As hours worked was the highest score statistic (Table 46) compared to the other variables, this was entered into the model.

Table 46 Variables Not in the Equation (when only constant used) for “How often do you feel emotionally drained at work?” in Calculation with Hours Worked as Continuous Predictor

Predictor- hours worked		Score	df	Sig.
Variables Step 0	Fulltime (1)	1.712	1	0.191
	Qualifications (1)	0.173	1	0.677
	Live alone (1)	0.895	1	0.344
	Hours worked	8.086	1	0.004
Overall statistics		9.329	4	0.053

The following results (Tables 47, 48, & 49) indicate how well this model predicts group classification. The model for predicting feeling emotionally drained with significant variables is displayed in Table 47. The model for hours worked (step one) (Table 47) correctly categorises 13 who do not feel emotionally drained and misclassifies 193 (correctly classifies 6.3% of cases). For those who do feel emotionally drained, the model correctly categorises 288 and misclassifies 13 (correctly classifies 95.7% of cases). When the constant was used only, the model correctly categorised 59.4 per cent of cases and now with hours worked added into the equation, the model correctly classifies 59.4 per cent of cases, which has not changed. For this question, people who work longer hours are more likely to feel emotionally drained at the $p<0.01$ level, which was statistically significant. The other continuous predictor, years in profession and the categorical predictors, employment status, qualifications and living alone were insignificant.

Table 47 Model for Predicting Feeling Emotionally Drained with Significant Variables Included

Observed N=507	Predicted	Predicted	Percentage correct
	no	yes	
Feeling emotionally drained ^a no	13	193	6.3%
Feeling emotionally drained ^a yes	13	288	95.7%
Overall percentage			59.4%

^a Step one- Hours worked

The significance of the models are displayed in the following tables (Tables 48 & 49). In Table 48, for hours worked, the *B* value is positive denoting that if the person works longer hours, they are more likely to feel emotionally drained, which is statistically significant at the $p<0.01$ level. The standard errors of the mean for these values are 0.304 and 0.009, respectively.

The Wald statistic is considerably different from 0 (Table 48), the predictor making a substantial contribution to predicting the outcome. The degrees of freedom (df) are equal to 1 which relates to number of observations able to vary (Field, 2005). The $\exp b$ (1.026) for hours worked is the value of the odds ratio which is only a guess or point estimate of the true value, given the sample data. If the person works longer hours, the odds for feeling emotionally drained is 1.026 times higher than for someone working less hours. The confidence interval (95% CI) is more accurate for the variable hours worked meaning that there is 95 per cent confidence that the value of the odds ratio in this sample population lies between 1.008 and 1.044.

Table 48 Significance of Model for Feeling Emotionally Drained with Hours Worked as Continuous Predictor

N=508	B(SE)	Wald	df	$\exp b$	95% CI
Included Predictor- hours worked					
Constant	-0.482*	2.307	1	0.618	
	(0.317)				
Hours worked^a	0.026**	7.893	1	1.026	1.008 to 1.044
	(0.009)				

*p = 0.129. **p<0.01. ^a Variable entered on step one.

In Table 49, the initial -2 Log likelihood equals 684.945, which assesses the overall fit of the model when only the constant is included. The overall final fit of the model equals the second -2 Log likelihood which is 676.64. The difference in these scores equals the chi-square which is 8.305 ($p<0.01$) indicating a good fit of the model. This is the value between the initial model and the second model. This shows that hours worked significantly predicts feeling emotionally drained better than when only feeling emotionally drained was used on its own in the model. The R^2 value for the Hosmer and Lemeshow (1989) is .01 which is the value of the chi-square divided by the original -2 log likelihood. The R^2 for the Cox and Snell (1989) and the Nagelkerke (1991) values are .016 and .022 for hours worked. This suggests that between 1.6 and 2.2 per cent of variability is explained by the outcome (dependent) variable when hours worked is built into the model.

Table 49 Significance of Model Feeling Emotionally Drained with Hours Worked as Continuous Predictor Demonstrating -2 Log Likelihood & Chi-square

Initial -2 Log likelihood	2 nd -2 Log likelihood	Chi-square	Degrees of freedom
684.945 ^a	676.640	8.305 ($p<0.01$)	1

$R^2 = .01$ (Hosmer & Lemeshow), .016 (Cox & Snell), .022 (Nagelkerke). ^a Step one (hours worked).

1.2.5. Losing empathy for colleagues (age)

The results using the categorical predictor variables and the continuous predictor age for the question, “Have you ever felt loss of empathy for colleagues while at work?” will be displayed. The categorical variable results are displayed in Table 50. Table 50 shows that when considering loss of empathy for colleagues while at work with age as the predictor, 41.1 per cent were fulltimers, 45.4 per cent of nurses and midwives possessed a degree and 11.6 per cent lived alone. This means that when using age as the predictor in the equation for logistic regression, over two-fifths (41.1%) losing empathy for colleagues worked fulltime, almost half (45.4%) losing empathy for colleagues possessed a degree and a minority (11.6%) losing empathy for colleagues lived alone.

Table 50 Categorical Variable Results for Loss of Empathy for Colleagues with Age as Continuous Predictor

Categorical results- Have you ever felt loss of empathy for colleagues?			
Predictor- age			
Fulltime	Yes	Number = 180	41.1%
N = 438	No	Number = 258	58.9%
Possesses a degree	Yes	Number = 199	45.4%
N = 438	No	Number = 239	54.6%
Live alone	Yes	Number = 51	11.6%
N = 438	No	Number = 387	88.4%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Have you ever felt loss of empathy for colleagues?”, in the logistic regression equation (Table 51). Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives did lose empathy for colleagues while at work, it was predicted that this would be correct 239 times out of 438, that is, 54.6 per cent. If the prediction was that all nurses and midwives did not lose empathy for colleagues while at work, this prediction would be correct 199 times out of 438, that is, 45.4 per cent.

Table 51 Predictions for Losing Empathy for Colleagues with Only the Constant in the Model

Question: Have you ever felt loss of empathy for colleagues while at work?			
Prediction correct for losing empathy for colleagues	239 / 438	N = 438	54.6%
Prediction correct for not losing empathy	199 / 438	N = 438	45.4%

The next calculation included the categorical predictor variables and the continuous predictor age in years for the question, “Have you ever felt loss of empathy for colleagues while at work?” Parameter codings were assigned to the categorical variables to determine the probability of outcome variables (Table 52).

Table 52 Categorical Variable Codings for “Have you ever felt loss of empathy for colleagues at work?” with Age as Continuous Predictor

Predictor- age			Parameter coding
	Category	Frequency	(1)
Fulltime	No	258	0
	Yes	180	1
Possesses a degree	No	239	1
	Yes	199	0
Live alone	No	387	1
	Yes	51	0

As qualifications and living alone were the highest score statistics (Table 53) compared to the other variables, these were entered into the model.

Table 53 Variables Not in the Equation (when only constant used) for “Have you ever felt loss of empathy for colleagues at work?” in Calculation with Age as Continuous Predictor

Predictor- age		Score	df	Sig.
Variables Step 0	Fulltime (1)	0.057	1	0.812
	Qualifications (1)	6.683	1	0.010
	Live alone (1)	4.603	1	0.032
	Age	2.460	1	0.117
Overall statistics		12.780	4	0.012

The following results (Tables 54, 55, & 56) indicate how well this model predicts group classification. The model for predicting losing empathy for colleagues with significant variables is displayed in Table 54. The model for qualifications (step one) (Table 54) correctly categorises 122 who do not lose empathy for colleagues and misclassifies 77 (correctly classifies 61.3% of cases). For those who do lose empathy for colleagues, the model correctly categorises 122 and misclassifies 117 (correctly classifies 51% of cases). When the constant was used only, the model correctly categorized 54.6 per cent of cases and now with qualifications added into the equation, the model correctly classifies 55.7 per cent of cases.

The model for living alone and qualifications (step two) (Table 54) correctly categorises 113 who do not lose empathy for colleagues and misclassifies 86 (correctly classifies 56.8% of cases). For those who do lose empathy for colleagues, the model correctly categorises 103 and misclassifies 136 (correctly classifies 56.9% of cases). The model now correctly categorises 56.8 per cent of cases compared to when only the constant was used (54.6%). For this question, people who possess a degree (or better educated), are less likely to lose empathy for colleagues at the $p<0.05$ level, which was statistically significant. Also people who live alone are less likely to lose empathy for colleagues at the $p<0.05$ level, which was also statistically significant. The other continuous predictors, age, hours worked and years in profession and the other categorical predictor, being fulltime were insignificant.

Table 54 Model for Predicting Losing Empathy for Colleagues with Significant Variables Included

Observed N=438	Predicted		Percentage correct
	no	yes	
Lose empathy for colleagues ^a no	122	77	61.3%
Lose empathy for colleagues ^a yes	117	122	51.0%
Overall percentage			55.7%
Lose empathy for colleagues ^b no	113	86	56.8%
Lose empathy for colleagues ^b yes	103	136	56.9%
Overall percentage			56.8%

^a Step one- Qualifications ^b Step two- Live alone & qualifications

The significance of the models are displayed in the following tables (Tables 55 & 56). In Table 55, for qualifications, the *B* value is negative denoting that if the person holds a degree or any higher qualification, they are less likely to lose empathy for colleagues, which is statistically significant at the $p<0.05$ level. The standard errors of the mean for these values are 0.146 and 0.195, respectively and 0.319 and 0.196. These are the standard deviations of the sample means (Field, 2005). For living alone,

the B value is negative denoting that people living alone are less likely to lose empathy for colleagues which is statistically significant at the $p<0.05$ level. The standard errors of the mean for these values are 0.319 and 0.321, respectively.

The Wald statistics are considerably different from 0 (Table 55), the predictor making a substantial contribution to predicting the outcome. The degrees of freedom (df) are equal to 1 which relates to number of observations able to vary (Field, 2005). The $\exp b$ (0.605 & 0.619) for qualifications is the value of the odds ratio which is only a guess or point estimate of the true value, given the sample data. If the person holds a degree or higher qualification, the odds for not losing empathy for colleagues is 0.605 to 0.619 times higher than for someone not possessing a degree or higher qualification. The confidence interval (95% CI) is more accurate for the variable qualifications meaning that there is 95 per cent confidence that the value of the odds ratio in this sample population lies between 0.413 and 0.887. The $\exp b$ (0.532) for living alone means that if a person lives alone, the odds of losing empathy for colleagues decreases by a factor equalling 0.532, all factors being equal (Pallatt, 2005). The confidence interval (95% CI) is more accurate for the variable living alone, being between 0.284 and 0.997.

Table 55 Significance of Model for Losing Empathy for Colleagues with Age as Continuous Predictor

N=438	B(SE)	Wald	df	$\exp b$	95% CI
Included Predictor- age					
Constant	0.460*	9.998	1	1.584	
	(0.146)				
Qualifications^a	-0.502**	6.646	1	0.605	0.413 to 0.887
	(0.195)				
Live alone^b	-0.631**	3.874	1	0.532	0.284 to 0.997
	(0.321)				
Qualifications^b	-0.480**	6.000	1	0.619	0.422 to 0.909
	(0.196)				
Constant	1.010*	10.033	1	2.745	
	(0.319)				

*p<0.01 **p<0.05. ^a Variable entered on step one. ^b Variables entered on step two.

In Table 56, the initial -2 Log likelihood equals 603.539, which assesses the overall fit of the model when only the constant is included. The initial -2 Log likelihood for living alone equals 596.828. The overall final fits of the model equal the second -2 Log likelihoods which are 596.828 and 592.756. The difference in these scores equals the chi-squares which are 6.711 ($p<0.05$) and 4.072 ($p<0.05$) indicating a good fit of the model. This is the value between the initial model and the second model. This shows that better education and living alone significantly predicts not losing empathy for colleagues better than when only losing empathy for colleagues was used on its own in the model. The R^2 value for the Hosmer and Lemeshow (1989) is .11 for the first step and .08 for the second step, which is the value of the chi-squares divided by the original -2 log likelihoods. The R^2 for the Cox and Snell (1989) and the Nagelkirke (1991) values are .015 and .02 for qualifications and .024 and .033 for living alone. This suggests that between 1.5 and 2 per cent of variability is explained by the outcome (dependent) variable when qualifications is built into the model and between 2.4 and 3.3 when living alone is built into the model.

Table 56 Significance of Model Losing Empathy for Colleagues with Age as Continuous Predictor Demonstrating -2 Log Likelihood & Chi-square

Initial -2 Log likelihood	2 nd -2 Log likelihood	Chi-square	Degrees of freedom
603.539 ^a	596.828	6.711 ($p<0.05$)	1
596.828 ^b	592.756	4.072 ($p<0.05$)	1

$R^2 = .11 \text{ & } .08$ (Hosmer & Lemeshow), .015 & .024 (Cox & Snell), .02 & .033 (Nagelkerke). ^a Step one (qualifs). ^b Step two (live alone).

1.2.6. Losing empathy for colleagues (hours worked)

The next calculation used the question “Have you ever felt loss of empathy for colleagues while at work?” and the categorical variable results are displayed in Table 57. The continuous predictor hours worked was used for this analysis. Table 57 shows that when considering loss of empathy for colleagues while at work with hours worked as the predictor, 40.9 per cent were fulltimers, 45.5 per cent of nurses and midwives possessed a degree and 11.6 per cent lived alone. This means that when using hours worked as the predictor in the equation for logistic regression, over two-fifths (40.9%) losing empathy for colleagues worked fulltime, almost half (45.5%) losing empathy for colleagues possessed a degree and a minority (11.6%) losing empathy for colleagues lived alone.

Table 57 Categorical Variable Results for Loss of Empathy for Colleagues with Hours Worked as Continuous Predictor

Categorical results- Have you ever felt loss of empathy for colleagues while at work?			
Predictor- hours worked			
Fulltime	Yes	Number = 180	40.9%
N = 440	No	Number = 260	59.1%
Possesses a degree	Yes	Number = 200	45.5%
N = 440	No	Number = 241	54.5%
Live alone	Yes	Number = 51	11.6%
N = 440	No	Number = 389	88.4%

The first analysis was calculated on a forward stepwise likelihood ratio method, so the initial model was derived using the constant, “Have you ever felt loss of empathy for colleagues?”, in the logistic regression equation (Table 58). Therefore, in this calculation all the predictor variables were omitted. If predictions were that all nurses and midwives did lose empathy for colleagues while at work, it was predicted that this would be correct 238 times out of 440, that is, 54.1 per cent. If the prediction was that all nurses and midwives did not lose empathy for colleagues while at work, this prediction would be correct 202 times out of 440, that is, 45.9 per cent.

Table 58 Predictions for Losing Empathy for Colleagues with Only the Constant in the Model

Question: Have you ever felt loss of empathy for colleagues while at work?			
Prediction correct for losing empathy for colleagues	238 / 440	N = 440	54.1%
Prediction correct for not losing empathy	202 / 440	N = 440	45.9%

The next calculation included the categorical predictor variables and the continuous predictor hours worked for the question, “Have you ever felt loss of empathy for colleagues while at work?” Parameter codings were assigned to the categorical variables to determine the probability of outcome variables (Table 59).

Table 59 Categorical Variable Codings for “Have you ever felt loss of empathy for colleagues at work?” with Hours Worked as Continuous Predictor

Predictor- hours worked			Parameter coding
	Category	Frequency	(1)
Fulltime	No	260	0
	Yes	180	1
Possesses a degree	No	240	1
	Yes	200	0
Live alone	No	389	1
	Yes	51	0

As qualifications and living alone were the highest score statistics (Table 60) compared to the other variables, these were entered into the model.

Table 60 Variables Not in the Equation (when only constant used) for “Have you ever felt loss of empathy for colleagues at work?” in Calculation Using Hours Worked as Continuous Predictor

Predictor- hours worked		Score	df	Sig.
Variables Step 0	Fulltime (1)	0.070	1	0.791
	Qualifications (1)	7.048	1	0.008
	Live alone (1)	4.909	1	0.027
	Hours worked	0.005	1	0.946
Overall statistics		12.334	4	0.015

The following results (Tables 61, 62 & 63) indicate how well this model predicts group classification. The model for predicting losing empathy for colleagues with significant variables is displayed in Table 61. The model for qualifications (step one) (Table 61) correctly categorises 124 who do not lose empathy for colleagues and misclassifies 78 (correctly classifies 61.4% of cases). For those who do lose empathy for colleagues, the model correctly categorises 122 and misclassifies 116 (correctly classifies 51.3% of cases). When the constant was used only, the model correctly categorised 54.1 per cent of cases and now with qualifications added into the equation, the model correctly classifies 55.9 per cent of cases.

The model for living alone and qualifications (step two) (Table 61) correctly categorises 115 who do not lose empathy for colleagues and misclassifies 87 (correctly classifies 56.9% of cases). For those who do lose empathy for colleagues, the model correctly categorises 136 and misclassifies 102 (correctly classifies 57.1% of cases). The model now correctly categorises 57 per cent of cases compared to when only the constant was used (54.1%). The other continuous predictors, age, hours worked and years in profession and the other categorical predictor, being fulltime were insignificant.

Table 61 Model for Predicting Losing Empathy for Colleagues with Significant Variables Included

Observed N = 440	Predicted	Predicted	Percentage correct
	no	yes	
Lose empathy for colleagues ^a no	124	78	61.4%
Lose empathy for colleagues ^a yes	116	122	51.3%
Overall percentage			55.9%
Lose empathy for colleagues ^b no	115	87	56.9%
Lose empathy for colleagues ^b yes	102	136	57.1%
Overall percentage			57.0%

^a Step one- Qualifications ^b Step two- Live alone & qualifications

The significance of the models are displayed in the following tables (Tables 62 & 63). In Table 62, for qualifications, the *B* value is negative denoting that if the person holds a degree or any higher qualification, they are less likely to lose empathy for colleagues, which is statistically significant at the $p<0.01$ level (Pallatt, 2005). The standard errors of the mean for these values are 0.145 and 0.194, respectively and 0.319 and 0.194. These are the standard deviations of the sample means (Field, 2005). For living alone, the *B* value is negative denoting that people living alone are less likely to lose empathy for colleagues which is statistically significant at the $p<0.05$ level. The standard errors of the mean for these values are 0.319 and 0.321, respectively.

The Wald statistics are considerably different from 0 (Table 62), the predictor making a substantial contribution to predicting the outcome. The degrees of freedom (df) are equal to 1 which relates to number of observations able to vary (Field, 2005). The $\exp b$ (0.598 & 0.612) for qualifications is the value of the odds ratio which is only a guess or point estimate of the true value, given the sample data.

If the person holds a degree or higher qualification, the odds for not losing empathy for colleagues is 0.598 to 0.612 times higher than for someone not possessing a degree or higher qualification. The confidence interval (95% CI) is more accurate for the variable qualifications meaning that there is 95 per cent confidence that the value of the odds ratio in this sample population lies between 0.409 and 0.875. The $\exp b$ (0.521) for living alone means that if a person lives alone, the odds of losing empathy for colleagues decreases by a factor equalling 0.521, all factors being equal (Pallant, 2005). The confidence interval (95% CI) is more accurate for the variable living alone, being between 0.278 and 0.977.

Table 62 Significance of Model for Losing Empathy for Colleagues with Hours Worked as Continuous Predictor

N=440	B(SE)	Wald	df	exp b	95% CI
Included Predictor- hours worked					
Constant	0.447*	9.520	1	1.564	
	(0.145)				
Qualifications^a	-0.514*	7.007	1	0.008	0.409 to 0.875
	(0.194)				
Live alone^b	-0.652**	4.134	1	0.521	0.278 to 0.977
	(0.321)				
Qualifications^b	-0.483**	6.118	1	0.617	0.421 to 0.905
	(0.195)				
Constant	1.015*	10.144	1	2.760	
	(0.319)				

*p<0.01. ** p<0.05. ^a Variable entered on step one. ^b Variables entered on step two.

In Table 63, the initial -2 Log likelihood equals 607.021, which assesses the overall fit of the model when only the constant is included. The initial -2 Log likelihood for living alone equals 599.943. The overall final fits of the model equal the second -2 Log likelihoods which are 599.943 and 595.592. The difference in these scores equals the chi-squares which are 7.078 ($p<0.01$) and 4.351 ($p<0.05$) indicating a good fit of the model. This is the value between the initial model and the second model. This shows that better education and living alone significantly predicts not losing empathy for colleagues better than when only losing empathy for colleagues was used on its own in the model. The R^2 value for the Hosmer and Lemeshow (1989) is .11 which is the value of the chi-square divided by the original -2 log likelihood, for both steps. The R^2 for the Cox and Snell (1989) and the Nagelkirke (1991) values are .016 and .021 for qualifications and .026 and .034 for living alone. This suggests that between 1.6 and 2.1 per cent of variability is explained by the outcome (dependent) variable when qualifications is built into the model and between 2.6 and 3.4 when living alone is built into the model.

Table 63

Significance of Model for Losing Empathy for Colleagues with Hours Worked as Continuous Predictor Demonstrating -2 Log Likelihood & Chi-square

Initial -2 Log likelihood	2 nd -2 Log likelihood	Chi-square	Degrees of freedom
607.021 ^a	599.943	7.078 ($p<0.01$)	1
599.943 ^b	595.592	4.351 ($p<0.05$)	1

$R^2 = .11$ (Hosmer & Lemeshow), .016 & .026 (Cox & Snell), .021 & .034 (Nagelkerke). ^a Step one (qualifs). ^b Step two (live alone).

1.2.7. Losing empathy for colleagues (years in profession)

The next calculation used the same question and the categorical variable results are displayed in Table 64. The continuous predictor years in profession was used for this analysis. Table 64 shows that when considering loss of empathy for colleagues while at work with years in profession as the predictor, 41 per cent were fulltimers, 45.8 per cent of nurses and midwives possessed a degree and 11.4 per cent lived alone. This means that when using years in profession as the predictor in the equation for logistic regression, over two-fifths (41%) losing empathy for colleagues worked fulltime, almost half (45.8%) losing empathy for colleagues possessed a degree and a minority (11.4%) losing empathy for colleagues lived alone.

Table 64 Categorical Variable Results for Loss of Empathy for Colleagues with Years in Profession as Continuous Predictor

Categorical results- Have you ever felt loss of empathy for colleagues while at work?			
Predictor- years in profession			
Fulltime	Yes	Number = 179	41.0%
N = 437	No	Number = 258	59.0%
Possesses a degree	Yes	Number = 200	45.8%
N = 437	No	Number = 237	54.2%
Live alone	Yes	Number = 50	11.4%
N = 437	No	Number = 387	88.6%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Have you ever felt loss of empathy for colleagues while at work?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all midwives and nurses did lose empathy for colleagues while at work, it was predicted that this would be correct 238 times out of 437, that is, 54.5 per cent. If the prediction was that all nurses and midwives did not lose empathy for clients while at work, this prediction would be correct 199 times out of 437, that is, 45.5 per cent (Table 65).

Table 65 Predictions for Losing Empathy for Colleagues with Only the Constant in the Model

Question: Have you ever felt loss of empathy for colleagues while at work?			
Prediction correct for losing empathy for colleagues	238 / 437	N = 437	54.5%
Prediction correct for not losing empathy	199 / 437	N = 437	45.5%

The next calculation included the categorical predictor variables and the continuous predictor years in profession for the question, “Have you ever felt loss of empathy for colleagues while at work?” Parameter codings were assigned to the categorical variables to determine the probability of outcome variables (Table 66).

Table 66 Categorical Variable Codings for “Have you ever felt loss of empathy for colleagues at work?” with Years in Profession as Continuous Predictor

Predictor- Years in profession		Parameter coding	
		Frequency	(1)
Fulltime	No	258	0
	Yes	179	1
Possesses a degree	No	237	1
	Yes	200	0
Live alone	No	387	1
	Yes	50	0

As qualifications and living alone were the highest score statistics (Table 67) compared to the other variables, these were entered into the model.

Table 67 Variables Not in the Equation (when only constant used) for “Have you ever felt loss of empathy for colleagues at work?” in Calculation with Years in Profession as Continuous Predictor

Predictor- years in profession		Score	df	Sig.
Variables Step 0	Fulltime	0.084	1	0.771
	Qualifications (1)	6.356	1	0.012
	Live alone (1)	5.496	1	0.019
	Years in profession	0.313	1	0.576
Overall statistics		12.168	4	0.016

The following results (Tables 68, 69 & 70) indicate how well this model predicts group classification. The model for qualifications (step one) (Table 68) correctly categorises 121 who do not lose empathy for colleagues and misclassifies 78 (correctly classifies 60.8% of cases). For those who do lose empathy for colleagues, the model correctly categorises 122 and misclassifies 116 (correctly classifies 51.3% of cases). When the constant was used only, the model correctly categorised 54.5 per cent of cases and now with qualifications added into the equation, the model correctly classifies 55.6 per cent of cases.

The model for living alone and qualifications (step two) (Table 68) correctly categorises 113 who do not lose empathy for colleagues and misclassifies 86 (correctly classifies 56.8% of cases). For those who do lose empathy for colleagues, the model correctly categorises 136 and misclassifies 102 (correctly classifies 57.1% of cases). The model now correctly categorises 57 per cent of cases compared to when only the constant was used (54.5%). For this question, people who possess a degree (or more educated), are more likely to lose empathy for colleagues at the $p<0.05$ level, which was statistically significant. Also people who live alone are less likely to lose empathy for colleagues at the $p<0.05$ level, which was also statistically significant. The other continuous predictors, age, hours worked and years in profession and the other categorical predictor, being fulltime were insignificant.

Table 68 Model for Predicting Losing Empathy for Colleagues with Significant Variables Included

Observed N=437	Predicted	Predicted	Percentage correct
	no	yes	
Lose empathy for colleagues ^a no	121	78	60.8%
Lose empathy for colleagues ^a yes	116	122	51.3%
Overall percentage			55.6%
Lose empathy for colleagues ^b no	113	86	56.8%
Lose empathy for colleagues ^b yes	102	136	57.1%
Overall percentage			57.0%

^a Step one- Qualifications ^b Step two- Live alone & qualifications

The significance of the models are displayed in the following tables (Tables 69 & 70). In Table 69, for qualifications, the *B* value is negative denoting that if the person holds a degree or any higher qualification, they are less likely to lose empathy for colleagues, which is statistically significant at the $p<0.05$ level. The standard errors of the mean for these values are 0.145 and 0.195, respectively and 0.325 and 0.196. These are the standard deviations of the sample means (Field, 2005). For living alone,

the B value is negative denoting that people living alone are less likely to lose empathy for colleagues which is statistically significant at the $p<0.05$ level. The standard errors of the mean for these values are 0.325 and 0.327, respectively.

The Wald statistics are considerably different from 0 (Table 69), the predictor making a substantial contribution to predicting the outcome. The degrees of freedom (df) are equal to 1 which relates to number of observations able to vary (Field, 2005). The exp *b* (0.613 & 0.629) for qualifications is the value of the odds ratio which is only a guess or point estimate of the true value, given the sample data. If the person holds a degree or higher qualification, the odds for not losing empathy for colleagues is 0.613 to 1.64 times higher than for someone not possessing a degree or higher qualification. The confidence interval (95% CI) is more accurate for the variable qualifications meaning that there is 95 per cent confidence that the value of the odds ratio in this sample population lies between 0.418 and 0.924. The exp *b* (0.494) for living alone means that if a person lives alone, the odds of losing empathy for colleagues decreases by a factor equalling 0.494, all factors being equal (Pallant, 2005). The confidence interval (95% CI) is more accurate for the variable living alone, being between 0.260 and 0.939.

Table 69 Significance of Model for Losing Empathy for Colleagues with Years in Profession as Continuous Predictor

N=437	B(SE)	Wald	df	exp <i>b</i>	95% CI
Included Predictor- years in profession					
Constant	0.447*	9.520	1	1.564	
	(0.145)				
Qualifications ^a	-0.490**	6.322	1	0.613	0.418 to 0.898
	(0.195)				
Live alone ^b	-0.704**	4.636	1	0.494	0.260 to 0.939
	(0.327)				
Qualifications ^b	-0.463**	5.586	1	0.629	0.429 to 0.924
	(0.196)				
Constant	1.062*	10.697	1	2.891	
	(0.325)				

*p<0.01. **p<0.05. ^a Variable entered on step one. ^b Variables entered on step two.

In Table 70, the initial -2 Log likelihood equals 602.325, which assesses the overall fit of the model when only the constant is included. The initial -2 Log likelihood for living alone equals 595.945. The overall final fits of the model equal the second -2 Log likelihoods which are 595.945 and 591.021. The difference in these scores equals the chi-squares which are 6.38 ($p<0.01$) and 4.924 ($p<0.05$) indicating a good fit of the model. This is the value between the initial model and the second model. This shows that qualifications and living alone significantly predicts not losing empathy for colleagues better than when only losing empathy for colleagues was used on its own in the model. The R^2 values for the Hosmer and Lemeshow (1989) are .01 which are the values of the chi-square divided by the original -2 log likelihoods. The R^2 for the Cox and Snell (1989) and the Nagelkirke (1991) values are .014 and .019 for qualifications and .026 and .034 for living alone. This suggests that between 1.4 and 1.9 per cent of variability is explained by the outcome (dependent) variable when qualifications is built into the model and between 2.6 and 3.4 when living alone is built into the model.

Table 70 Significance of Model for Losing Empathy for Colleagues with Years in Profession as Continuous Predictor Demonstrating -2 Log Likelihood & Chi-square

Initial -2 Log likelihood	2 nd -2 Log likelihood	Chi-square	Degrees of freedom
602.325 ^a	595.945	6.380 ($p<0.05$)	1
595.945 ^b	591.021	4.924 ($p<0.05$)	1

$R^2 = .01$ (Hosmer & Lemeshow), .014 & .026 (Cox & Snell), .019 & .034 (Nagelkerke). ^a Step one

(qualifs). ^b Step two (live alone).

1.2.8. Losing empathy for clients (age)

The next calculation used the question, “Have you ever felt loss of empathy for clients while at work?” and the categorical variable results are displayed in Table 71. The continuous predictor age was used for this analysis. Table 71 shows that when considering loss of empathy for clients while at work with age as the predictor, 40.6 per cent were fulltimers, 46.9 per cent of nurses and midwives possessed a degree and 11.7 per cent lived alone. This means that when using age as the predictor in the equation for logistic regression, over two-fifths (40.6%) losing empathy for clients worked fulltime, almost half (46.9%) losing empathy for clients possessed a degree and a minority (11.7%) losing empathy for clients lived alone.

Table 71 Categorical Variable Results for Loss of Empathy for Clients with Age as Continuous Predictor

Categorical results- Have you ever felt loss of empathy for clients while at work?			
Predictor- age			
Fulltime	Yes	Number = 188	40.6%
N = 463	No	Number = 275	59.4%
Possesses a degree	Yes	Number = 217	46.9%
N = 463	No	Number = 246	53.1%
Live alone	Yes	Number = 54	11.7%
N = 463	No	Number = 409	88.3%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Have you ever felt loss of empathy for clients while at work?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all midwives and nurses did lose empathy for clients while at work, it was predicted that this would be correct 232 times out of 463, that is, 50.1 per cent. If the prediction was that all midwives and nurses did not lose empathy for clients while at work, this prediction would be correct 231 times out of 463, that is, 49.9 per cent (Table 72).

Table 72

Predictions for Losing Empathy for Clients with Only the Constant in the Model

Question: Have you ever felt loss of empathy for clients while at work?			
Prediction correct for losing empathy for clients	232 / 463	N = 463	50.1%
Prediction correct for not losing empathy for clients	231 / 463	N = 463	49.9%

The next calculation included the categorical predictor variables and the continuous predictor age for the question, “Have you ever felt loss of empathy for clients while at work?” Parameter codings were assigned to the categorical variables to determine the probability of outcome variables (Table 73).

Table 73 Categorical Variable Codings for “Have you ever felt loss of empathy for clients at work?” with Age as Continuous Predictor

Predictor- age		Parameter coding	
		Frequency	(1)
Fulltime	No	275	0
	Yes	188	1
Possesses a degree	No	246	1
	Yes	217	0
Live alone	No	409	1
	Yes	54	0

As age was the highest score statistic (Table 74) compared to the other variables, this was entered into the model.

Table 74 Variables Not in the Equation (when only constant used) for “Have you ever felt loss of empathy for clients at work?” in Calculation with Age as Continuous Predictor

Predictor- age		Score	df	Sig.
Variables Step 0	Fulltime (1)	0.052	2	0.820
	Qualifications (1)	0.370	1	0.543
	Live alone (1)	0.726	1	0.394
	Age	10.005	1	0.002
Overall statistics		11.622	5	0.020

The following results (Tables 75, 76 & 77) indicate how well this model predicts group classification. The model for age (step one) (Table 75) correctly categorises 138 who do not lose empathy for clients and misclassifies 93 (correctly classifies 59.7% of cases). For those who do lose empathy for clients, the model correctly categorises 122 and misclassifies 110 (correctly classifies 52.6% of cases). When the constant was used only, the model correctly categorised 50.1 per cent of cases and now with age added into the equation, the model correctly classifies 56.2 per cent of cases. For this question, people who are older are less likely to lose empathy for clients at the $p<0.01$ level, which was statistically significant. The other categorical predictors were insignificant.

Table 75 Model for Predicting Losing Empathy for Clients with Significant Variable Included

Observed N=463	Predicted	Predicted	Percentage correct
	no	yes	
Lose empathy for clients ^a no	138	93	59.7%
Lose empathy for clients ^a yes	110	122	52.6%
Overall percentage			56.2%

^a Step one- age

The significance of the model is displayed in the following tables (Tables 76 & 77). In Table 76, for age, the *B* value is negative denoting that if the person is older, they are less likely to lose empathy for clients, which is statistically significant at the p<0.01 level. The standard errors of the mean for these values are 0.529 and .012. These are the standard deviations of the sample means (Field, 2005). The Wald statistics are considerably different from 0 (Table 76), the predictor making a substantial contribution to predicting the outcome. The degrees of freedom (df) are equal to 1 which relates to number of observations able to vary (Field, 2005). The exp *b* (0.965) for age means that the older a person is, the odds of losing empathy for clients decreases by a factor equalling 0.965, all factors being equal (Pallatt, 2005). The confidence interval (95% CI) is more accurate for the variable age, being between 0.943 and 0.987.

Table 76 Significance of Model for Losing Empathy for Clients with Age as Continuous Predictor

N=463	B(SE)	Wald	df	exp <i>b</i>	95% CI
Included Predictor- age					
Constant	1.622*	9.513	1	5.064	
	(0.526)				
Age ^a	-0.036*	9.793	1	0.964	0.943 to 0.987
	(0.012)				

*p<0.01. ^aVariable entered on step one.

In Table 77, the initial -2 Log likelihood equals 641.852, which assesses the overall fit of the model when only the constant is included. The initial -2 Log likelihood for age equals 632.324 which is the overall final fit of the model. The difference in these scores equals the chi-square which is 9.528 ($p<0.01$) indicating a good fit of the model. This is the value between the initial model and the second model. This shows that age significantly predicts not losing empathy for clients better than when only losing empathy for clients was used on its own in the model (Field, 2005). The R^2 value for the Hosmer and Lemeshow (1989) is .13 which is the value of the chi-square divided by the original -2 log likelihood. The R^2 for the Cox and Snell (1989) and the Nagelkirke (1991) values are .022 and .029. This suggests that between 2.2 and 2.9 per cent of variability is explained by the outcome (dependent) variable when age is built into the model.

Table 77 Significance of Model for Losing Empathy for Clients with Age as Continuous Predictor Demonstrating -2 Log Likelihood & Chi-square

Initial -2 Log likelihood	2 nd -2 Log likelihood	Chi-square	Degrees of freedom
641.852 ^a	631.739	10.113 ($p<0.01$)	1

$R^2 = .13$ (Hosmer & Lemeshow), .022 (Cox & Snell), .029 (Nagelkerke). ^a Step one (age).

1.2.9. Losing empathy for clients (years in profession)

The next calculation used the same question and the categorical variable results are displayed in Table 78. The continuous predictor years in profession was used for this analysis. Table 78 shows that when considering loss of empathy for clients while at work with years in profession as the predictor, 40.1 per cent were fulltimers, 46.8 per cent of nurses and midwives possessed a degree and 11.4 per cent lived alone. This means that when using years in profession as the predictor in the equation for logistic regression, over two-fifths (40.1%) losing empathy for clients worked fulltime, almost half (46.8%) losing empathy for clients possessed a degree and a minority (11.4%) losing empathy for clients lived alone.

Table 78 Categorical Variable Results for Loss of Empathy for Clients with Years in Profession as Continuous Predictor

Categorical results- Have you ever felt loss of empathy for clients while at work?			
Predictor- years in profession			
Fulltime	Yes	Number = 189	40.1%
N = 466	No	Number = 277	59.9%
Possesses a degree	Yes	Number = 218	46.8%
N = 466	No	Number = 248	53.2%
Live alone	Yes	Number = 53	11.4%
N = 466	No	Number = 413	88.6%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Have you ever felt loss of empathy for clients while at work?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all midwives and nurses did lose empathy for colleagues while at work, it was predicted that this would be correct 235 times out of 466, that is, 50.4 per cent. If the prediction was that all midwives and nurses did not lose empathy for clients while at work, this prediction would be correct 231 times out of 466, that is, 49.6 per cent (Table 79).

Table 79

Predictions for Losing Empathy for Clients with Only the Constant in the Model

Question: Have you ever felt loss of empathy for clients while at work?			
Prediction correct for losing empathy for clients	235 / 466	N = 466	50.4%
Prediction correct for not losing empathy for clients	231 / 466	N = 466	49.6%

The next calculation included the categorical predictor variables and the continuous predictor age for the question, “Have you ever felt loss of empathy for clients while at work?” Parameter codings were assigned to the categorical variables to determine the probability of outcome variables (Table 80).

Table 80 Categorical Variable Codings for “Have you ever felt loss of empathy for clients at work?” with Years in Profession as Continuous Predictor

Predictor- years in profession		Parameter coding	
		Frequency	(1)
Fulltime	No	277	1
	Yes	189	0
Possesses a degree	No	248	0
	Yes	218	1
Live alone	No	413	1
	Yes	53	0

As years in profession was the highest score statistic (Table 81) compared to the other variables, this was entered into the model.

Table 81 Variables Not in the Equation (when only constant used) for “Have you ever felt loss of empathy for clients at work?” in Calculation with Years in Profession as Continuous Predictor

Predictor- years in profession		Score	df	Sig.
Variables Step 0	Fulltime (1)	0.003	1	0.953
	Qualifications (1)	0.324	1	0.569
	Live alone (1)	0.912	1	0.340
	Years in profession	11.310	1	0.001
Overall statistics		12.996	4	0.011

The following results (Tables 82, 83 & 84) indicate how well this model predicts group classification. The model for years in profession (step one) (Table 82) correctly categorises 134 who do not lose empathy for clients and misclassifies 97 (correctly classifies 58% of cases). For those who do lose empathy for clients, the model correctly categorises 127 and misclassifies 108 (correctly classifies 54% of cases). When the constant was used only, the model correctly categorised 50.4 per cent of cases and now with years in profession added into the equation, the model correctly classifies 56 per cent of cases. For this question, people who have been in the profession longer are less likely to lose empathy for clients at the $p<0.01$ level, which was statistically significant. The other categorical predictors were insignificant.

Table 82 Model for Predicting Losing Empathy for Clients with Significant Variable Included

Observed N=466	Predicted no	Predicted yes	Percentage correct
Lose empathy for clients ^a no	134	97	58.0%
Lose empathy for clients ^a yes	108	127	54.0%
Overall percentage			56.0%

^a Step one- years in profession

The significance of the model is displayed in the following tables (Tables 83 & 84). In Table 83, for years in profession, the *B* value is negative denoting that the longer the person has spent in the profession, the less likely they are to lose empathy for clients, which is statistically significant at the $p<0.01$ level. The standard errors of the mean for these values are 0.236 and .01. These are the standard deviations of the sample means (Field, 2005). The Wald statistics are considerably different from 0 (Table 83), the predictor making a substantial contribution to predicting the outcome. The degrees of freedom (df) are equal to 1 which relates to number of observations able to vary (Field, 2005). The $\exp b$ (0.968) for years in profession means that the more years the person has spent in the profession, the odds of losing empathy for clients decreases by a factor equalling 0.968, all factors being equal (Pallatt, 2005). The confidence interval (95% CI) is more accurate for the variable years in profession, being between 0.949 and 0.987.

Table 83 Significance of Model for Losing Empathy for Clients with Years in Profession as Continuous Predictor Variable

N=465	B(SE)	Wald	df	$\exp b$	95% CI
Included Predictor- years in profession					
Constant	0.736*	9.734	1	2.088	
	(0.236)				
Years in prof ^a	-0.033*	11.081	1	0.968	0.949 to 0.987
	(0.010)				

* $p<0.01$. ^aVariable entered on step one.

In Table 84, the initial -2 Log likelihood equals 645.979, which assesses the overall fit of the model when only the constant is included. The initial -2 Log likelihood for years in profession equals 634.550 which is the overall final fit of the model. The difference in these scores equals the chi-square which is 11.429 ($p<0.01$) indicating a good fit of the model. This is the value between the initial model and the second model. This shows that the years spent in the profession significantly predicts not losing empathy for clients better than when only losing empathy for clients was used on its own in the model (Field, 2005). The R^2 value for the Hosmer and Lemeshow (1989) is .13 which is the value of the chi-square divided by the original -2 log likelihood. The R^2 for the Cox and Snell (1989) and the Nagelkirke (1991) values are .024 and .032. This suggests that between 2.4 and 3.2 per cent of variability is explained by the outcome (dependent) variable when years in profession is built into the model.

Table 84 Significance of Model for Losing Empathy for Clients with Years in Profession as Continuous Predictor Demonstrating -2 Log Likelihood & Chi-square

Initial -2 Log likelihood	2 nd -2 Log likelihood	Chi-square	Degrees of freedom
645.979 ^a	634.550	11.429 ($p<0.01$)	1

$R^2 = .13$ (Hosmer & Lemeshow), .024 (Cox & Snell), .032 (Nagelkerke). ^a Step one (years in profession).

1.3. Individual responses

In relation to pressure and motivation levels, the data suggest that the respondents were:

- less likely to place unreasonable pressure on themselves if they were more educated ($p<0.05$).

The following section presents more detailed information relating to individual responses in regard to being more educated.

1.3.1. Pressure and motivation (age)

The results using the categorical predictor variables and the continuous predictor age for pressure and motivation levels will be displayed. The categorical variable results are displayed in Table 85. Table 85 shows that when placing unreasonable pressure on themselves in relation to work with age as the predictor, 41.8 per cent were fulltimers, 47.1 per cent of nurses and midwives possessed a degree and 11.5 per cent lived alone. This means that when using age as the predictor in the equation for logistic regression, over two-fifths (41.8%) scoring moderate to high pressure and motivation levels worked fulltime, almost half (47.1%) scoring moderate to high pressure and motivation levels possessed a degree and a minority (11.5%) scoring moderate to high pressure and motivation levels lived alone.

Table 85 Categorical Variable Results for Pressure and Motivation Levels in Relation to Work With Age as Continuous Predictor

Categorical results for Pressure and Motivation Levels			
Predictor- age			
Fulltime	Yes	Number = 207	41.8%
N = 495	No	Number = 288	58.2%
Possesses a degree	Yes	Number = 233	47.1%
N = 495	No	Number = 262	52.9%
Live alone	Yes	Number = 57	11.5%
N = 495	No	Number = 438	88.5%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using pressure and motivation levels as the constant, in the logistic regression equation (Table 86). Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives placed unreasonable expectations on themselves in relation to work, it was predicted that this would be correct 352 times out of 495, that is, 71.1 per cent. If the prediction was that all nurses and midwives experienced low pressure and motivation levels in relation to work, this prediction would be correct 143 times out of 495, that is, 28.9 per cent.

Table 86 Predictions for Pressure and Motivation Levels with Only the Constant in the Model

Pressure and motivation levels in relation to work			
Prediction correct for high pressure and motivation levels in relation to work	352 / 495	N = 495	71.1%
Prediction correct for low pressure and motivation levels in relation to work	143 / 495	N = 495	28.9%

The next calculation included the categorical predictor variables and the continuous predictor age for pressure and motivation levels. Parameter codings were assigned to the categorical variables to determine the probability of outcome variables (Table 87).

Table 87 Categorical Variable Codings for Pressure and Motivation Levels with Age as Continuous Predictor

Predictor- age			Parameter coding
	Category	Frequency	(1)
Fulltime	No	288	0
	Yes	207	1
Possesses a degree	No	262	1
	Yes	233	0
Live alone	No	438	1
	Yes	57	0

As qualifications was the highest score statistic (Table 88) compared to the other variables, this was entered into the model.

Table 88 Variables Not in the Equation (when only constant used) for Pressure and Motivation Levels in Calculation with Age as Continuous Predictor

Predictor- age		Score	df	Sig.
Variables Step 0	Fulltime (1)	0.584	1	0.445
	Qualifications (1)	5.982	1	0.014
	Live alone (1)	1.160	1	0.281
	Age	0.997	1	0.318
Overall statistics		7.043	4	0.134

The following results indicate how well this model predicts group classification. The significance of the models are displayed in the following tables (Tables 89, 90 & 91). The model for predicting pressure and motivation levels with significant variables is displayed in Table 89. The model for qualifications (step one) (Table 89) correctly categorises no-one who does not place unreasonable expectations on themselves and misclassifies 143 (correctly classifies no cases). For those who place unreasonable expectations on themselves, the model correctly categorises 352 and misclassifies no-one (correctly classifies all cases). When the constant was used only, the model correctly categorised 71.1 per cent of cases and now with qualifications added into the equation, the model correctly classifies the same percentage (71.1%) of cases. For this question, people who are more educated, are less likely to place unreasonable expectations on themselves at the $p<0.05$ level, which was statistically significant. The other categorical predictors, being fulltime and living alone and the continuous predictors, age, hours worked and years in the profession, were insignificant.

Table 89 Model for Predicting Pressure and Motivation Levels with Significant Variables Included

Observed N = 495	Predicted low	Predicted high	Percentage correct
Pressure Motivation level ^a low	0	143	0%
Pressure Motivation level ^a high	0	352	100%
Overall percentage			71.1%

^a Step one- Qualifications

The significance of the models are displayed in the following tables (Tables 90 & 91). In Table 90, for qualifications, the *B* value is negative denoting that if the person is more educated, they are less likely to place unreasonable expectations on themselves, which is statistically significant at the $p<0.05$ level. The standard errors of the mean for these values are 0.154 and 0.202, respectively. These are the standard deviations of the sample means (Field, 2005).

The Wald statistics are considerably different from 0 (Table 90), the predictor making a substantial contribution to predicting the outcome. The degrees of freedom (df) are equal to 1 which relates to number of observations able to vary (Field, 2005). The $\exp b$ (0.611) for qualifications is the value of the odds ratio which is only a guess or point estimate of the true value, given the sample data. If the person is more educated, the odds for placing unreasonable expectations on themselves is 1.021 to 1.043 times lower than for someone less educated. The confidence interval (95% CI) is more accurate for the variable qualifications meaning that there is 95 per cent confidence that the value of the odds ratio in this sample population lies between 0.411 and 0.908.

Table 90 Significance of Model for Pressure and Motivation Level with Age as Continuous Predictor

N=495	B(SE)	Wald	df	exp b	95% CI
Included Predictor- age					
Constant	1.174*	57.956	1	3.236	
	(0.154)				
Qualifications^a	-0.493**	5.935	1	0.611	0.411 to 0.908
	(0.202)				

*p<0.0001. **p<0.05. ^a Variable entered on step one.

In Table 91, the initial -2 Log likelihood equals 595.142, which assesses the overall fit of the model when only the constant is included. The overall final fit of the model equals the second -2 Log likelihood which is 589.112. The difference in these scores equals the chi-square which is 6.030 ($p<0.05$) indicating a good fit of the model. This is the value between the initial model and the second model. This shows that being more educated significantly predicts not placing unreasonable expectations on themselves better than when only placing unreasonable expectations on themselves was used on its own in the model. The R^2 value for the Hosmer and Lemeshow (1989) is .01 which is the value of the chi-square divided by the original -2 log likelihood. The R^2 for the Cox and Snell (1989) and the Nagelkirke (1991) values are .012 and .017. This suggests that between 1.2 and 1.7 per cent of variability is explained by the outcome (dependent) variable when qualifications is built into the model.

Table 91 Significance of Model for Pressure and Motivation Levels with Age as Continuous Predictor Demonstrating -2 Log Likelihood & Chi-square

Initial -2 Log likelihood	2 nd -2 Log likelihood	Chi-square	Degrees of freedom
595.142 ^a	589.112	6.03 ($p<0.05$)	1

$R^2 = .01$ (Hosmer & Lemeshow), .012 (Cox & Snell), .017 (Nagelkerke). ^a Step one (qualifications).

1.3.2. Pressure and motivation (hours worked)

The results using the categorical predictor variables and the continuous predictor hours worked for pressure and motivation levels will be displayed. The categorical variable results are displayed in Table 92. Table 92 shows that when placing unreasonable pressure on themselves in relation to work with hours worked as the predictor, 41.7 per cent were fulltimers, 46.9 per cent of nurses and midwives possessed a degree and 11.4 per cent lived alone. This means that when using hours worked as the predictor in the equation for logistic regression, over two-fifths (41.7%) scoring moderate to high pressure and motivation levels worked fulltime, almost half (46.9%) scoring moderate to high pressure and motivation levels possessed a degree and a minority (11.4%) scoring moderate to high pressure and motivation levels lived alone.

Table 92 Categorical Variable Results for Pressure and Motivation Levels in Relation to Work With Hours Worked as Continuous Predictor

Categorical results for Pressure and Motivation Levels			
Predictor- hours worked			
Fulltime	Yes	Number = 208	41.7%
N = 499	No	Number = 291	58.3%
Possesses a degree	Yes	Number = 234	46.9%
N = 499	No	Number = 265	53.1%
Live alone	Yes	Number = 57	11.4%
N = 499	No	Number = 442	88.6%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using pressure and motivation levels as the constant, in the logistic regression equation (Table 93). Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives placed unreasonable expectations on themselves in relation to work, it was predicted that this would be correct 356 times out of 499, that is, 71.3 per cent. If the prediction was that all nurses and midwives experienced low pressure and motivation levels in relation to work, this prediction would be correct 143 times out of 499, that is, 28.7 per cent.

Table 93 Predictions for Pressure and Motivation Levels with Only the Constant in the Model

Pressure and motivation levels in relation to work			
Prediction correct for high pressure and motivation levels in relation to work	356 / 499	N = 499	71.3%
Prediction correct for low pressure and motivation levels in relation to work	143 / 499	N = 499	28.7%

The next calculation included the categorical predictor variables and the continuous predictor hours worked for pressure and motivation levels. Parameter codings were assigned to the categorical variables to determine the probability of outcome variables (Table 94).

Table 94 Categorical Variable Codings for Pressure and Motivation Levels with Hours Worked as Continuous Predictor

Predictor- hours worked			Parameter coding
	Category	Frequency	(1)
Fulltime	No	291	0
	Yes	208	1
Possesses a degree	No	265	1
	Yes	234	0
Live alone	No	442	1
	Yes	57	0

As qualifications was the highest score statistic (Table 95) compared to the other variables, this was entered into the model.

Table 95 Variables Not in the Equation (when only constant used) for Pressure and Motivation Levels in Calculation with Hours Worked as Continuous Predictor

Predictor- hours worked		Score	df	Sig.
Variables Step 0	Fulltime (1)	0.525	1	0.469
	Qualifications (1)	5.723	1	0.017
	Live alone (1)	1.077	1	0.299
	Hours worked	4.593	1	0.032
Overall statistics		10.868	4	0.028

The following results indicate how well this model predicts group classification. The significance of the models are displayed in the following tables (Tables 96, 97 & 98). The model for predicting pressure and motivation levels with significant variables is displayed in Table 96. The model for qualifications (step one) (Table 96) correctly categorises no-one who does not place unreasonable expectations on themselves and misclassifies 143 (correctly classifies no cases). For those who place unreasonable expectations on themselves, the model correctly categorises 356 and misclassifies no-one (correctly classifies all cases). When the constant was used only, the model correctly categorised 71.3 per cent of cases and now with qualifications added into the equation, the model correctly classifies the same percentage (71.3%) of cases. For this question, people who are more educated, are less likely to place unreasonable expectations on themselves at the $p<0.05$ level, which was statistically significant. The other categorical predictors, being fulltime and living alone and the continuous predictors, age, hours worked and years in the profession, were insignificant.

Table 96 Model for Predicting Pressure and Motivation Levels with Significant Variables Included

Observed N = 499	Predicted	Predicted	Percentage correct
	low	high	
Pressure Motivation level ^a low	0	143	0%
Pressure Motivation level ^a high	0	356	100%
Overall percentage			71.3%

^a Step one- Qualifications

The significance of the models are displayed in the following tables (Tables 97 & 98). In Table 97, for qualifications, the *B* value is negative denoting that if the person is more educated, they are less likely to place unreasonable expectations on themselves, which is statistically significant at the $p<0.05$ level. The standard errors of the mean for these values are 0.154 and 0.202, respectively. These are the standard deviations of the sample means (Field, 2005).

The Wald statistics are considerably different from 0 (Table 97), the predictor making a substantial contribution to predicting the outcome. The degrees of freedom (df) are equal to 1 which relates to number of observations able to vary (Field, 2005). The $\exp b$ (0.618) for qualifications is the value of the odds ratio which is only a guess or point estimate of the true value, given the sample data. If the person is more educated, the odds for placing unreasonable expectations on themselves is 0.618 times lower than for someone less educated. The confidence interval (95% CI) is more accurate for the variable qualifications meaning that there is 95 per cent confidence that the value of the odds ratio in this sample population lies between 0.416 and 0.908.

Table 97 Significance of Model for Pressure and Motivation Level with Hours Worked as Continuous Predictor

N=499	B(SE)	Wald	df	$\exp b$	95% CI
Included Predictor- hours worked					
Constant	1.180*	58.587	1	3.255	
	(0.154)				
Qualifications ^a	-0.481**	5.679	1	0.618	0.416 to 0.918
	(0.202)				

*p<0.0001. **p<0.05. ^a Variable entered on step one.

In Table 98, the initial -2 Log likelihood equals 597.857, which assesses the overall fit of the model when only the constant is included. The overall final fit of the model equals the second -2 Log likelihood which is 592.088. The difference in these scores equals the chi-square which is 5.769 ($p<0.05$) indicating a good fit of the model. This is the value between the initial model and the second model. This shows that being more educated significantly predicts not placing unreasonable expectations on themselves better than when only placing unreasonable expectations on themselves was used on its own in the model. The R^2 value for the Hosmer and Lemeshow (1989) is .01 which is the value of the chi-square divided by the original -2 log likelihood. The R^2 for the Cox and Snell (1989) and the Nagelkirke (1991) values are .011 and .016. This suggests that between 1.1 and 1.6 per cent of variability is explained by the outcome (dependent) variable when qualifications is built into the model.

Table 98 Significance of Model for Pressure and Motivation Levels with Hours Worked as Continuous Predictor Demonstrating -2 Log Likelihood & Chi-square

Initial -2 Log likelihood	2 nd -2 Log likelihood	Chi-square	Degrees of freedom
597.857 ^a	592.088	5.769 ($p<0.05$)	1

$R^2 = .01$ (Hosmer & Lemeshow), .011 (Cox & Snell), .016 (Nagelkerke). ^a Step one (qualifications).

1.3.3. Pressure and motivation (years in profession)

The results using the categorical predictor variables and the continuous predictor years in profession for pressure and motivation levels will be displayed. The categorical variable results are displayed in Table 99. Table 99 shows that when placing unreasonable pressure on themselves in relation to work with years in profession as the predictor, 41.7 per cent were fulltimers, 47.4 per cent of nurses and midwives possessed a degree and 11.3 per cent lived alone. This means that when using years in profession as the predictor in the equation for logistic regression, over two-fifths (41.7%) scoring moderate to high pressure and motivation levels worked fulltime, almost half (47.4%) scoring moderate to high pressure and motivation levels possessed a degree and a minority (11.3%) scoring moderate to high pressure and motivation levels lived alone.

Table 99 Categorical Variable Results for Pressure and Motivation Levels in Relation to Work With Years in Profession as Continuous Predictor

Categorical results for Pressure and Motivation Levels			
Predictor- years in profession			
Fulltime	Yes	Number = 207	41.7%
N = 496	No	Number = 289	58.3%
Possesses a degree	Yes	Number = 235	47.4%
N = 496	No	Number = 261	52.6%
Live alone	Yes	Number = 56	11.3%
N = 496	No	Number = 440	88.7%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using pressure and motivation levels as the constant, in the logistic regression equation (Table 100). Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives placed unreasonable expectations on themselves in relation to work, it was predicted that this would be correct 355 times out of 496, that is, 71.6 per cent. If the prediction was that all nurses and midwives experienced low pressure and motivation levels in relation to work, this prediction would be correct 141 times out of 496, that is, 28.7 per cent.

Table 100 Predictions for Pressure and Motivation Levels with Only the Constant in the Model

Pressure and motivation levels in relation to work			
Prediction correct for high pressure and motivation levels in relation to work	355 / 496	N = 496	71.6%
Prediction correct for low pressure and motivation levels in relation to work	141 / 496	N = 496	28.7%

The next calculation included the categorical predictor variables and the continuous predictor years in profession for pressure and motivation levels. Parameter codings were assigned to the categorical variables to determine the probability of outcome variables (Table 101).

Table 101 Categorical Variable Codings for Pressure and Motivation Levels with Years in Profession as Continuous Predictor

Predictor- years in profession		Parameter coding	
	Category	Frequency	(1)
Fulltime	No	289	0
	Yes	207	1
Possesses a degree	No	261	1
	Yes	235	0
Live alone	No	440	1
	Yes	56	0

As qualifications was the highest score statistic (Table 102) compared to the other variables, this was entered into the model.

Table 102 Variables Not in the Equation (when only constant used) for Pressure and Motivation Levels in Calculation with Years in Profession as Continuous Predictor

Predictor- years in profession		Score	df	Sig.
Variables Step 0	Fulltime (1)	0.602	1	0.438
	Qualifications (1)	5.538	1	0.019
	Live alone (1)	1.520	1	0.218
	Years in profession	1.234	1	0.267
Overall statistics		6.911	4	0.141

The following results indicate how well this model predicts group classification. The significance of the models are displayed in the following tables (Tables 103, 104 & 105). The model for predicting pressure and motivation levels with significant variables is displayed in Table 103. The model for qualifications (step one) (Table 103) correctly categorises no-one who does not place unreasonable expectations on themselves and misclassifies 141 (correctly classifies no cases). For those who place unreasonable expectations on themselves, the model correctly categorises 355 and misclassifies no-one (correctly classifies all cases). When the constant was used only, the model correctly categorised 71.6 per cent of cases and now with qualifications added into the equation, the model correctly classifies the same percentage (71.6%) of cases. For this question, people who are more educated, are less likely to place unreasonable expectations on themselves at the $p<0.05$ level, which was statistically significant. The other categorical predictors, being fulltime and living alone and the continuous predictors, age, hours worked and years in the profession, were insignificant.

Table 103 Model for Predicting Pressure and Motivation Levels with Significant Variables Included

Observed N = 496	Predicted low	Predicted high	Percentage correct
Pressure Motivation level ^a low	0	141	0%
Pressure Motivation level ^a high	0	355	100%
Overall percentage			71.6%

^a Step one- Qualifications

The significance of the models are displayed in the following tables (Tables 104 & 105). In Table 104, for qualifications, the B value is negative denoting that if the person is more educated, they are less likely to place unreasonable expectations on themselves, which is statistically significant at the $p<0.05$ level. The standard errors of the mean for these values are 0.154 and 0.203, respectively. These are the standard deviations of the sample means (Field, 2005).

The Wald statistics are considerably different from 0 (Table 105), the predictor making a substantial contribution to predicting the outcome. The degrees of freedom (df) are equal to 1 which relates to number of observations able to vary (Field, 2005). The $\exp b$ (0.622) for qualifications is the value of the odds ratio which is only a guess or point estimate of the true value, given the sample data. If the person is more educated, the odds for placing unreasonable expectations on themselves is 0.622 times lower than for someone less educated. The confidence interval (95% CI) is more accurate for the variable qualifications meaning that there is 95 per cent confidence that the value of the odds ratio in this sample population lies between 0.418 and 0.925.

Table 104 Significance of Model for Pressure and Motivation Level with Years as Continuous Predictor

N=496	B(SE)	Wald	df	exp b	95% CI
Included Predictor- years in profession					
Constant	1.186*	59.219	1	3.273	
	(0.154)				
Qualifications ^a	-0.475**	5.497	1	0.622	0.418 to 0.925
	(0.203)				

* $p<0.0001$. ** $p<0.05$. ^aVariable entered on step one.

In Table 105, the initial -2 Log likelihood equals 592.169, which assesses the overall fit of the model when only the constant is included. The overall final fit of the model equals the second -2 Log likelihood which is 586.591. The difference in these scores equals the chi-square which is 5.578 ($p<0.05$) indicating a good fit of the model. This is the value between the initial model and the second model. This shows that being more educated significantly predicts not placing unreasonable expectations on themselves better than when only placing unreasonable expectations on themselves was used on its own in the model. The R^2 value for the Hosmer and Lemeshow (1989) is 0.1 which is the value of the chi-square divided by the original -2 log likelihood. The R^2 for the Cox and Snell (1989) and the Nagelkirke (1991) values are .011 and .016. This suggests that between 1.1 and 1.6 per cent of variability is explained by the outcome (dependent) variable when qualifications is built into the model.

Table 105 Significance of Model for Pressure and Motivation Levels with Years in Profession as Continuous Predictor Demonstrating -2 Log Likelihood & Chi-square

Initial -2 Log likelihood	2 nd -2 Log likelihood	Chi-square	Degrees of freedom
592.169 ^a	586.591	5.578 ($p<0.05$)	1

$R^2 = 0.1$ (Hosmer & Lemeshow), .011 (Cox & Snell), .016 (Nagelkerke). ^a Step one (qualifications).

2. Statistically non-significant findings

Insignificant findings ($p>0.05$) were found in relation to individual responses to stress and burnout.

2.1. Stress

Different variables did not predict whether respondents were more likely to experience stress overall. In particular:

- if the person was older, worked more hours per week, worked more years in the profession, worked fulltime as opposed to part-time, was more educated and whether they lived alone ($p>0.05$).

The following section presents more detailed information relating to overall stress levels.

2.1.1. Stress levels (age)

Stress levels were calculated with the continuous predictor age being used for the analysis and the categorical variable results are displayed in the following table (Table 106). Table 106 shows that for stress levels with age as the predictor, 41.7 per cent were fulltimers, 46.4 per cent of nurses and midwives possessed a degree and 12.3 per cent lived alone. This means that when using age as the predictor in the equation for logistic regression, over two-fifths (41.7%) experiencing moderate to high levels of stress worked fulltime, almost half (46.4%) experiencing moderate to high levels of stress possessed a degree and a minority (12.3%) experiencing moderate to high levels of stress lived alone.

Table 106 Categorical Variable Results for Stress Levels with Age as Continuous Predictor

Categorical results for stress levels			
Predictor- age			
Fulltime	Yes	Number = 204	41.7%
N = 489	No	Number = 285	58.3%
Possesses a degree	Yes	Number = 227	46.4%
N = 489	No	Number = 262	53.6%
Live alone	Yes	Number = 60	12.3%
N = 489	No	Number = 429	87.7%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using stress as the constant in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives experienced high stress levels in relation to work, this would be correct 304 times out of 489, that is, 62.2 per cent. If the prediction was that all nurses and midwives experienced low stress levels in relation to work, this prediction would be correct 185 times out of 489, that is, 37.8 per cent (Table 107).

Table 107 Predictions for Stress Levels with Only Constant in the Model

Stress levels in relation to work			
Prediction correct for high stress levels	304 / 489	N = 489	62.2%
Prediction correct for low stress levels	185 / 489	N = 489	37.8%

The next calculation included the categorical predictor variables and the continuous predictor age for experiencing stress which did not have any significant effect.

2.1.2. Stress levels (hours worked)

Stress levels were calculated with the continuous predictor hours worked being used for the analysis and the categorical variable results are displayed in the following table (Table 108). Table 108 shows that for stress levels with hours worked as the predictor, 41.6 per cent were fulltimers, 46.3 per cent of nurses and midwives possessed a degree and 12 per cent lived alone. This means that when using hours worked as the predictor in the equation for logistic regression, over two fifths (41.6%) experiencing moderate to high levels of stress worked fulltime, almost half (46.3%) experiencing moderate to high levels of stress possessed a degree and a minority (12%) experiencing moderate to high levels of stress lived alone.

Table 108 Categorical Variable Results for Stress Levels with Hours Worked as Continuous Predictor

Categorical results for stress levels			
Predictor- hours worked			
Fulltime	Yes	Number = 204	41.6%
N = 490	No	Number = 286	58.4%
Possesses a degree	Yes	Number = 227	46.3%
N = 490	No	Number = 263	53.7%
Live alone	Yes	Number = 59	12.0%
N = 490	No	Number = 431	88.0%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using stress as the constant in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives experienced high stress levels in relation to work, this would be correct 306 times out of 490, that is, 62.4 per cent. If the prediction was that all nurses and midwives experienced low stress levels in relation to work, this prediction would be correct 184 times out of 490, that is, 37.6 per cent (Table 109).

Table 109 Predictions for Stress Levels with Only Constant in the Model

Stress levels in relation to work			
Prediction correct for high stress levels	306 / 490	N = 490	62.4%
Prediction correct for low stress levels	184 / 490	N = 490	37.6%

The next calculation included the categorical predictor variables and the continuous predictor hours worked for experiencing stress which did not have any significant effect.

2.1.3. Stress levels (years in profession)

Stress levels were calculated with the continuous predictor years in profession being used for the analysis and the categorical variable results are displayed in the following table (Table 110). Table 110 shows that for stress levels with years in profession as the predictor, 41.9 per cent were fulltimers, 46.8 per cent of nurses and midwives possessed a degree and 12.1 per cent lived alone. This means that when using years in profession as the predictor in the equation for logistic regression, over two-fifths (41.9%) experiencing moderate to high levels of stress worked fulltime, almost half (46.8%) experiencing moderate to high levels of stress possessed a degree and a minority (12.1%) experiencing moderate to high levels of stress lived alone.

Table 110 Categorical Variable Results for Stress Levels with Years in Profession as Continuous Predictor

Categorical results for stress levels			
Predictor- years in profession			
Fulltime	Yes	Number = 205	41.9%
N = 489	No	Number = 284	58.1%
Possesses a degree	Yes	Number = 229	46.8%
N = 489	No	Number = 260	53.2%
Live alone	Yes	Number = 59	12.1%
N = 489	No	Number = 430	87.9%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using stress as the constant in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives experienced high stress levels in relation to work, this would be correct 305 times out of 489, that is, 62.4 per cent. If the prediction was that all nurses and midwives experienced low stress levels in relation to work, this prediction would be correct 184 times out of 489, that is, 37.6 per cent (Table 111).

Table 111 Predictions for Stress Levels with Only Constant in the Model

Stress levels in relation to work			
Prediction correct for high stress levels	305 / 489	N = 489	62.4%
Prediction correct for low stress levels	184 / 489	N = 489	37.6%

The next calculation included the categorical predictor variables and the continuous predictor years in profession for experiencing stress which did not have any significant effect.

Different variables did not predict whether respondents were more likely to experience sleeplessness, experience headaches requiring analgesia, require treatment for stress, take “mental health” leave, experience depression and want to change area of practice. In particular:

- if the person worked fulltime as opposed to part time, this did not predict any significant findings for any of the above variables ($p>0.05$);
- if the person was better educated, this did not predict any significant findings for any of the above variables ($p>0.05$);
- if the person lived alone, this did not predict any significant findings for the above variables ($p>0.05$);
- if the person was older, this did not predict any significant findings for the above variables ($p>0.05$) except for taking “mental health” leave ($p<0.0001$);

- if the person worked more hours, this did not predict any significant findings for the above variables ($p>0.05$) except for experiencing sleeplessness ($p<0.01$) and
- the longer the person worked in the profession, this did not predict any significant findings for the above variables ($p>0.05$) except for taking “mental health” leave ($p<0.0001$).

The following section presents more detailed information relating to stress concerning experiencing sleeplessness, experiencing headaches, stress requiring treatment, taking “mental health” leave, length of depression and wanting to change area of practice.

2.1.4. Sleeplessness (age)

The question, “How often do you experience sleeplessness in relation to work?” was calculated with the continuous predictor age being used for the analysis and the categorical variable results are displayed in the following table (Table 112). Table 112 shows that when experiencing sleeplessness with age as the predictor, 41.9 per cent were fulltimers, 47.1 per cent of nurses and midwives possessed a degree and 12.1 per cent lived alone. This means that when using age as the predictor in the equation for logistic regression, over two-fifths (41.9%) experiencing sleeplessness worked fulltime, almost half (47.1%) experiencing sleeplessness possessed a degree and a minority (12.1%) experiencing sleeplessness lived alone.

Table 112

Categorical Variable Results for Sleeplessness with Age as Continuous Predictor

Categorical results- How often do you experience sleeplessness?			
Predictor- age			
Fulltime	Yes	Number = 211	41.9%
N = 503	No	Number = 292	58.1%
Possesses a degree	Yes	Number = 237	47.1%
N = 503	No	Number = 266	52.9%
Live alone	Yes	Number = 61	12.1%
N = 503	No	Number = 442	87.9%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “How often do you experience sleeplessness in relation to work?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives experienced sleeplessness, this would be correct 186 times out of 503, that is, 63 per cent. If the prediction was that all nurses and midwives did not experience sleeplessness, this prediction would be correct 317 times out of 503, that is, 37 per cent (Table 113).

Table 113 Predictions for Sleeplessness with Only Constant in the Model

Question: How often do you experience sleeplessness?			
Prediction correct for experiencing sleeplessness	186 / 503	N = 503	63.0%
Prediction correct for not experiencing sleeplessness	317 / 503	N = 503	37.0%

The next calculation included the categorical predictor variables and the continuous predictor age for the question, “How often do you experience sleeplessness in relation to work?” which did not have any significant effect.

2.1.5. Sleeplessness (years in profession)

The question, “How often do you experience sleeplessness in relation to work?” was calculated with the continuous predictor years in profession being used for the analysis and the categorical variable results are displayed in the following table (Table 114). Table 114 shows that when experiencing sleeplessness with years in profession as the predictor, 41.9 per cent were fulltimers, 47.1 per cent of nurses and midwives possessed a degree and 12.1 per cent lived alone. This means that when using years in profession as the predictor in the equation for logistic regression, over two-fifths (42%) experiencing sleeplessness worked fulltime, almost half (47.3%) experiencing sleeplessness possessed a degree and a minority (11.9%) experiencing sleeplessness lived alone.

Table 114 Categorical Variable Results for Sleeplessness with Years in Profession as Continuous Predictor

Categorical results- How often do you experience sleeplessness?			
Predictor- years in profession			
Fulltime	Yes	Number = 212	42.0%
N = 505	No	Number = 293	58.0%
Possesses a degree	Yes	Number = 239	47.3%
N = 505	No	Number = 266	52.7%
Live alone	Yes	Number = 60	11.9%
N = 505	No	Number = 445	88.1%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “How often do you experience sleeplessness in relation to work?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives experienced sleeplessness, this would be correct 186 times out of 505, that is, 63.2 per cent. If the prediction was that all nurses and midwives did not experience sleeplessness, this prediction would be correct 319 times out of 505, that is, 36.8 per cent (Table 115).

Table 115 Predictions for Sleeplessness with Only Constant in the Model

Question: How often do you experience sleeplessness?			
Prediction correct for experiencing sleeplessness	186 / 505	N = 505	36.8%
Prediction correct for not experiencing sleeplessness	319 / 505	N = 505	63.2%

The next calculation included the categorical predictor variables and the continuous predictor years in profession for the question, “How often do you experience sleeplessness in relation to work?” which did not have any significant effect.

2.1.6. Experiencing headaches (age)

The question, “Do you experience headaches that require analgesia?” was calculated with the continuous predictor age being used for the analysis and the categorical variable results are displayed in the following table (Table 116). Table 116 shows that when experiencing headaches with age as the predictor, 41.9 per cent were fulltimers, 47.3 per cent of nurses and midwives possessed a degree and 12.1 per cent lived alone. This means that when using age as the predictor in the equation for logistic regression, over two-fifths (41.9%) experiencing headaches worked fulltime, almost half (47.3%) experiencing headaches possessed a degree and a minority (12.1%) experiencing headaches lived alone.

Table 116 Categorical Variable Results for Experiencing Headaches with Age as Continuous Predictor

Categorical results- Do you experience headaches that require analgesia?			
Predictor- age			
Fulltime	Yes	Number = 211	41.9%
N = 503	No	Number = 292	58.1%
Possesses a degree	Yes	Number = 238	47.3%
N = 503	No	Number = 265	52.7%
Live alone	Yes	Number = 61	12.1%
N = 503	No	Number = 442	87.9%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Do you experience headaches that require analgesia?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives experienced headaches, this would be correct 189 times out of 503, that is, 62.4 per cent. If the prediction was that all nurses and midwives did not experience headaches, this prediction would be correct 314 times out of 503, that is, 37.6 per cent (Table 117).

Table 117

Predictions for Experiencing Headaches with Only Constant in the Model

Question: Do you experience headaches that require analgesia?			
Prediction correct for experiencing sleeplessness	189 / 503	N = 503	37.6%
Prediction correct for not experiencing sleeplessness	314 / 503	N = 503	62.4%

The next calculation included the categorical predictor variables and the continuous predictor age for the question, “Do you experience headaches that require analgesia?” which did not have any significant effect.

2.1.7. Experiencing headaches (hours worked)

The question, “Do you experience headaches that require analgesia?” was calculated with the continuous predictor hours worked being used for the analysis and the categorical variable results are displayed in the following table (Table 118). Table 118 shows that when experiencing headaches with hours worked as the predictor, 41.8 per cent were fulltimers, 46.9 per cent of nurses and midwives possessed a degree and 11.8 per cent lived alone. This means that when using hours worked as the predictor in the equation for logistic regression, over two-fifths (41.8%) experiencing headaches worked fulltime, almost half (46.9%) experiencing headaches possessed a degree and a minority (11.8%) experiencing headaches lived alone.

Table 118 Categorical Variable Results for Experiencing Headaches with Hours Worked as Continuous Predictor

Categorical results- Do you experience headaches that require analgesia?			
Predictor- hours worked			
Fulltime	Yes	Number = 212	41.8%
N = 507	No	Number = 295	58.2%
Possesses a degree	Yes	Number = 238	46.9%
N = 507	No	Number = 269	53.1%
Live alone	Yes	Number = 60	11.8%
N = 507	No	Number = 447	88.2%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Do you experience headaches that require analgesia?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives experienced headaches, this would be correct 190 times out of 507, that is, 62.4 per cent. If the prediction was that all nurses and midwives did not experience headaches, this prediction would be correct 314 times out of 503, that is, 37.6 per cent (Table 119).

Table 119

Predictions for Experiencing Headaches with Only Constant in the Model

Question: Do you experience headaches that require analgesia?			
Prediction correct for experiencing sleeplessness	190 / 507	N = 507	37.5%
Prediction correct for not experiencing sleeplessness	317 / 507	N = 507	62.5%

The next calculation included the categorical predictor variables and the continuous predictor hours worked for the question, “Do you experience headaches that require analgesia?” which did not have any significant effect.

2.1.8. Experiencing headaches (years in profession)

The question, “Do you experience headaches that require analgesia?” was calculated with the continuous predictor years in profession being used for the analysis and the categorical variable results are displayed in the following table (Table 120). Table 120 shows that when experiencing headaches with years in the profession as the predictor, 42.1 per cent were fulltimers, 47.4 per cent of nurses and midwives possessed a degree and 11.9 per cent lived alone. This means that when using years in profession as the predictor in the equation for logistic regression, over two-fifths (42.1%) experiencing headaches worked fulltime, almost half (47.4%) experiencing headaches possessed a degree and a minority (11.9%) experiencing headaches lived alone.

Table 120 Categorical Variable Results for Experiencing Headaches with Years in Profession as Continuous Predictor

Categorical results- Do you experience headaches that require analgesia?			
Predictor- years in profession			
Fulltime	Yes	Number = 213	42.1%
N = 506	No	Number = 293	57.9%
Possesses a degree	Yes	Number = 240	47.4%
N = 506	No	Number = 266	52.6%
Live alone	Yes	Number = 60	11.9%
N = 506	No	Number = 446	88.1%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Do you experience headaches that require analgesia?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives experienced headaches, this would be correct 190 times out of 506, that is, 62.5 per cent. If the prediction was that all nurses and midwives did not experience headaches, this prediction would be correct 316 times out of 506, that is, 37.5 per cent (Table 121).

Table 121

Predictions for Experiencing Headaches with Only Constant in the Model

Question: Do you experience headaches that require analgesia?			
Prediction correct for experiencing sleeplessness	190 / 506	N = 506	37.5%
Prediction correct for not experiencing sleeplessness	316 / 506	N = 506	62.5%

The next calculation included the categorical predictor variables and the continuous predictor years in the profession for the question, “Do you experience headaches that require analgesia?” which did not have any significant effect.

2.1.9. Stress requiring treatment (age)

The question, “Do you experience “stress” that requires treatment? For example, panadol, massages” was calculated with the continuous predictor age being used for the analysis and the categorical variable results are displayed in the following table (Table 122). Table 122 shows that when treatment for stress was required with age as the predictor, 42.3 per cent were fulltimers, 47.1 per cent of nurses and midwives possessed a degree and 12.1 per cent lived alone. This means that when using age as the predictor in the equation for logistic regression, over two-fifths (42.3%) who required treatment for stress worked fulltime, almost half (47.1%) who required treatment for stress possessed a degree and a minority (12.1%) who required treatment for stress lived alone.

Table 122 Categorical Variable Results for Stress Requiring Treatment with Age as Continuous Predictor

Categorical results- Do you experience “stress” that requires treatment?			
Predictor- age			
Fulltime	Yes	Number = 213	42.3%
N = 503	No	Number = 290	57.7%
Possesses a degree	Yes	Number = 237	47.1%
N = 503	No	Number = 266	52.9%
Live alone	Yes	Number = 61	12.1%
N = 503	No	Number = 442	87.9%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Do you experience “stress” that requires treatment?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives required treatment for stress, this would be correct 385 times out of 503, that is, 76.5 per cent. If the prediction was that all nurses and midwives did not require treatment for stress, this prediction would be correct 118 times out of 503, that is, 23.5 per cent (Table 123).

Table 123

Predictions for Stress Requiring Treatment with Only Constant in the Model

Question: Do you experience “stress” that requires treatment?			
Prediction correct for stress requiring treatment	385 / 503	N = 503	76.5%
Prediction correct for not requiring treatment for stress	118 / 503	N = 503	23.5%

The next calculation included the categorical predictor variables and the continuous predictor age for the question, “Do you experience “stress” that requires treatment?” which did not have any significant effect.

2.1.10. Stress requiring treatment (hours worked)

The question, “Do you experience “stress” that requires treatment?” was used with the continuous predictor hours worked for this analysis. Table 124 shows that when treatment for stress was required with hours worked as the predictor, 42.1 per cent were fulltimers, 46.8 per cent of nurses and midwives possessed a degree and 11.9 per cent lived alone. This means that when using hours worked as the predictor in the equation for logistic regression, over two-fifths (42.1%) who required treatment for stress worked fulltime, almost half (46.8%) who required treatment for stress possessed a degree and a minority (11.9%) who required treatment for stress lived alone.

Table 124 Categorical Variable Results for Stress Requiring Treatment with Hours Worked as Continuous Predictor

Categorical results- Do you experience “stress” that requires treatment?			
Predictor- hours worked			
Fulltime	Yes	Number = 213	42.1%
N = 506	No	Number = 293	57.9%
Possesses a degree	Yes	Number = 237	46.8%
N = 506	No	Number = 269	53.2%
Live alone	Yes	Number = 60	11.9%
N = 506	No	Number = 446	88.1%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Do you experience “stress” that requires treatment?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives required treatment for stress, this would be correct 388 times out of 506, that is, 76.7 per cent. If the prediction was that all nurses and midwives did not require treatment for stress, this prediction would be correct 118 times out of 506, that is, 23.3 per cent (Table 125).

Table 125

Predictions for Stress Requiring Treatment with Only Constant in the Model

Question: Do you experience “stress” that requires treatment?			
Prediction correct for stress requiring treatment	388 / 506	N = 506	76.7%
Prediction correct for not requiring treatment for stress	118 / 506	N = 506	23.3%

The next calculation included the categorical predictor variables and the continuous predictor hours worked for the question, “Do you experience “stress” that requires treatment?” which did not have any significant effect.

2.1.11. Stress requiring treatment (years in profession)

The same question, “Do you experience “stress” that requires treatment?” was calculated with the continuous predictor years in profession being used for the analysis and the categorical variable results are displayed in the following table (Table 126). Table 126 shows that when requiring treatment for stress with years in profession as the predictor, 42.4 per cent were fulltimers, 47.3 per cent of nurses and midwives possessed a degree and 11.9 per cent lived alone. This means that when using years in profession as the predictor in the equation for logistic regression, over two-fifths (42.2%) who required treatment for stress worked fulltime, almost half (47.3%) who required treatment for stress possessed a degree and a minority (11.9%) who required treatment for stress lived alone.

Table 126 Categorical Variable Results for Stress Requiring Treatment with Years in Profession as Continuous Predictor

Categorical results- Do you experience “stress” that requires treatment?			
Predictor- years in profession			
Fulltime	Yes	Number = 214	42.4%
N = 505	No	Number = 291	57.6 %
Possesses a degree	Yes	Number = 239	47.3%
N = 505	No	Number = 266	52.7%
Live alone	Yes	Number = 60	11.9%
N = 505	No	Number = 445	88.1%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Do you experience “stress” that requires treatment?” in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives required treatment for stress, this would be correct 386 times out of 505, that is, 76.4 per cent. If the prediction was that all nurses and midwives did not require treatment for stress, this prediction would be correct 119 times out of 505, that is, 23.6 per cent (Table 127).

Table 127

Predictions for Stress Requiring Treatment with Only Constant in the Model

Question: Do you experience “stress” that requires treatment?			
Prediction correct for stress requiring treatment	386 / 505	N = 505	76.4%
Prediction correct for not requiring treatment for stress	119 / 505	N = 505	23.6%

The next calculation included the categorical predictor variables and the continuous predictor years in profession for the question, “Do you experience “stress” that requires treatment?” which did not have any significant effect.

2.1.12. Mental health leave (hours worked)

The question, “Over the last year, have you taken leave as “mental health days”?” was used with the continuous predictor hours worked for this analysis. Table 128 shows that “mental health” leave with hours worked as the predictor, 41.8 per cent were fulltimers, 46.7 per cent of nurses and midwives possessed a degree and 11.9 per cent lived alone. This means that when using hours worked as the predictor in the equation for logistic regression, over two-fifths (41.8%) who took “mental health” leave worked fulltime, almost half (46.7%) who took “mental health” leave possessed a degree and a minority (11.9%) who took “mental health” leave lived alone.

Table 128 Categorical Variable Results for Mental Health Leave with Hours Worked as Continuous Predictor

Categorical results- Over the last year, have you taken leave as “mental health” days?			
Predictor- hours worked			
Fulltime	Yes	Number = 211	41.8%
N = 505	No	Number = 294	58.2%
Possesses a degree	Yes	Number = 236	46.7%
N = 505	No	Number = 269	53.3%
Live alone	Yes	Number = 60	11.9%
N = 505	No	Number = 445	88.1%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Over the last year, have you taken leave as “mental health days”?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives took “mental health” leave, this would be correct 230 times out of 505, that is, 54.5 per cent. If the prediction was that all nurses and midwives did not take “mental health” leave, this prediction would be correct 275 times out of 505, that is, 45.5 per cent (Table 129).

Table 129 Predictions for Mental Health Leave with Only Constant in the Model

Question: Over the last year, have you taken leave as “mental health” days?			
Prediction correct for taking mental health leave	230 / 505	N = 506	54.5%
Prediction correct for not taking mental health leave	275 / 505	N = 505	45.5%

The next calculation included the categorical predictor variables and the continuous predictor hours worked for the question, “Over the last year, have you taken leave as “mental health days”? which did not have any significant effect.

2.1.13. Length of depression (age)

The question, “For how long at one time do you experience depression in relation to work?” was calculated with the continuous predictor age being used for the analysis and the categorical variable results are displayed in the following table (Table 130). Table 130 shows that for length of depression with age as the predictor, 42 per cent were fulltimers, 46.8 per cent of nurses and midwives possessed a degree and 12 per cent lived alone. This means that when using age as the predictor in the equation for logistic regression, over two-fifths (42%) experiencing depression worked fulltime, almost half (46.8%) experiencing depression possessed a degree and a minority (12%) experiencing depression lived alone.

Table 130 Categorical Variable Results for Length of Depression with Age as Continuous Predictor

Categorical results- For how long at one time do you experience depression in relation to work?			
Predictor- age			
Fulltime	Yes	Number = 210	42.0%
N = 500	No	Number = 290	58.0%
Possesses a degree	Yes	Number = 234	46.8%
N = 500	No	Number = 266	53.2%
Live alone	Yes	Number = 60	12.0%
N = 500	No	Number = 440	88.0%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “For how long at one time do you experience depression in relation to work?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives experience depression, this would be correct 311 times out of 500, that is, 62.2 per cent. If the prediction was that all nurses and midwives did not experience depression, this prediction would be correct 189 times out of 500, that is, 37.8 per cent (Table 131).

Table 131 Predictions for Length of Depression with Only Constant in the Model

Question: For how long at one time do you experience depression in relation to work?			
Prediction correct for experiencing depression	311 / 500	N = 500	62.2%
Prediction correct for not experiencing depression	189 / 500	N = 500	37.8%

The next calculation included the categorical predictor variables and the continuous predictor age for the question, “For how long at one time do you experience depression in relation to work?” which did not have any significant effect.

2.1.14. Length of depression (hours worked)

The question, “For how long at one time do you experience depression in relation to work?” was calculated with the continuous predictor hours worked being used for the analysis and the categorical variable results are displayed in the following table (Table 132). Table 132 shows that for length of depression with hours worked as the predictor, 41.9 per cent were fulltimers, 46.4 per cent of nurses and midwives possessed a degree and 11.7 per cent lived alone. This means that when using hours worked as the predictor in the equation for logistic regression, over two-fifths (41.9%) experiencing depression worked fulltime, almost half (46.4%) experiencing depression possessed a degree and a minority (11.7%) experiencing depression lived alone.

Table 132 Categorical Variable Results for Length of Depression with Hours Worked as Continuous Predictor

Categorical results- For how long at one time do you experience depression in relation to work?			
Predictor- hours worked			
Fulltime	Yes	Number = 211	41.9%
N = 504	No	Number = 293	58.1%
Possesses a degree	Yes	Number = 234	46.4%
N = 504	No	Number = 270	53.6%
Live alone	Yes	Number = 59	11.7%
N = 504	No	Number = 445	88.3%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “For how long at one time do you experience depression in relation to work?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives experience depression, this would be correct 315 times out of 504, that is, 62.5 per cent. If the prediction was that all nurses and midwives did not experience depression, this prediction would be correct 189 times out of 504, that is, 37.5 per cent (Table 133).

Table 133 Predictions for Length of Depression with Only Constant in the Model

Question: For how long at one time do you experience depression in relation to work?			
Prediction correct for experiencing depression	315 / 504	N = 504	62.5%
Prediction correct for not experiencing depression	189 / 504	N = 504	37.5%

The next calculation included the categorical predictor variables and the continuous predictor hours worked for the question, “For how long at one time do you experience depression in relation to work?” which did not have any significant effect.

2.1.15. Length of depression (years in profession)

The question, “For how long at one time do you experience depression in relation to work?” was calculated with the continuous predictor years in profession being used for the analysis and the categorical variable results are displayed in the following table (Table 134). Table 134 shows that for length of depression with years in profession as the predictor, 42 per cent were fulltimers, 47 per cent of nurses and midwives possessed a degree and 11.8 per cent lived alone. This means that when using years in profession as the predictor in the equation for logistic regression, over two-fifths (42%) experiencing depression worked fulltime, almost half (47%) experiencing depression possessed a degree and a minority (11.8%) experiencing depression lived alone.

Table 134 Categorical Variable Results for Length of Depression with Years in Profession as Continuous Predictor

Categorical results- For how long at one time do you experience depression in relation to work?			
Predictor- years in profession			
Fulltime	Yes	Number = 211	42.0%
N = 502	No	Number = 291	58.0%
Possesses a degree	Yes	Number = 236	47.0%
N = 502	No	Number = 266	53.0%
Live alone	Yes	Number = 59	11.8%
N = 502	No	Number = 443	88.2%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “For how long at one time do you experience depression in relation to work?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives experience depression, this would be correct 314 times out of 502, that is, 62.5 per cent. If the prediction was that all nurses and midwives did not experience depression, this prediction would be correct 188 times out of 502, that is, 37.5 per cent (Table 135).

Table 135 Predictions for Length of Depression with Only Constant in the Model

Question: For how long at one time do you experience depression in relation to work?			
Prediction correct for experiencing depression	314 / 502	N = 502	62.5%
Prediction correct for not experiencing depression	188 / 502	N = 502	37.5%

The next calculation included the categorical predictor variables and the continuous predictor years in profession for the question, “For how long at one time do you experience depression in relation to work?” which did not have any significant effect.

2.1.16. Wanting to change area of practice (age)

The question, “Would you like to change your area of practice?” was calculated with the continuous predictor age being used for the analysis and the categorical variable results are displayed in the following table (Table 136). Table 136 shows that when considering wanting to change area of practice with age as the predictor, 44.4 per cent were fulltimers, 45.8 per cent of nurses and midwives possessed a degree and 13.1 per cent lived alone. This means that when using age as the predictor in the equation for logistic regression, over two-fifths (44.6%) wanting to change area of practice worked fulltime, over two-fifths (45.3%) wanting to change area of practice possessed a degree and a minority (12.1%) wanting to change area of practice lived alone.

Table 136 Categorical Variable Results for Wanting to Change Area of Practice with Age as Continuous Predictor

Categorical results- Would you like to change your area of practice?			
Predictor- age			
Fulltime	Yes	Number = 133	44.6%
N = 298	No	Number = 165	55.3%
Possesses a degree	Yes	Number = 135	45.3%
N = 298	No	Number = 163	54.7%
Live alone	Yes	Number = 36	12.1%
N = 298	No	Number = 262	87.9%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Would you like to change your area of practice?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives wanted to change their area of practice, this would be correct 52 times out of 298, that is, 17.4 per cent. If the prediction was that all nurses and midwives did not want to change their area of practice, this prediction would be correct 246 times out of 298, that is, 82.6 per cent (Table 137).

Table 137 Predictions for Wanting to Change Area of Practice with Only Constant in the Model

Question: Would you like to change your area of practice?			
Prediction correct for wanting to change area	52 / 298	N = 298	17.4%
Prediction correct for not wanting to change area	246 / 298	N = 298	82.6%

The next calculation included the categorical predictor variables and the continuous predictor age for the question, “Would you like to change your area of practice?” which did not have any significant effect.

2.1.17. Wanting to change area of practice (hours worked)

The question, “Would you like to change your area of practice?” and the categorical variable results are displayed in the following table (Table 138). The continuous predictor hours worked was used for this analysis. Table 138 shows that when considering wanting to change area of practice with hours worked as the predictor, 44.3 per cent were fulltimers, 45 per cent of nurses and midwives possessed a degree and 12 per cent lived alone. This means that when using hours worked as the predictor in the equation for logistic regression, over two-fifths (44.6%) wanting to change area of practice worked fulltime, over two-fifths (45.3%) wanting to change area of practice possessed a degree and a minority (12.1%) wanting to change area of practice lived alone.

Table 138 Categorical Variable Results for Wanting to Change Area of Practice with Hours Worked as Continuous Predictor

Categorical results- Would you like to change your area of practice?			
Predictor- hours worked			
Fulltime	Yes	Number = 133	44.3%
N = 300	No	Number = 167	55.7%
Possesses a degree	Yes	Number = 135	45.0%
N = 300	No	Number = 165	55.0%
Live alone	Yes	Number = 36	12.0%
N = 300	No	Number = 264	88.0%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Would you like to change your area of practice?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives wanted to change their area of practice, this would be correct 52 times out of 300, that is, 17.3 per cent. If the prediction was that all nurses and midwives did not want to change their area of practice, this prediction would be correct 248 times out of 300, that is, 82.7 per cent (Table 139).

Table 139 Predictions for Wanting to Change Area of Practice with Only Constant in the Model

Question: Would you like to change your area of practice?			
Prediction correct for wanting to change area	52 / 300	N = 300	17.3%
Prediction correct for not wanting to change area	248 / 300	N = 300	82.7%

The next calculation included the categorical predictor variables and the continuous predictor hours worked for the question, “Would you like to change your area of practice?” which did not have any significant effect.

2.1.18. Wanting to change area of practice (years in profession)

The question, “Would you like to change your area of practice?” was calculated with the continuous predictor years in profession being used for the analysis and the categorical variable results are displayed in the following table (Table 140). Table 140 shows that when considering wanting to change area of practice with years in profession as the predictor, 44.1 per cent were fulltimers, 45.5 per cent of nurses and midwives possessed a degree and 11.7 per cent lived alone. This means that when using years in profession as the predictor in the equation for logistic regression, over two-fifths (44.1%) wanting to change area of practice worked fulltime, over two-fifths (45.5%) wanting to change area of practice possessed a degree and a minority (12.1%) wanting to change area of practice lived alone.

Table 140 Categorical Variable Results for Wanting to Change Area of Practice with Years in Profession as Continuous Predictor

Categorical results- Would you like to change your area of practice?			
Predictor- years in profession			
Fulltime	Yes	Number = 132	44.1%
N = 299	No	Number = 167	55.9%
Possesses a degree	Yes	Number = 136	45.5%
N = 299	No	Number = 163	54.5%
Live alone	Yes	Number = 35	11.7%
N = 299	No	Number = 264	88.3%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Would you like to change your area of practice?” in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives wanted to change their area of practice, this would be correct 51 times out of 299, that is, 17.1 per cent. If the prediction was that all nurses and midwives did not want to change their area of practice, this prediction would be correct 248 times out of 299, that is, 82.9 per cent (Table 141).

Table 141 Predictions for Wanting to Change Area of Practice with Only Constant in the Model

Question: Would you like to change your area of practice?			
Prediction correct for wanting to change area	51 / 299	N = 299	17.1%
Prediction correct for not wanting to change area	248 / 299	N = 299	82.9%

The next calculation included the categorical predictor variables and the continuous predictor years in profession for the question, “Would you like to change your area of practice?” which did not have any significant effect.

2.2. Burnout

Different variables did not predict whether respondents were more likely to experience burnout overall. In particular,

- if the person was older, worked more years in the profession, worked fulltime as opposed to part time, was more educated and whether they lived alone ($p>0.05$).

The following section presents more detailed information relating to overall burnout levels.

2.2.1. Burnout levels (age)

Burnout levels were calculated with the continuous predictor age being used for the analysis and the categorical variable results are displayed in the following table (Table 142). Table 142 shows that for burnout levels with age as the predictor, 42.8 per cent were fulltimers, 46.5 per cent of nurses and midwives possessed a degree and 11.9 per cent lived alone. This means that when using age as the predictor in the equation for logistic regression, over two-fifths (42.8%) experiencing moderate to high levels of burnout worked fulltime, almost half (46.5%) experiencing moderate to high levels of burnout possessed a degree and a minority (11.9%) experiencing moderate to high levels of burnout lived alone.

Table 142 Categorical Variable Results for Burnout Levels with Age as Continuous Predictor

Categorical results for burnout levels			
Predictor- age			
Fulltime	Yes	Number = 208	42.8%
N = 486	No	Number = 278	57.2%
Possesses a degree	Yes	Number = 226	46.5%
N = 486	No	Number = 260	53.5%
Live alone	Yes	Number = 58	11.9%
N = 486	No	Number = 428	88.1%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using stress as the constant in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives experienced high burnout levels in relation to work, this would be correct 270 times out of 486, that is, 55.6 per cent. If the prediction was that all nurses and midwives experienced low burnout levels in relation to work, this prediction would be correct 216 times out of 486, that is, 44.4 per cent (Table 143).

Table 143 Predictions for Burnout Levels with Only Constant in the Model

Burnout levels in relation to work			
Prediction correct for high burnout levels	270 / 486	N = 486	55.6%
Prediction correct for low burnout levels	216 / 486	N = 486	44.4%

The next calculation included the categorical predictor variables and the continuous predictor age for experiencing burnout which did not have any significant effect.

2.2.2. Burnout levels (years in profession)

Burnout levels were calculated with the continuous predictor years in profession being used for the analysis and the categorical variable results are displayed in the following table (Table 144). Table 144 shows that for burnout with years in profession as the predictor, 42.8 per cent were fulltimers, 46.7 per cent of nurses and midwives possessed a degree and 11.7 per cent lived alone. This means that when using years in profession as the predictor in the equation for logistic regression, over two-fifths (42.8%) experiencing moderate to high levels of burnout worked fulltime, almost half (46.7%) experiencing moderate to high levels of burnout possessed a degree and a minority (11.7 %) experiencing moderate to high levels of burnout lived alone.

Table 144 Categorical Variable Results for Burnout Levels with Years in Profession as Continuous Predictor

Categorical results for burnout levels			
Predictor- years in profession			
Fulltime	Yes	Number = 209	42.8%
N = 488	No	Number = 279	57.2%
Possesses a degree	Yes	Number = 228	46.7%
N = 488	No	Number = 260	53.3%
Live alone	Yes	Number = 57	11.7%
N = 488	No	Number = 431	88.3%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using burnout as the constant in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives experienced high burnout levels in relation to work, this would be correct 272 times out of 488, that is, 55.7 per cent. If the prediction was that all nurses and midwives experienced low burnout levels in relation to work, this prediction would be correct 216 times out of 488, that is, 44.3 per cent (Table 145).

Table 145 Predictions for Burnout Levels with Only Constant in the Model

Burnout levels in relation to work			
Prediction correct for high burnout levels	272 / 488	N = 488	55.7%
Prediction correct for low burnout levels	216 / 488	N = 488	44.3%

The next calculation included the categorical predictor variables and the continuous predictor years in profession for experiencing burnout which did not have any significant effect.

Different variables did not predict whether respondents were more likely to experience apathy, feel emotionally drained and lose empathy for clients. In particular:

- if the person worked fulltime as opposed to part time, this did not predict any significant findings for any of the above variables ($p>0.05$);
- if the person was better educated, this did not predict any significant findings for any of the above variables ($p>0.05$);
- if the person lived alone, this did not predict any significant findings for any of the above variables ($p>0.05$);
- if the person was older, this did not predict any significant findings for the above variables ($p>0.05$) except for feeling emotionally drained ($p<0.05$) and losing empathy for clients ($p<0.01$);
- if the person worked more hours, this did not predict any significant findings for losing empathy for clients ($p>0.05$) and

- the longer the person worked in the profession, this did not predict any significant findings for the above variables ($p>0.05$) except for losing empathy for clients ($p<0.01$).

The following section presents more detailed information relating to burnout concerning experiencing apathy, feeling emotionally drained and losing empathy for clients.

2.2.3. Experiencing apathy (age)

The question, “Do you become apathetic when “stressed”?” and the categorical variable results are displayed in the following table (Table 146). The continuous predictor age was used for this analysis. Table 146 shows that when experiencing apathy with age as the predictor, 42.3 per cent were fulltimers, 46.7 per cent of nurses and midwives possessed a degree and 12 per cent lived alone. This means that when using age as the predictor in the equation for logistic regression, over two-fifths (42.3%) experiencing apathy worked fulltime, almost half (46.7%) experiencing apathy possessed a degree and a minority (12%) experiencing apathy lived alone.

Table 146

Categorical Variable Results for Apathy with Age as Continuous Predictor

Categorical results- Do you become apathetic when “stressed”?			
Predictor- age			
Fulltime	Yes	Number = 211	42.3%
N = 499	No	Number = 288	57.7%
Possesses a degree	Yes	Number = 233	46.7%
N = 499	No	Number = 266	53.3%
Live alone	Yes	Number = 60	12.0%
N = 499	No	Number = 439	88.0%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Do you become apathetic when “stressed”?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives did experience apathy, this would be correct 396 times out of 499, that is, 79.4 per cent. If the prediction was that all nurses and midwives did not experience apathy, this prediction would be correct 103 times out of 499, that is, 20.6 per cent (Table 147).

Table 147 Predictions for Apathy with Only Constant in the Model

Question: Do you become apathetic when “stressed”?			
Prediction correct for experiencing apathy	396 / 499	N = 499	79.4%
Prediction correct for not experiencing apathy	103 / 499	N = 499	20.6%

The next calculation included the categorical predictor variables and the continuous predictor age for the question, “Do you become apathetic when “stressed”? which did not have any significant effect.

2.2.4. Experiencing apathy (years in profession)

The question, “Do you become apathetic when “stressed”?” and the categorical variable results are displayed in the following table (Table 148). The continuous predictor years in profession was used for this analysis. Table 148 shows that when experiencing apathy with years in profession as the predictor, 42.3 per cent were fulltimers, 46.9 per cent of nurses and midwives possessed a degree and 11.8 per cent lived alone. This means that when using years in profession as the predictor in the equation for logistic regression, over two fifths (42.3%) experiencing apathy worked fulltime, almost half (46.9%) experiencing apathy possessed a degree and a minority (11.8%) experiencing apathy lived alone.

Table 148 Categorical Variable Results for Apathy with Years in Profession as Continuous Predictor

Categorical results- Do you become apathetic when “stressed”?			
Predictor- years in profession			
Fulltime	Yes	Number = 212	42.3%
N = 501	No	Number = 289	57.7%
Possesses a degree	Yes	Number = 235	46.9%
N = 501	No	Number = 266	53.1%
Live alone	Yes	Number = 59	11.8%
N = 501	No	Number = 442	88.2%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Do you become apathetic when “stressed”?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives did experience apathy, this would be correct 398 times out of 501, that is, 79.4 per cent. If the prediction was that all nurses and midwives did not experience apathy, this prediction would be correct 103 times out of 501, that is, 20.6 per cent (Table 149).

Table 149 Predictions for Apathy with Only Constant in the Model

Question: Do you become apathetic when “stressed”?			
Prediction correct for experiencing apathy	398 / 501	N = 501	79.4%
Prediction correct for not experiencing apathy	103 / 501	N = 501	20.6%

The next calculation included the categorical predictor variables and the continuous predictor years in profession for the question, “Do you become apathetic when “stressed”? which did not have any significant effect.

2.2.5. Feeling emotionally drained (years in profession)

The question, “How often do you feel emotionally drained at work?” and the categorical variable results are displayed in the following table (Table 150). The continuous predictor years in profession was used for this analysis. Table 150 shows that when feeling emotionally drained with years in profession as the predictor, 42 per cent were fulltimers, 47.3 per cent of nurses and midwives possessed a degree and 11.9 per cent lived alone. This means that when using years in profession as the predictor in the equation for logistic regression, over two-fifths (42%) feeling emotionally drained worked fulltime, almost half (47.3%) feeling emotionally drained possessed a degree and a minority (11.9%) feeling emotionally drained lived alone.

Table 150 Categorical Variable Results for Feeling Emotionally Drained with Years in Profession as Continuous Predictor

Categorical results- How often do you feel emotionally drained at work?			
Predictor- years in profession			
Fulltime	Yes	Number = 212	42.0%
N = 505	No	Number = 293	58.0%
Possesses a degree	Yes	Number = 239	47.3%
N = 505	No	Number = 266	52.7%
Live alone	Yes	Number = 60	11.9%
N = 505	No	Number = 445	88.1%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “How often do you feel emotionally drained at work?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives did feel emotionally drained, this would be correct 300 times out of 505, that is, 59.4 per cent. If the prediction was that all nurses and midwives did not feel emotionally drained, this prediction would be correct 205 times out of 505, that is, 40.6 per cent (Table 151).

Table 151

Predictions for Feeling Emotionally Drained with Only Constant in the Model

Question: How often do you feel emotionally drained at work?			
Prediction correct for feeling emotionally drained	300 / 505	N = 505	59.4%
Prediction correct for not feeling emotionally drained	205 / 505	N = 505	40.6%

The next calculation included the categorical predictor variables and the continuous predictor years in profession for the question, “How often do you feel emotionally drained at work?” which did not have any significant effect.

2.2.6. Losing empathy for clients (hours worked)

The question, “Have you ever felt loss of empathy for clients while at work?” and the categorical variable results are displayed in the following table (Table 152). The continuous predictor hours worked was used for this analysis. Table 152 shows that losing empathy for clients with hours worked as the predictor, 40.1 per cent were fulltimers, 46.5 per cent of nurses and midwives possessed a degree and 11.6 per cent lived alone. This means that when using hours worked as the predictor in the equation for logistic regression, over two-fifths (40.1%) losing empathy for clients worked fulltime, almost half (46.5%) losing empathy for clients possessed a degree and a minority (11.6%) losing empathy for clients lived alone.

Table 152 Categorical Variable Results for Loss of Empathy for Clients with Hours Worked as Continuous Predictor

Question: Have you ever felt loss of empathy for clients while at work?			
Predictor- hours worked			
Fulltime	Yes	Number = 189	40.1%
N = 467	No	Number = 278	59.9%
Possesses a degree	Yes	Number = 217	46.5%
N = 467	No	Number = 250	53.5%
Live alone	Yes	Number = 54	11.6%
N = 467	No	Number = 413	88.4%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Have you ever felt loss of empathy for clients while at work?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives did lose empathy for clients while at work, this would be correct 235 times out of 467, that is, 50.3 per cent. If the prediction was that all nurses and midwives did not lose empathy for clients, this prediction would be correct 232 times out of 467, that is, 49.7 per cent (Table 153).

Table 153 Predictions for Losing Empathy for Clients While at Work with Only Constant in the Model

Question: Have you ever felt loss of empathy for clients while at work?			
Prediction correct for losing empathy for clients	235 / 467	N = 467	50.3%
Prediction correct for not losing empathy	232 / 467	N = 467	49.7%

The next calculation included the categorical predictor variables and the continuous predictor hours worked for the question, “Have you ever felt loss of empathy for clients while at work?” which did not have any significant effect.

2.3. Individual responses

Different variables did not predict whether respondents were more likely to experience high levels of self-imposed work pressure and motivation overall. In particular,

- if the person was older, worked more hours per week, worked more years in the profession, worked fulltime as opposed to part time and whether they lived alone ($p>0.05$) (see section 1.3 of this Appendix for more detailed information relating to overall individual responses).

Different variables did not predict whether respondents were more likely to have difficulty slowing down. In particular:

- if the person worked fulltime as opposed to part time, this did not predict any significant findings for difficulty slowing down ($p>0.05$);
- if the person lived alone, this did not predict any significant findings for difficulty slowing down ($p>0.05$);
- if the person was older, this did not predict any significant findings for difficulty slowing down ($p>0.05$);
- if the person worked more hours, this did not predict any significant findings for difficulty slowing down ($p>0.05$) and
- the longer the person worked in the profession, this did not predict any significant findings for difficulty slowing down ($p>0.05$).

The following section presents more detailed information relating to individual responses concerning difficulty slowing down.

2.3.1. Difficulty slowing down (age)

The question, “Do you have difficulty slowing down to attend to procedures, which require meticulous and methodical attentiveness, for example, calculating drug dosages, removing sutures, collecting blood or suturing?” and the categorical variable results are displayed in the following table (Table 154). The continuous predictor age was used for this analysis. Table 154 shows that when having difficulty slowing down with age as the predictor, 41.9 per cent were fulltimers, 46.9 per cent of nurses and midwives possessed a degree and 11.9 per cent lived alone. This means that when using age as the predictor in the equation for logistic regression, over two-fifths (41.9%) having difficulty slowing down worked fulltime, almost half (46.9%) having difficulty slowing down possessed a degree and a minority (11.9%) having difficulty slowing down lived alone.

Table 154 Categorical Variable Results for Difficulty Slowing Down with Age as Continuous Predictor

Categorical results- Do you have difficulty slowing down to attend to procedures, which require meticulous and methodical attentiveness?			
Predictor- age			
Fulltime	Yes	Number = 211	41.9%
N = 503	No	Number = 292	58.1%
Possesses a degree	Yes	Number = 236	46.9 %
N = 503	No	Number = 267	53.1%
Live alone	Yes	Number = 60	11.9%
N = 503	No	Number = 443	88.1%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Do you have difficulty slowing down to attend to procedures, which require meticulous and methodical attentiveness, for example, calculating drug dosages, removing sutures, collecting blood or suturing?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives did have difficulty slowing down, this would be correct 292 times out of 503, that is, 58.1 per cent. If the prediction was that all nurses and midwives did not have difficulty slowing down, this prediction would be correct 211 times out of 503, that is, 41.9 per cent (Table 155).

Table 155

Predictions for Difficulty Slowing Down with Only Constant in the Model

Question: Do you have difficulty slowing down to attend to procedures, which require meticulous and methodical attentiveness?			
Prediction correct for difficulty slowing down	292 / 503	N = 503	58.1%
Prediction correct for not having difficulty slowing down	211 / 503	N = 503	41.9%

The next calculation included the categorical predictor variables and the continuous predictor age for the question, “Do you have difficulty slowing down to attend to procedures, which require meticulous and methodical attentiveness, for example, calculating drug dosages, removing sutures, collecting blood or suturing?” which did not have any significant effect.

2.3.2. Difficulty slowing down (hours worked)

The question, “Do you have difficulty slowing down to attend to procedures, which require meticulous and methodical attentiveness, for example, calculating drug dosages, removing sutures, collecting blood or suturing?” and the categorical variable results are displayed in the following table (Table 156). The continuous predictor hours worked was used for this analysis. Table 156 shows that having difficulty slowing down with hours worked as the predictor, 40.7 per cent were fulltimers, 46.6 per cent of nurses and midwives possessed a degree and 11.7 per cent lived alone. This means that when using hours worked as the predictor in the equation for logistic regression, over two-fifths (40.7%) having difficulty slowing down worked fulltime, almost half (46.6%) having difficulty slowing down possessed a degree and a minority (11.7%) having difficulty slowing down lived alone.

Table 156 Categorical Variable Results for Difficulty Slowing Down with Hours Worked as Continuous Predictor

Question: Do you have difficulty slowing down to attend to procedures, which require meticulous and methodical attentiveness?			
Predictor- hours worked			
Fulltime	Yes	Number = 211	41.7%
N = 506	No	Number = 295	58.3%
Possesses a degree	Yes	Number = 236	46.6%
N = 506	No	Number = 270	53.4%
Live alone	Yes	Number = 59	11.7%
N = 506	No	Number = 447	88.3%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Do you have difficulty slowing down to attend to procedures, which require meticulous and methodical attentiveness, for example, calculating drug dosages, removing sutures, collecting blood or suturing?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives did have difficulty slowing down, this would be correct 296 times out of 506, that is, 58.5 per cent. If the prediction was that all nurses and midwives did not have difficulty slowing down, this prediction would be correct 210 times out of 506, that is, 41.5 per cent (Table 157).

Table 157

Predictions for Difficulty Slowing Down with Only Constant in the Model

Question: Do you have difficulty slowing down to attend to procedures, which require meticulous and methodical attentiveness?			
Prediction correct for difficulty slowing down	296 / 506	N = 506	58.5%
Prediction correct for not having difficulty slowing down	210 / 506	N = 506	41.5%

The next calculation included the categorical predictor variables and the continuous predictor hours worked for the question, “Do you have difficulty slowing down to attend to procedures, which require meticulous and methodical attentiveness, for example, calculating drug dosages, removing sutures, collecting blood or suturing?” which did not have any significant effect.

2.3.3. Difficulty slowing down (years in profession)

The question, “Do you have difficulty slowing down to attend to procedures, which require meticulous and methodical attentiveness, for example, calculating drug dosages, removing sutures, collecting blood or suturing?” and the categorical variable results are displayed in the following table (Table 158). The continuous predictor years in profession was used for this analysis. Table 158 shows that when having difficulty slowing down with years in profession as the predictor, 42 per cent were fulltimers, 47.1 per cent of nurses and midwives possessed a degree and 11.7 per cent lived alone. This means that when using years in profession as the predictor in the equation for logistic regression, over two-fifths (42%) having difficulty slowing down worked fulltime, almost half (47.1%) having difficulty slowing down possessed a degree and a minority (11.7%) having difficulty slowing down lived alone.

Table 158 Categorical Variable Results for Difficulty Slowing Down with Years in Profession as Continuous Predictor

Categorical results- Do you have difficulty slowing down to attend to procedures, which require meticulous and methodical attentiveness?			
Predictor- years in profession			
Fulltime	Yes	Number = 212	42.0%
N = 505	No	Number = 293	58.0%
Possesses a degree	Yes	Number = 238	47.1%
N = 505	No	Number = 267	52.9%
Live alone	Yes	Number = 59	11.7%
N = 505	No	Number = 446	88.3%

The first analysis was calculated on a forward stepwise method, so the initial model was derived using the constant, “Do you have difficulty slowing down to attend to procedures, which require meticulous and methodical attentiveness, for example, calculating drug dosages, removing sutures, collecting blood or suturing?”, in the logistic regression equation. Therefore, in this calculation all of the predictor variables were omitted. If predictions were that all nurses and midwives did have difficulty slowing down, this would be correct 295 times out of 505, that is, 58.4 per cent. If the prediction was that all nurses and midwives did not have difficulty slowing down, this prediction would be correct 210 times out of 505, that is, 41.6 per cent (Table 159).

Table 159

Predictions for Difficulty Slowing Down with Only Constant in the Model

Question: Do you have difficulty slowing down to attend to procedures, which require meticulous and methodical attentiveness?			
Prediction correct for difficulty slowing down	295 / 505	N = 505	58.4%
Prediction correct for not having difficulty slowing down	210 / 505	N = 505	41.6%

The next calculation included the categorical predictor variables and the continuous predictor years in profession for the question, “Do you have difficulty slowing down to attend to procedures, which require meticulous and methodical attentiveness, for example, calculating drug dosages, removing sutures, collecting blood or suturing?” which did not have any significant effect.

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Appendix 7 Multicollinearity for logistic regression

Multicollinearity exists if the predictors in a regression model show strong correlations between them. If predictors show strong correlations, it is difficult to assess which predictor is important. A high collinearity level increases the probability that the good predictors of the outcome might be found non-significant, thereby being abandoned from the model (known as Type 2 error) (Field, 2005). Variance inflation factor (VIF) values should not be greater than 10 (Myers, 1990). All VIF values for these independent variables were less than 1.9, showing that the predictors did not have strong relationships with the other independent predictors.

Tolerance levels are related to the variance inflation factor, being its reciprocal ($1/VIF$) (Field, 2005). All tolerance levels for the independent variables used for logistic regression in these analyses were above 0.5, indicating no problems with multicollinearity. All questions included the categorical independent variables, employment status, qualifications and living arrangement. The other continuous independent variables age, hours worked and years in profession were put into the calculation separately with all the categorical independent variables, as they were for logistic regression.

1. Multicollinearity for statistically significant findings of logistic regression

All results below show that when testing for multicollinearity for the statistically significant findings of logistic regression, that the variance inflation factors are all below 10 (1.940 being the highest value) and all tolerance levels are above 0.1 (0.515 being the lowest value). This means that none of these variables overlapped too much with each other and if they did overlap too much this would mean that some variables would show high inter-correlations meaning that the variables are measuring the same thing very closely.

1.1. Testing for multicollinearity for stress

1.1.1. Experiencing sleeplessness

The following table (Table 1) shows collinearity results for the variable, experiencing sleeplessness. Table 1 displays all categorical predictors and the continuous independent variable, hours worked. Table 1 shows that all VIF values are less than 10, with 1.931 being the highest value. All tolerance levels are above 0.1, being 0.518 to 0.975.

Table 1 Collinearity Statistics for Experiencing Sleeplessness with Hours Worked as Continuous Independent Variable

Dependent Variable- Experiencing Sleeplessness		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Hours worked	1.911	0.523
Fulltime	1.931	0.518
Possesses a degree	1.043	0.959
Live alone	1.026	0.975

1.1.2. Taking mental health leave

The following tables (Tables 2 & 3) show collinearity results for the variable, taking “mental health” leave. Table 2 displays all categorical predictors and the continuous independent variable, age. Table 2 shows that all VIF values are less than 10, with 1.118 being the highest value. All tolerance levels are above 0.1, being 0.894 to 0.966.

Table 2 Collinearity Statistics for Taking Mental Health Leave with Age as Continuous Independent Variable

Dependent Variable- Taking Mental Health Leave		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Age	1.089	0.919
Fulltime	1.056	0.947
Possesses a degree	1.118	0.894
Live alone	1.035	0.966

Table 3 displays all categorical predictors and the continuous independent variable, years in profession. Table 3 shows that all VIF values are less than 10, with 1.159 being the highest value. All tolerance levels are above 0.1, being 0.862 to 0.971.

Table 3 Collinearity Statistics for Taking Mental Health Leave with Years in Profession as Continuous Independent Variable

Dependent Variable- Taking Mental Health Leave		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Years in profession	1.118	0.894
Fulltime	1.057	0.946
Possesses a degree	1.159	0.862
Live alone	1.030	0.971

1.2. Testing for multicollinearity for burnout

1.2.1. Burnout levels

The following table (Table 4) shows collinearity results for burnout levels. Table 4 displays all categorical predictors and the continuous independent variable, hours worked. Table 4 shows that all VIF values are less than 10, with 1.940 being the highest value. All tolerance levels are above 0.1, being 0.515 to 0.973.

Table 4 Collinearity Statistics for Burnout with Hours Worked as Continuous Independent Variable

Dependent Variable- Burnout		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Hours worked	1.911	0.523
Fulltime	1.940	0.515
Possesses a degree	1.046	0.956
Live alone	1.027	0.973

1.2.2. Apathy

The following table (Table 5) shows collinearity results for the variable, apathy. Table 5 displays all categorical predictors and the continuous independent variable, hours worked. Table 5 shows that all VIF values are less than 10, with 1.925 being the highest value. All tolerance levels are above 0.1, being 0.519 to 0.974.

Table 5 Collinearity Statistics for Apathy with Hours Worked as Continuous Independent Variable

Dependent Variable- Apathy		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Hours worked	1.904	0.525
Fulltime	1.925	0.519
Possesses a degree	1.045	0.957
Live alone	1.027	0.974

1.2.3. Feeling emotionally drained

The following tables (Tables 6 & 7) show collinearity results for the variable, feeling emotionally drained. Table 6 displays all categorical predictors and the continuous independent variable, age. Table 6 shows that all VIF values are less than 10, with 1.118 being the highest value. All tolerance levels are above 0.1, being 0.894 to 0.966.

Table 6 Collinearity Statistics for Feeling Emotionally Drained with Age as Continuous Independent Variable

Dependent Variable- Feeling Emotionally Drained		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Age	1.090	0.918
Fulltime	1.055	0.948
Possesses a degree	1.118	0.894
Live alone	1.035	0.966

Table 7 displays all categorical predictors and the continuous independent variable, hours worked. Table 7 shows that all VIF values are less than 10, with 1.929 being the highest value. All tolerance levels are above 0.1, being 0.518 to 0.975.

Table 7 Collinearity Statistics for Feeling Emotionally Drained with Hours Worked as Continuous Independent Variable

Dependent Variable- Feeling Emotionally Drained		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Hours worked	1.911	0.523
Fulltime	1.929	0.518
Possesses a degree	1.041	0.960
Live alone	1.026	0.975

1.2.4. Loss of empathy for colleagues

The following tables (Tables 8, 9 & 10) show collinearity results for the variable, loss of empathy for colleagues. Table 8 displays all categorical predictors and the continuous independent variable, age. Table 8 shows that all VIF values are less than 10, with 1.124 being the highest value. All tolerance levels are above 0.1, being 0.890 to 0.967.

Table 8 Collinearity Statistics for Loss of Empathy for Colleagues with Age as Continuous Independent Variable

Dependent Variable- Loss of Empathy for Colleagues		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Age	1.104	0.906
Fulltime	1.059	0.944
Possesses a degree	1.124	0.890
Live alone	1.034	0.967

Table 9 displays all categorical predictors and the continuous independent variable, hours worked. Table 9 shows that all VIF values are less than 10, with 1.896 being the highest value. All tolerance levels are above 0.1, being 0.527 to 0.975.

Table 9 Collinearity Statistics for Loss of Empathy for Colleagues with Hours Worked as Continuous Independent Variable

Dependent Variable- Loss of Empathy for Colleagues		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Hours worked	1.890	0.529
Fulltime	1.896	0.527
Possesses a degree	1.045	0.957
Live alone	1.026	0.975

Table 10 displays all categorical predictors and the continuous independent variable, years in profession. Table 10 shows that all VIF values are less than 10, with 1.149 being the highest value. All tolerance levels are above 0.1, being 0.870 to 0.969.

Table 10 Collinearity Statistics for Loss of Empathy for Colleagues with Years in Profession as Continuous Independent Variable

Dependent Variable- Loss of Empathy for Colleagues		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Years in Profession	1.119	0.893
Fulltime	1.055	0.948
Possesses a degree	1.149	0.870
Live alone	1.032	0.969

1.2.5. Loss of empathy for clients

The following tables (Tables 11 & 12) show collinearity results for the variable, loss of empathy for clients. Table 11 displays all categorical predictors and the continuous independent variable, age. Table 11 shows that all VIF values are less than 10, with 1.122 being the highest value. All tolerance levels are above 0.1, being 0.892 to 0.971.

Table 11 Collinearity Statistics for Loss of Empathy for Clients with Age as Continuous Independent Variable

Dependent Variable- Loss of Empathy for Clients		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Age	1.095	0.913
Fulltime	1.054	0.949
Possesses a degree	1.122	0.892
Live alone	1.030	0.971

Table 12 displays all categorical predictors and the continuous independent variable, years in profession. Table 12 shows that all VIF values are less than 10, with 1.149 being the highest value. All tolerance levels are above 0.1, being 0.870 to 0.975.

Table 12 Collinearity Statistics for Loss of Empathy for Clients with Years in Profession as Continuous Independent Variable

Dependent Variable- Loss of Empathy for Clients		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Years in profession	1.111	0.900
Fulltime	1.054	0.949
Possesses a degree	1.149	0.870
Live alone	1.025	0.975

1.3. Testing for multicollinearity for individual responses

1.3.1. Pressure and motivation

The following tables (Tables 13, 14 & 15) show collinearity results for overall pressure and motivation levels. Table 13 displays all categorical predictors and the continuous independent variable, age. Table 13 shows that all VIF values are less than 10, with 1.118 being the highest value. All tolerance levels are above 0.1, being 0.894 to 0.974.

Table 13 Collinearity Statistics for Pressure and Motivation with Age as Continuous Independent Variable

Dependent Variable- Pressure and Motivation		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Age	1.091	0.916
Fulltime	1.048	0.954
Possesses a degree	1.118	0.894
Live alone	1.027	0.974

Table 14 displays all categorical predictors and the continuous independent variable, hours worked. Table 14 shows that all VIF values are less than 10, with 1.913 being the highest value. All tolerance levels are above 0.1, being 0.523 to 0.979.

Table 14 Collinearity Statistics for Pressure and Motivation with Hours Worked as Continuous Independent Variable

Dependent Variable- Pressure and Motivation		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Hours worked	1.902	0.526
Fulltime	1.913	0.523
Possesses a degree	1.041	0.961
Live alone	1.021	0.979

Table 15 displays all categorical predictors and the continuous independent variable, years in profession. Table 15 shows that all VIF values are less than 10, with 1.164 being the highest value. All tolerance levels are above 0.1, being 0.859 to 0.979.

Table 15 Collinearity Statistics for Pressure and Motivation with Years in Profession as Continuous Independent Variable

Dependent Variable- Pressure and Motivation		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Years in profession	1.126	0.888
Fulltime	1.049	0.954
Possesses a degree	1.164	0.859
Live alone	1.021	0.979

2. Multicollinearity for statistically non-significant findings of logistic regression

All results below show that when testing for multicollinearity for the statistically non-significant findings of logistic regression, that the variance inflation factors are all below 10 (2.070 being the highest value) and all tolerance levels are above 0.1 (0.483 being the lowest value). This means that none of these variables overlapped too much with each other. If they did overlap too much this would mean that some variables would show high inter-correlations meaning that the variables are measuring the same thing very closely, making them redundant.

2.1. Testing for multicollinearity for stress

2.1.1. Stress levels

The following tables (Tables 16, 17 & 18) show collinearity results for stress levels. Table 16 displays all categorical predictors and the continuous independent variable, age. Table 16 shows that all VIF values are less than 10, with 1.122 being the highest value. All tolerance levels are above 0.1, being 0.891 to 0.967.

Table 16

Collinearity Statistics for Stress with Age as Continuous Independent Variable

Dependent Variable- Stress		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Age	1.093	0.915
Fulltime	1.054	0.949
Possesses a degree	1.122	0.891
Live alone	1.034	0.967

Table 17 displays all categorical predictors and the continuous independent variable, hours worked. Table 17 shows that all VIF values are less than 10, with 1.917 being the highest value. All tolerance levels are above 0.1, being 0.522 to 0.975.

Table 17 Collinearity Statistics for Stress with Hours Worked as Continuous Independent Variable

Dependent Variable- Stress		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Hours worked	1.899	0.527
Fulltime	1.917	0.522
Possesses a degree	1.039	0.962
Live alone	1.026	0.975

Table 18 displays all categorical predictors and the continuous independent variable, years in profession. Table 18 shows that all VIF values are less than 10, with 1.160 being the highest value. All tolerance levels are above 0.1, being 0.862 to 0.972.

Table 18 Collinearity Statistics for Stress with Years in Profession as Continuous Independent Variable

Dependent Variable- Stress		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Years in profession	1.122	0.891
Fulltime	1.053	0.950
Possesses a degree	1.160	0.862
Live alone	1.029	0.972

2.1.2. Experiencing sleeplessness

The following tables (Tables 19 & 20) show collinearity results for the variable, experiencing sleeplessness. Table 19 displays all categorical predictors and the continuous independent variable, age. Table 19 shows that all VIF values are less than 10, with 1.118 being the highest value. All tolerance levels are above 0.1, being 0.895 to 0.966.

Table 19 Collinearity Statistics for Experiencing Sleeplessness with Age as Continuous Independent Variable

Dependent Variable- Experiencing Sleeplessness		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Age	1.087	0.920
Fulltime	1.058	0.945
Possesses a degree	1.118	0.895
Live alone	1.035	0.966

Table 20 displays all categorical predictors and the continuous independent variable, years in profession. Table 20 shows that all VIF values are less than 10, with 1.162 being the highest value. All tolerance levels are above 0.1, being 0.861 to 0.971.

Table 20 Collinearity Statistics for Experiencing Sleeplessness with Years in Profession as Continuous Independent Variable

Dependent Variable- Experiencing Sleeplessness		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Years in profession	1.120	0.893
Fulltime	1.058	0.945
Possesses a degree	1.162	0.861
Live alone	1.030	0.971

2.1.3. Headaches requiring analgesia

The following tables (Tables 21, 22 & 23) show collinearity results for the variable, headaches requiring analgesia. Table 21 displays all categorical predictors and the continuous independent variable, age. Table 21 shows that all VIF values are less than 10, with 1.119 being the highest value. All tolerance levels are above 0.1, being 0.894 to 0.966.

Table 21 Collinearity Statistics for Headaches Requiring Analgesia with Age as Continuous Independent Variable

Dependent Variable- Headaches Requiring Analgesia		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Age	1.088	0.919
Fulltime	1.058	0.945
Possesses a degree	1.119	0.894
Live alone	1.035	0.966

Table 22 displays all categorical predictors and the continuous independent variable, hours worked. Table 22 shows that all VIF values are less than 10, with 1.929 being the highest value. All tolerance levels are above 0.1, being 0.518 to 0.975.

Table 22 Collinearity Statistics for Headaches Requiring Analgesia with Hours Worked as Continuous Independent Variable

Dependent Variable- Headaches Requiring Analgesia		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Hours worked	1.908	0.524
Fulltime	1.929	0.518
Possesses a degree	1.044	0.958
Live alone	1.026	0.975

Table 23 displays all categorical predictors and the continuous independent variable, years in profession. Table 23 shows that all VIF values are less than 10, with 1.163 being the highest value. All tolerance levels are above 0.1, being 0.860 to 0.971.

Table 23 Collinearity Statistics for Headaches Requiring Analgesia with Years in Profession as Continuous Independent Variable

Dependent Variable- Headaches Requiring Analgesia		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Years in profession	1.120	0.893
Fulltime	1.059	0.945
Possesses a degree	1.163	0.860
Live alone	1.030	0.971

2.1.4. Stress requiring treatment

The following tables (Tables 24, 25 & 26) show collinearity results for the variable, stress requiring treatment. Table 24 displays all categorical predictors and the continuous independent variable, age. Table 24 shows that all VIF values are less than 10, with 1.119 being the highest value. All tolerance levels are above 0.1, being 0.894 to 0.967.

Table 24 Collinearity Statistics for Stress Requiring Treatment with Age as Continuous Independent Variable

Dependent Variable- Stress Requiring Treatment		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Age	1.088	0.919
Fulltime	1.057	0.946
Possesses a degree	1.119	0.894
Live alone	1.034	0.967

Table 25 displays all categorical predictors and the continuous independent variable, hours worked. Table 25 shows that all VIF values are less than 10, with 1.926 being the highest value. All tolerance levels are above 0.1, being 0.519 to 0.975.

Table 25 Collinearity Statistics for Stress Requiring Treatment with Hours Worked as Continuous Independent Variable

Dependent Variable- Stress Requiring Treatment		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Hours worked	1.905	0.525
Fulltime	1.926	0.519
Possesses a degree	1.043	0.959
Live alone	1.025	0.975

Table 26 displays all categorical predictors and the continuous independent variable, years in profession. Table 26 shows that all VIF values are less than 10, with 1.159 being the highest value. All tolerance levels are above 0.1, being 0.863 to 0.972.

Table 26 Collinearity Statistics for Stress Requiring Treatment with Years in Profession as Continuous Independent Variable

Dependent Variable- Stress Requiring Treatment		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Years in profession	1.118	0.895
Fulltime	1.057	0.946
Possesses a degree	1.159	0.863
Live alone	1.029	0.972

2.1.5. Taking mental health leave

The following table (Table 27) shows collinearity results for the variable, taking “mental health” leave. Table 27 displays all categorical predictors and the continuous independent variable, hours worked. Table 27 shows that all VIF values are less than 10, with 1.923 being the highest value. All tolerance levels are above 0.1, being 0.520 to 0.975.

Table 27 Collinearity Statistics for Taking Mental Health Leave with Hours Worked as Continuous Independent Variable

Dependent Variable- Taking Mental Health Leave		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Hours worked	1.903	0.526
Fulltime	1.923	0.520
Possesses a degree	1.043	0.959
Live alone	1.026	0.975

2.1.6. Length of depression

The following tables (Tables 28, 29 & 30) show collinearity results for the variable, length of depression. Table 28 displays all categorical predictors and the continuous independent variable, age. Table 28 shows that all VIF values are less than 10, with 1.120 being the highest value. All tolerance levels are above 0.1, being 0.893 to 0.969.

Table 28 Collinearity Statistics for Length of Depression with Age as Continuous Independent Variable

Dependent Variable- Length of Depression		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Age	1.090	0.917
Fulltime	1.054	0.949
Possesses a degree	1.120	0.893
Live alone	1.032	0.969

Table 29 displays all categorical predictors and the continuous independent variable, hours worked. Table 29 shows that all VIF values are less than 10, with 1.918 being the highest value. All tolerance levels are above 0.1, being 0.521 to 0.977.

Table 29 Collinearity Statistics for Length of Depression with Hours Worked as Continuous Independent Variable

Dependent Variable- Length of Depression		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Hours worked	1.900	0.526
Fulltime	1.918	0.521
Possesses a degree	1.043	0.959
Live alone	1.024	0.977

Table 30 displays all categorical predictors and the continuous independent variable, years in profession. Table 30 shows that all VIF values are less than 10, with 1.163 being the highest value. All tolerance levels are above 0.1, being 0.860 to 0.971.

Table 30 Collinearity Statistics for Length of Depression with Years in Profession as Continuous Independent Variable

Dependent Variable- Length of Depression		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Years in profession	1.120	0.893
Fulltime	1.059	0.945
Possesses a degree	1.163	0.860
Live alone	1.030	0.971

2.1.7. Wanting to change area of practice

The following tables (Tables 31, 32 & 33) show collinearity results for the variable, wanting to change area of practice. Table 31 displays all categorical predictors and the continuous independent variable, age. Table 31 shows that all VIF values are less than 10, with 1.070 being the highest value. All tolerance levels are above 0.1, being 0.934 to 0.959.

Table 31 Collinearity Statistics for Wanting to Change Area of Practice with Age as Continuous Independent Variable

Dependent Variable- Wanting to Change Area of Practice		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Age	1.059	0.945
Fulltime	1.060	0.943
Possesses a degree	1.070	0.934
Live alone	1.043	0.959

Table 32 displays all categorical predictors and the continuous independent variable, hours worked. Table 32 shows that all VIF values are less than 10, with 2.070 being the highest value. All tolerance levels are above 0.1, being 0.483 to 0.971.

Table 32 Collinearity Statistics for Wanting to Change Area of Practice with Hours Worked as Continuous Independent Variable

Dependent Variable- Wanting to Change Area of Practice		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Hours worked	2.070	0.483
Fulltime	2.061	0.485
Possesses a degree	1.046	0.956
Live alone	1.030	0.971

Table 33 displays all categorical predictors and the continuous independent variable, years in profession. Table 33 shows that all VIF values are less than 10, with 1.114 being the highest value. All tolerance levels are above 0.1, being 0.898 to 0.971.

Table 33 Collinearity Statistics for Wanting to Change Area of Practice with Years in Profession as Continuous Independent Variable

Dependent Variable- Wanting to Change Area of Practice		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Years in profession	1.081	0.925
Fulltime	1.062	0.941
Possesses a degree	1.114	0.898
Live alone	1.030	0.971

2.2. Testing for multicollinearity for burnout

2.2.1. Burnout levels

The following tables (Tables 34 & 35) show collinearity results for burnout levels. Table 34 displays all categorical predictors and the continuous independent variable, age. Table 34 shows that all VIF values are less than 10, with 1.110 being the highest value. All tolerance levels are above 0.1, being 0.901 to 0.962.

Table 34

Collinearity Statistics for Burnout with Age as Continuous Independent Variable

Dependent Variable- Burnout		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Age	1.083	0.924
Fulltime	1.061	0.942
Possesses a degree	1.110	0.901
Live alone	1.039	0.962

Table 35 displays all categorical predictors and the continuous independent variable, years in profession. Table 35 shows that all VIF values are less than 10, with 1.171 being the highest value. All tolerance levels are above 0.1, being 0.854 to 0.970.

Table 35 Collinearity Statistics for Burnout with Years in Profession as Continuous Independent Variable

Dependent Variable- Burnout		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Years in profession	1.128	0.887
Fulltime	1.062	0.942
Possesses a degree	1.171	0.854
Live alone	1.031	0.970

2.2.2. Apathy

The following tables (Tables 36 & 37) show collinearity results for burnout levels. Table 36 displays all categorical predictors and the continuous independent variable, age. Table 36 shows that all VIF values are less than 10, with 1.120 being the highest value. All tolerance levels are above 0.1, being 0.893 to 0.965.

Table 36

Collinearity Statistics for Apathy with Age as Continuous Independent Variable

Dependent Variable- Apathy		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Age	1.087	0.920
Fulltime	1.061	0.942
Possesses a degree	1.120	0.893
Live alone	1.037	0.965

Table 37 displays all categorical predictors and the continuous independent variable, years in profession. Table 37 shows that all VIF values are less than 10, with 1.166 being the highest value. All tolerance levels are above 0.1, being 0.857 to 0.970.

Table 37 Collinearity Statistics for Apathy with Years in Profession as Continuous Independent Variable

Dependent Variable- Apathy		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Years in profession	1.122	0.891
Fulltime	1.062	0.942
Possesses a degree	1.166	0.857
Live alone	1.031	0.970

2.2.3. Feeling emotionally drained

The following table (Table 38) shows collinearity results for feeling emotionally drained. Table 38 displays all categorical predictors and the continuous independent variable, years in profession. Table 38 shows that all VIF values are less than 10, with 1.161 being the highest value. All tolerance levels are above 0.1, being 0.861 to 0.971.

Table 38 Collinearity Statistics for Feeling Emotionally Drained with Years in Profession as Continuous Independent Variable

Dependent Variable- Feeling Emotionally Drained		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Years in profession	1.121	0.892
Fulltime	1.057	0.946
Possesses a degree	1.161	0.861
Live alone	1.030	0.971

2.2.4. Loss of empathy for clients

Table 39 displays all categorical predictors and the continuous independent variable, hours worked. Table 39 shows that all VIF values are less than 10, with 1.921 being the highest value. All tolerance levels are above 0.1, being 0.520 to 0.977.

Table 39 Collinearity Statistics for Loss of Empathy for Clients with Hours Worked as Continuous Independent Variable

Dependent Variable- Loss of Empathy for Clients		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Hours worked	1.911	0.523
Possesses a degree	1.921	0.520
Live alone	1.044	0.958
Fulltime	1.023	0.977

2.3. Testing for multicollinearity for individual responses

2.3.1. Difficulty slowing down

The following tables (Tables 40, 41 & 42) show collinearity results for difficulty slowing down. Table 40 displays all categorical predictors and the continuous independent variable, age. Table 40 shows that all VIF values are less than 10, with 1.119 being the highest value. All tolerance levels are above 0.1, being 0.894 to 0.969.

Table 40 Collinearity Statistics for Difficulty Slowing Down with Age as Continuous Independent Variable

Dependent Variable- Difficulty Slowing Down		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Age	1.090	0.917
Fulltime	1.054	0.948
Possesses a degree	1.119	0.894
Live alone	1.032	0.969

Table 41 displays all categorical predictors and the continuous independent variable, hours worked. Table 41 shows that all VIF values are less than 10, with 1.924 being the highest value. All tolerance levels are above 0.1, being 0.520 to 0.976.

Table 41 Collinearity Statistics for Difficulty Slowing Down with Hours Worked as Continuous Independent Variable

Dependent Variable- Difficulty Slowing Down		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Hours worked	1.907	0.524
Possesses a degree	1.924	0.520
Live alone	1.041	0.961
Fulltime	1.024	0.976

Table 42 displays all categorical predictors and the continuous independent variable, years in profession. Table 42 shows that all VIF values are less than 10, with 1.164 being the highest value. All tolerance levels are above 0.1, being 0.859 to 0.974.

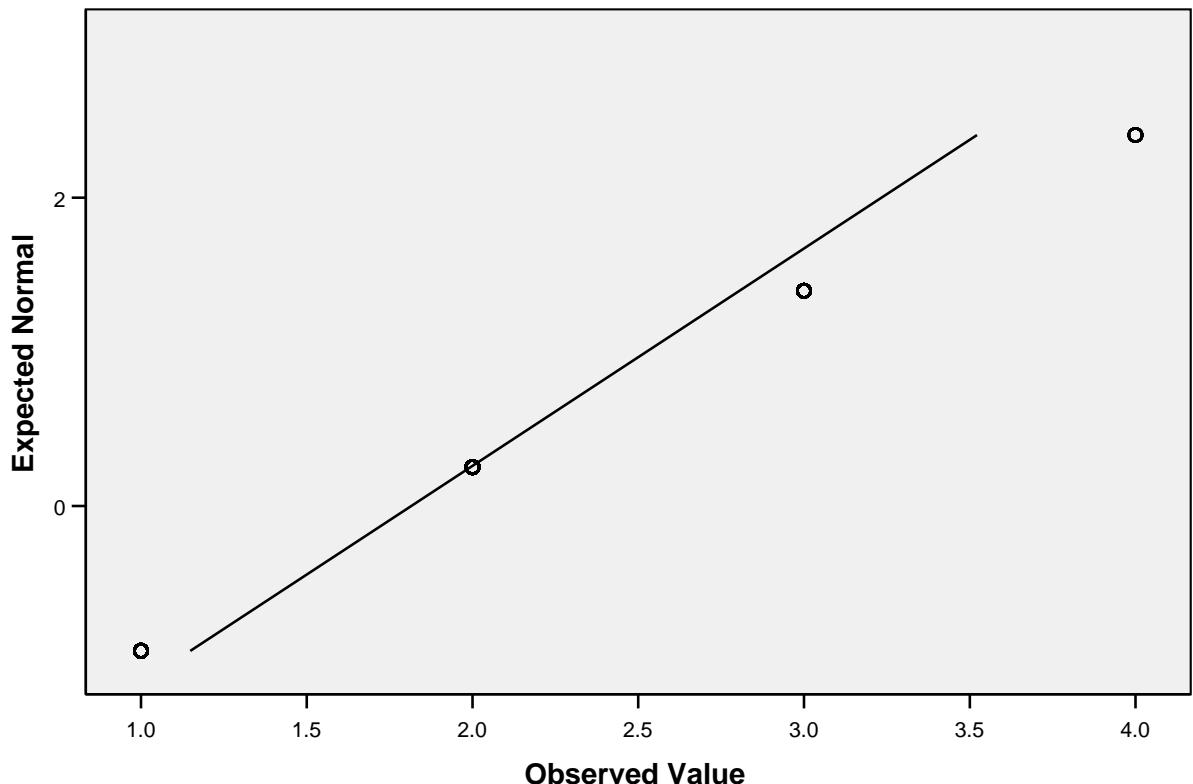
Table 42 Collinearity Statistics for Difficulty Slowing Down with Years in Profession as Continuous Independent Variable

Dependent Variable- Difficulty Slowing Down		
Independent Variable	Variance Inflation Factor	Tolerance Levels
Years in profession	1.125	0.889
Fulltime	1.054	0.948
Possesses a degree	1.164	0.859
Live alone	1.027	0.974

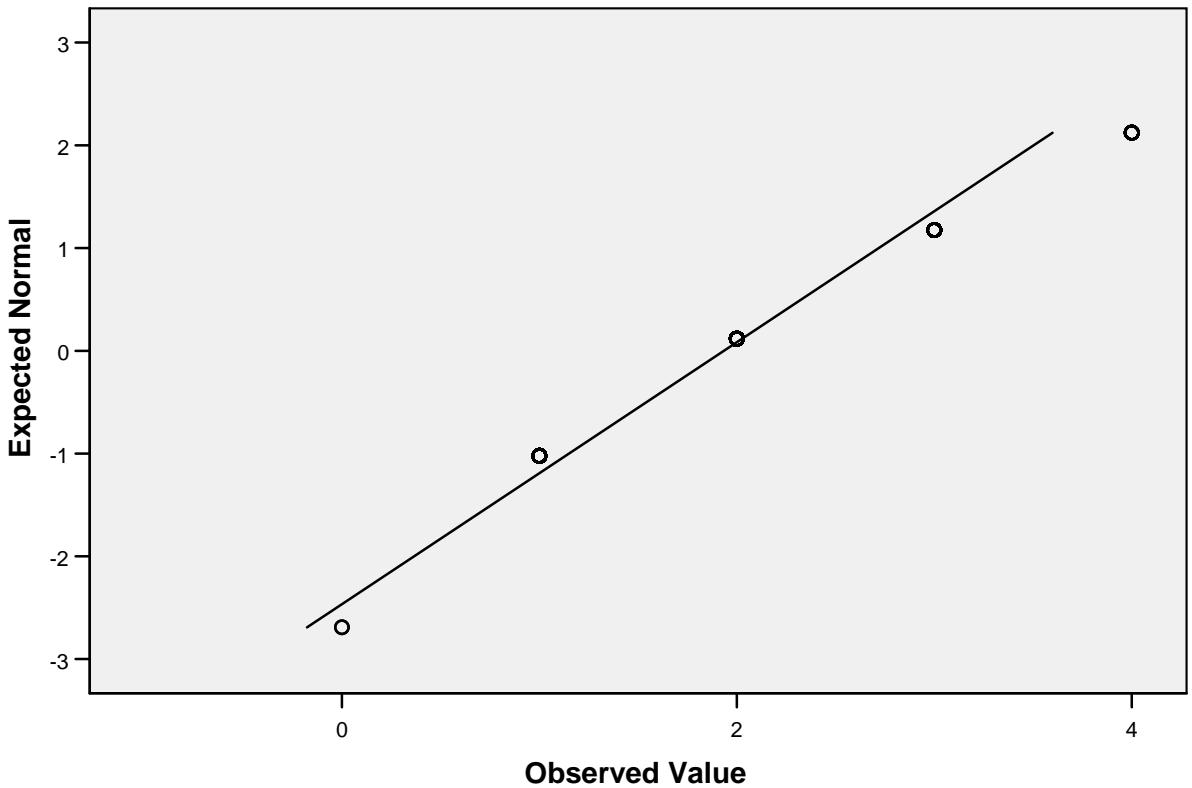
Appendix 8 Normality plots for factor analysis

Work Environment Subscale

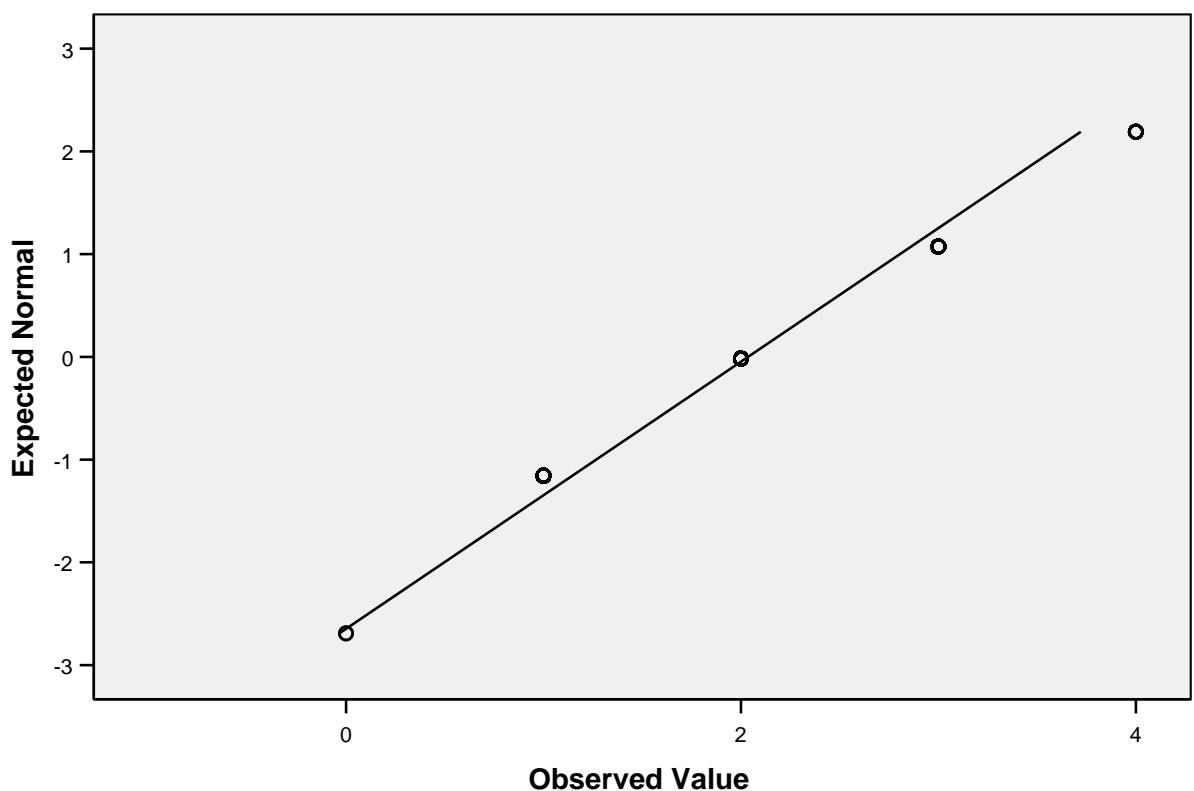
Normal Q-Q Plot of Frequency of stress



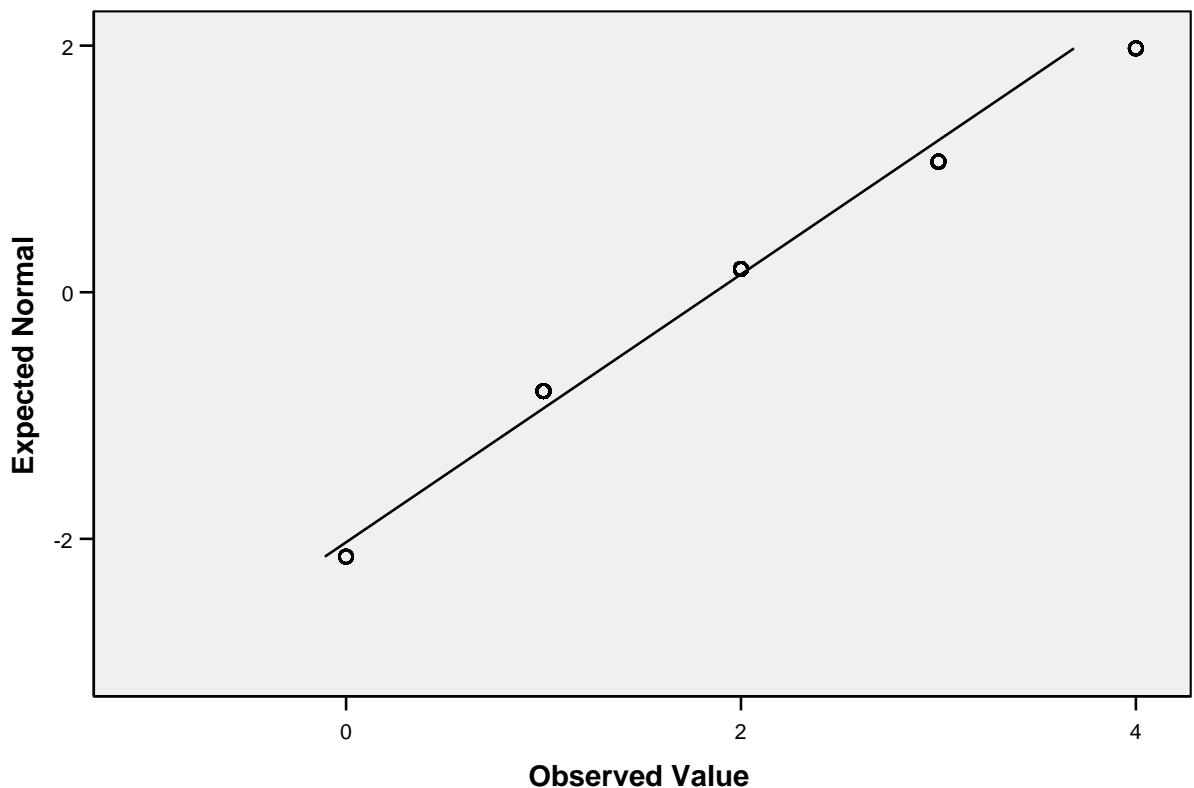
Normal Q-Q Plot of Time management



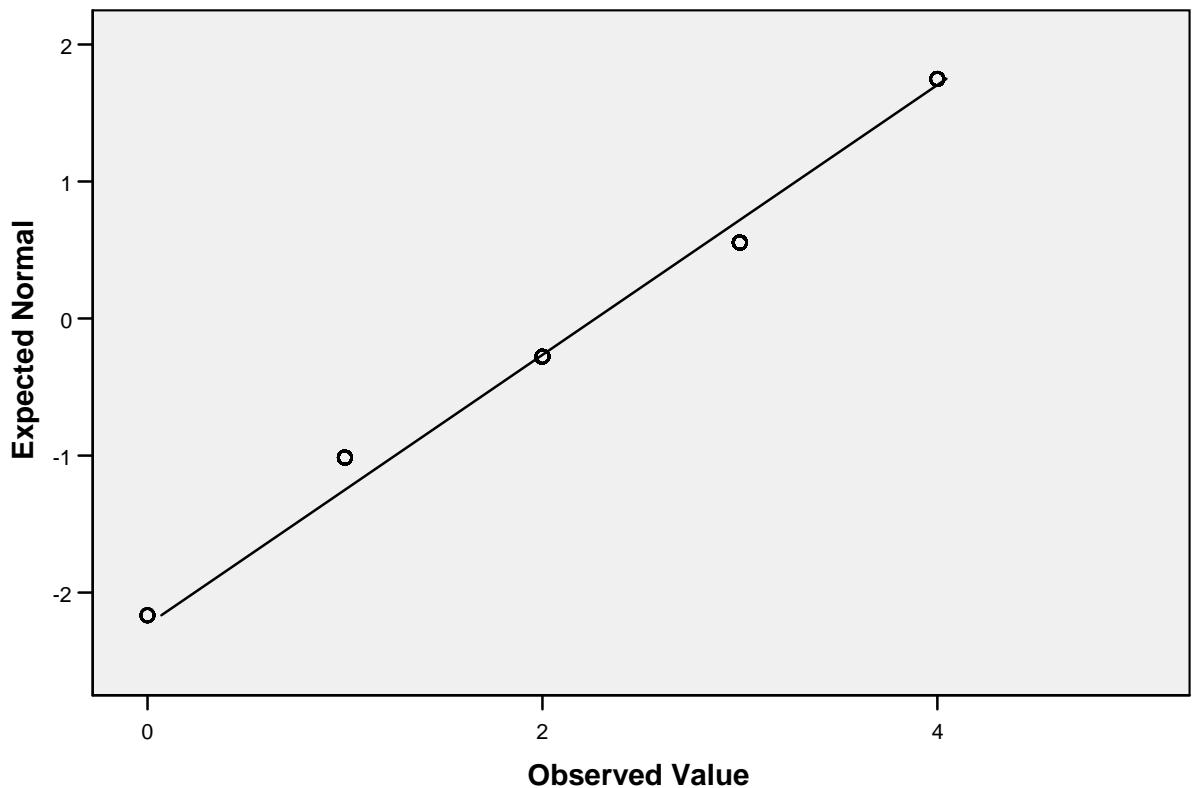
Normal Q-Q Plot of Rush to complete tasks



Normal Q-Q Plot of Finishing work late

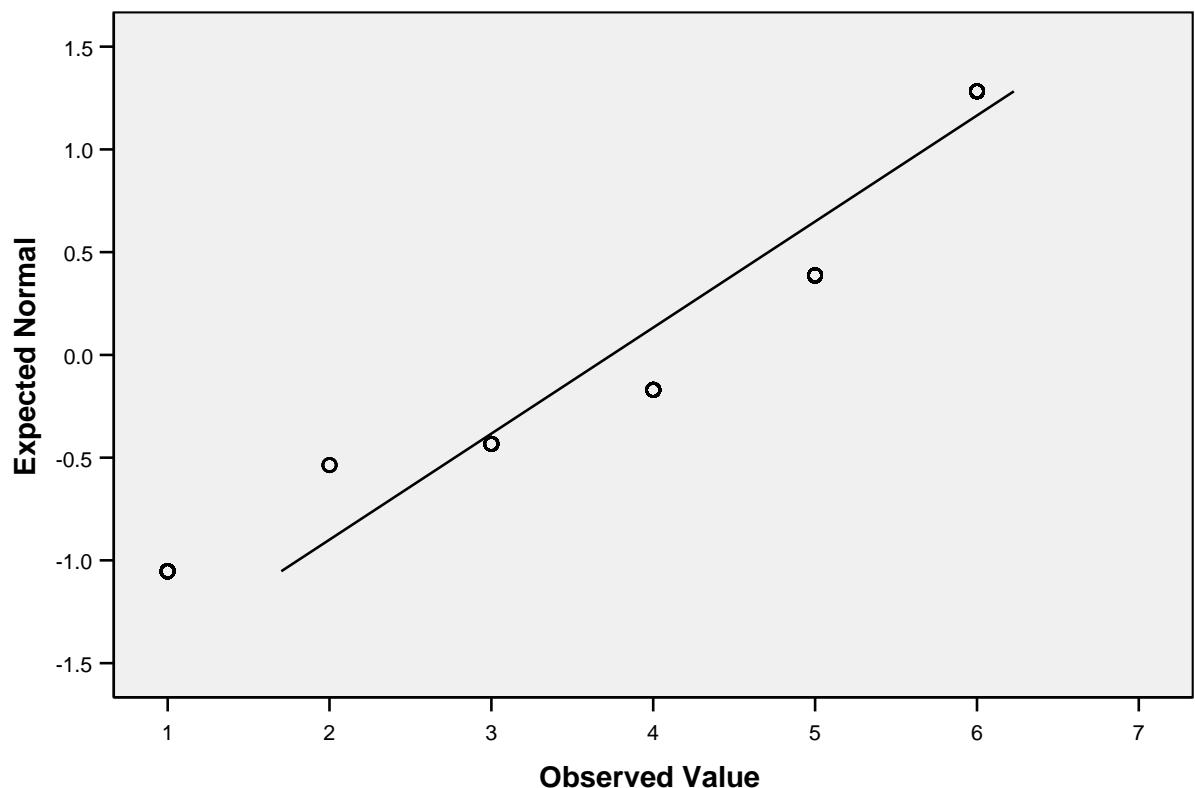


Normal Q-Q Plot of Organisational support

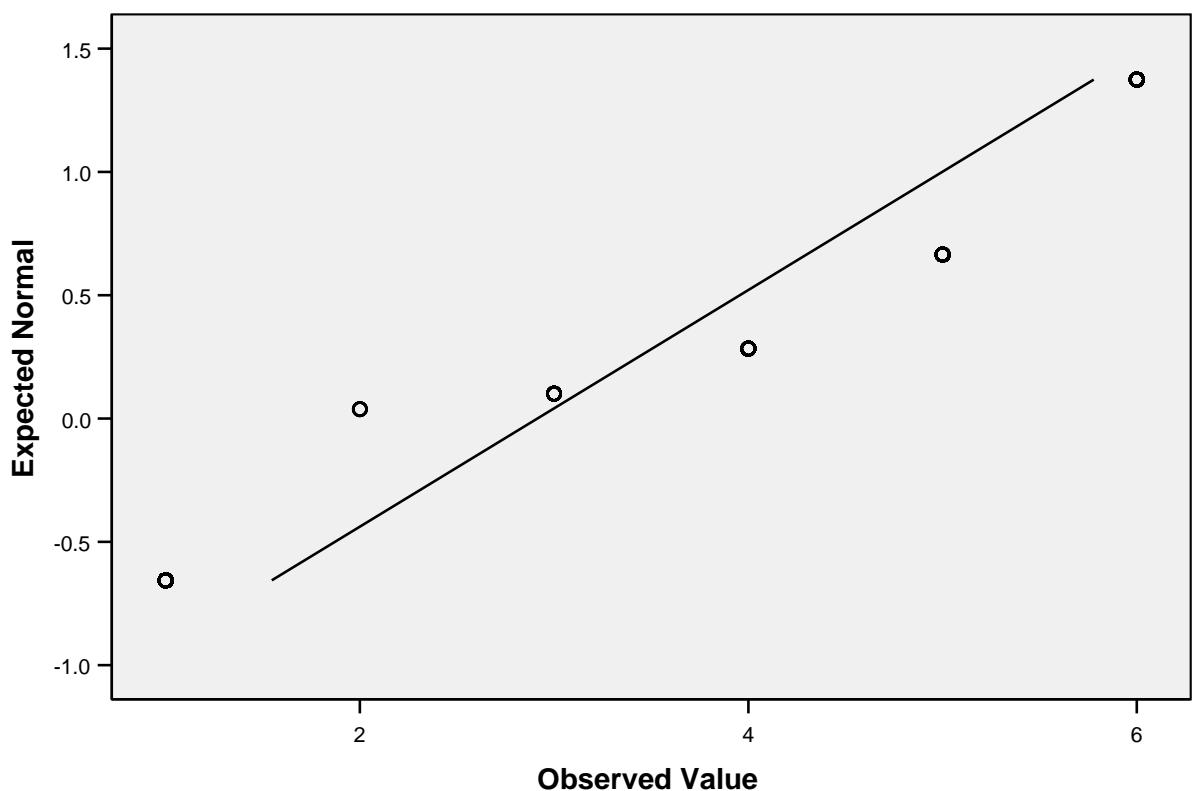


Psychosocial Effects Subscale

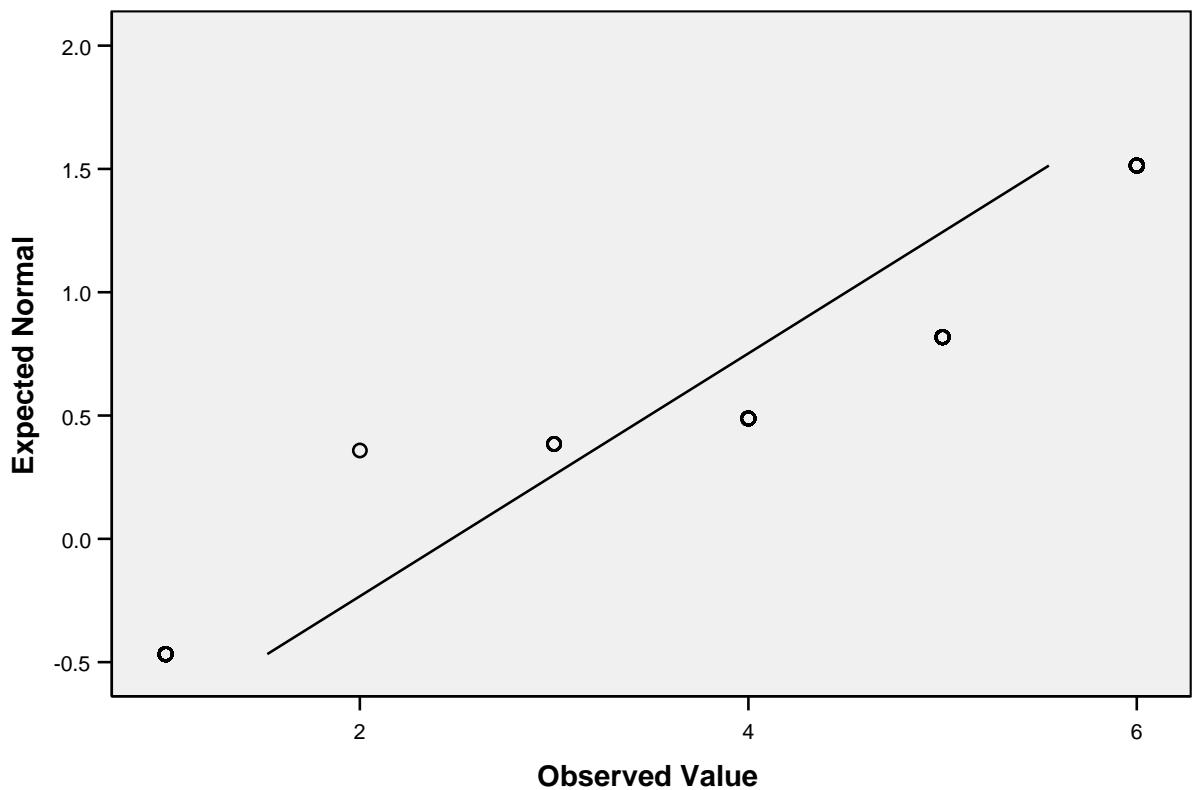
Normal Q-Q Plot of Experiencing increased anxiety



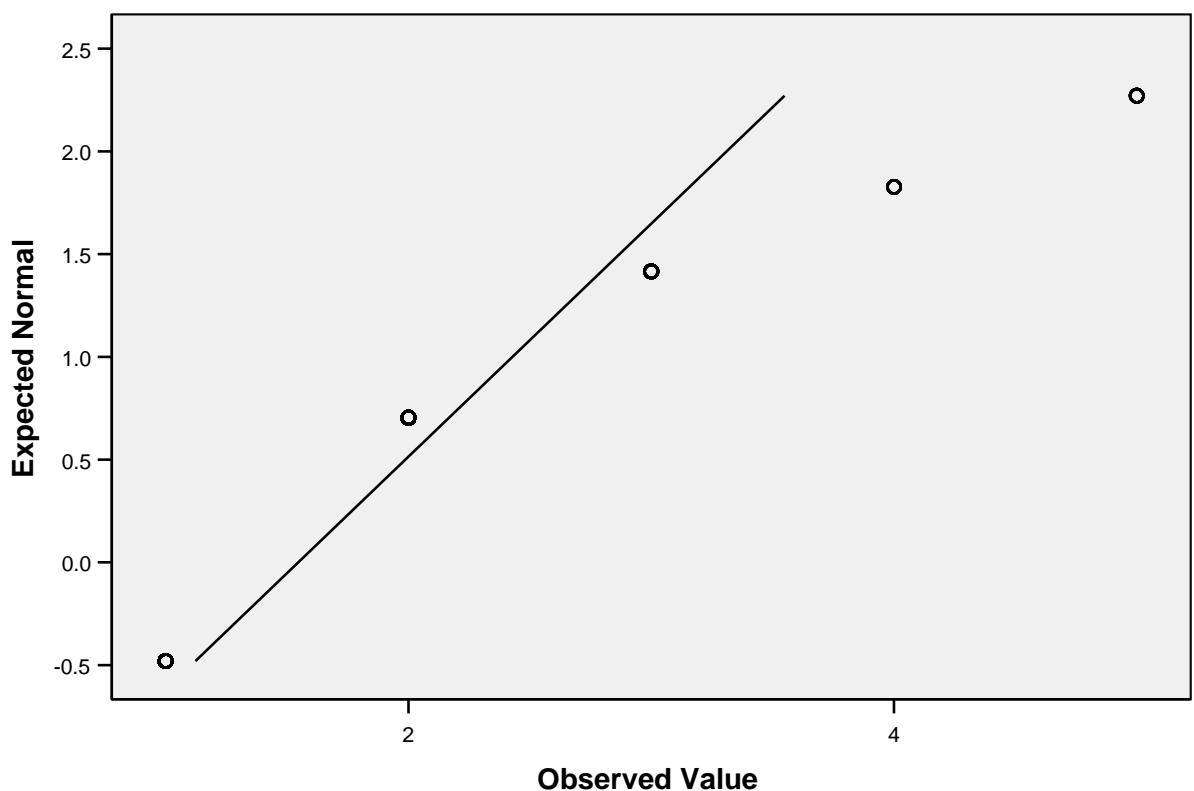
Normal Q-Q Plot of Sleeplessness over past decade



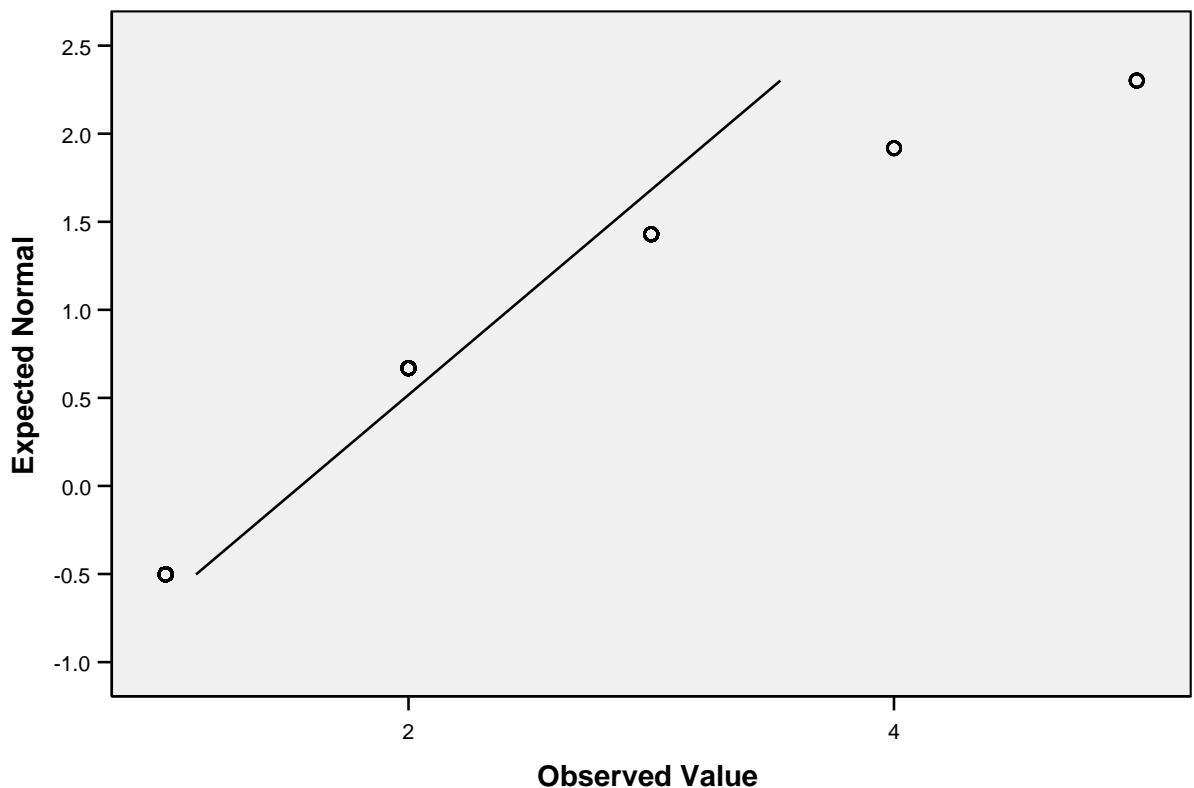
Normal Q-Q Plot of Depression over past decade



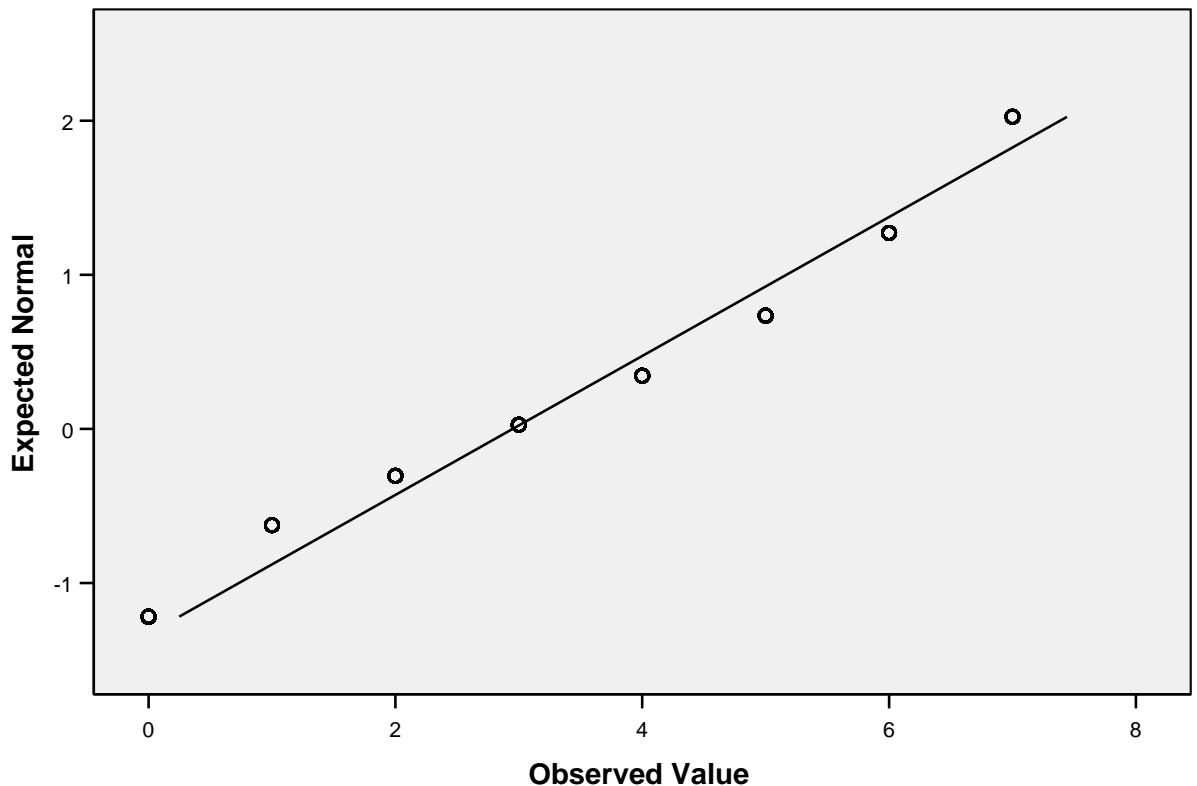
Normal Q-Q Plot of Sleeplessness over past week



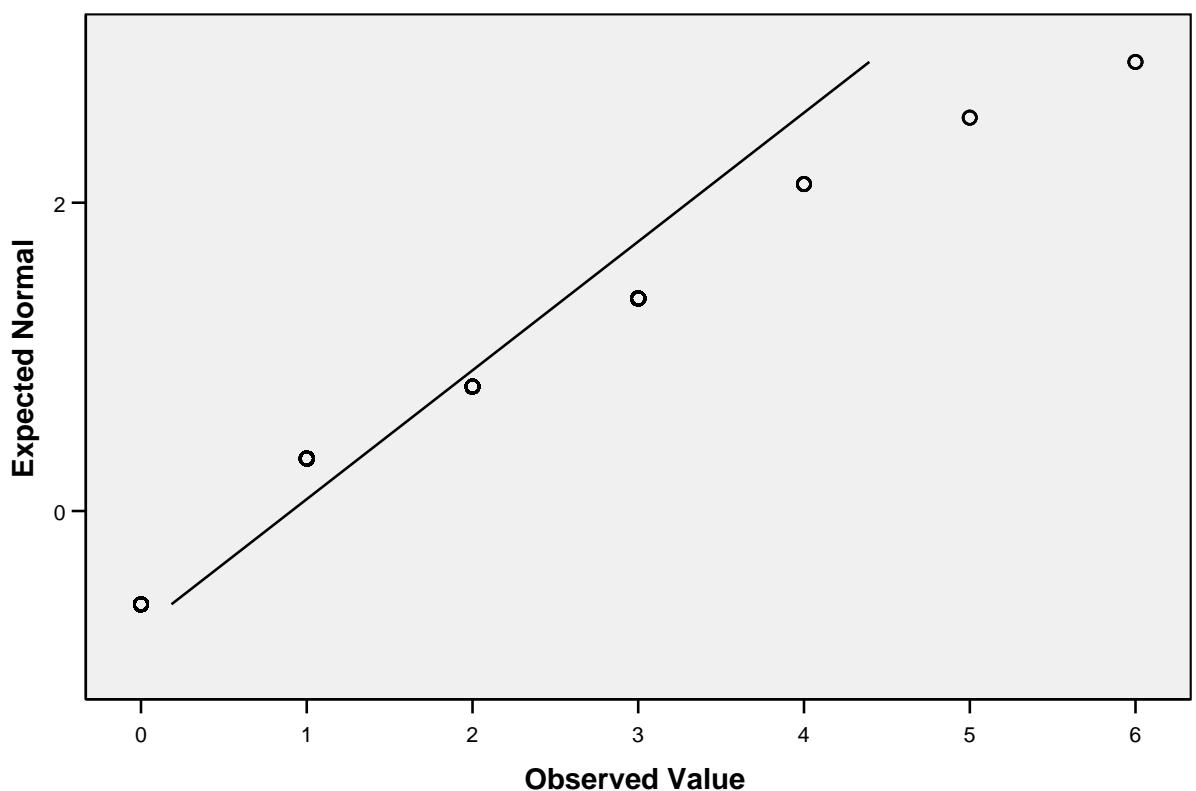
Normal Q-Q Plot of Headaches requiring analgesia



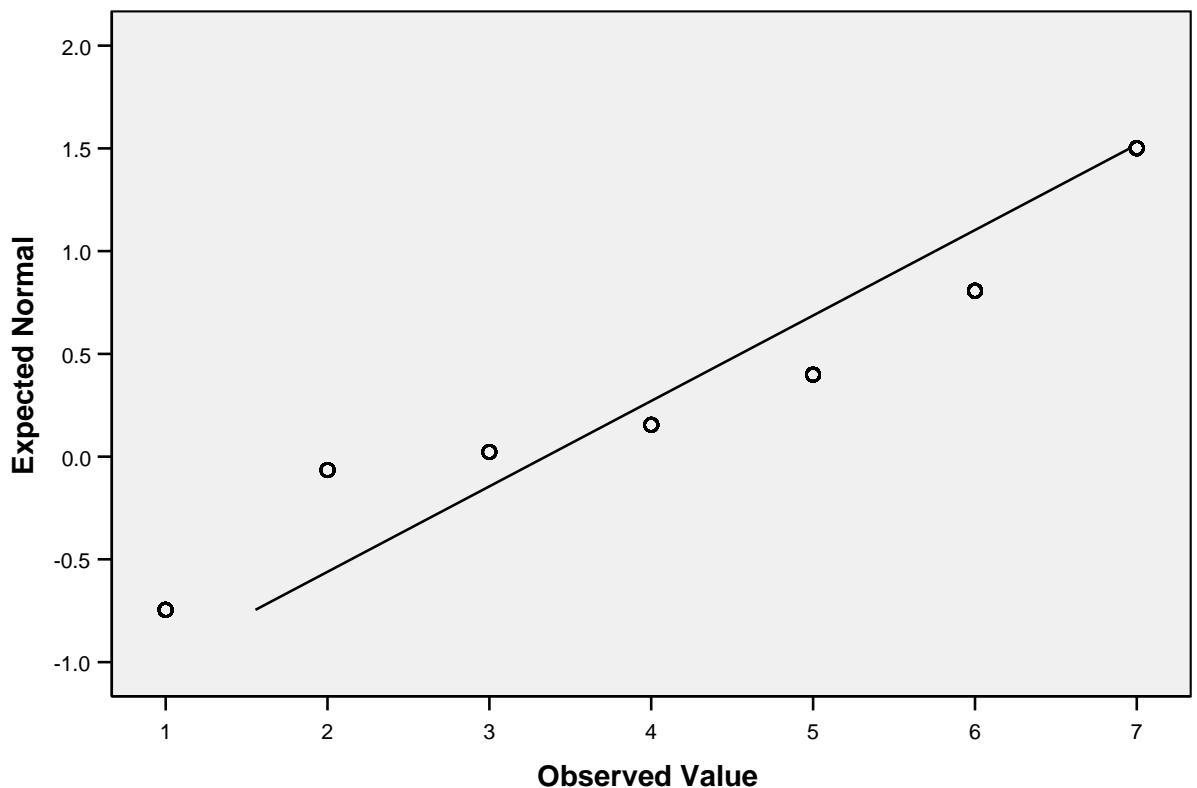
Normal Q-Q Plot of Stress requiring treatment



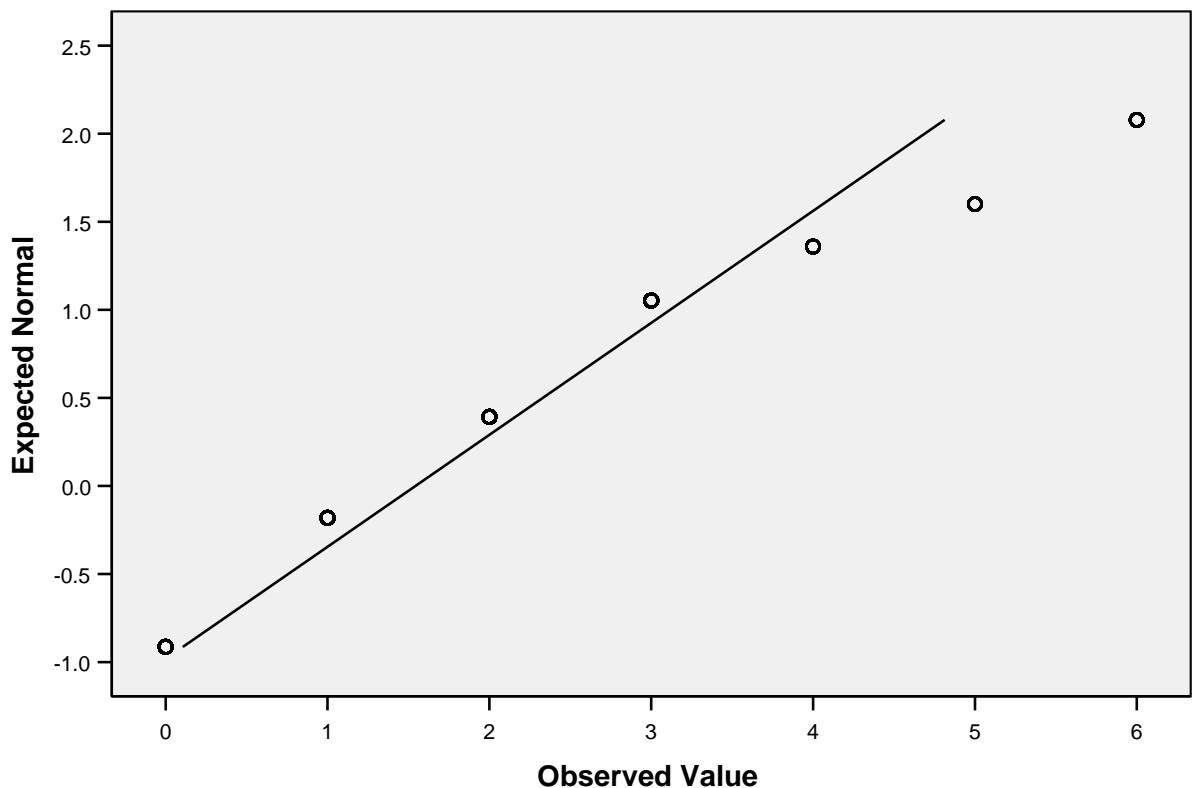
Normal Q-Q Plot of Mental health leave



Normal Q-Q Plot of Helplessness over past decade

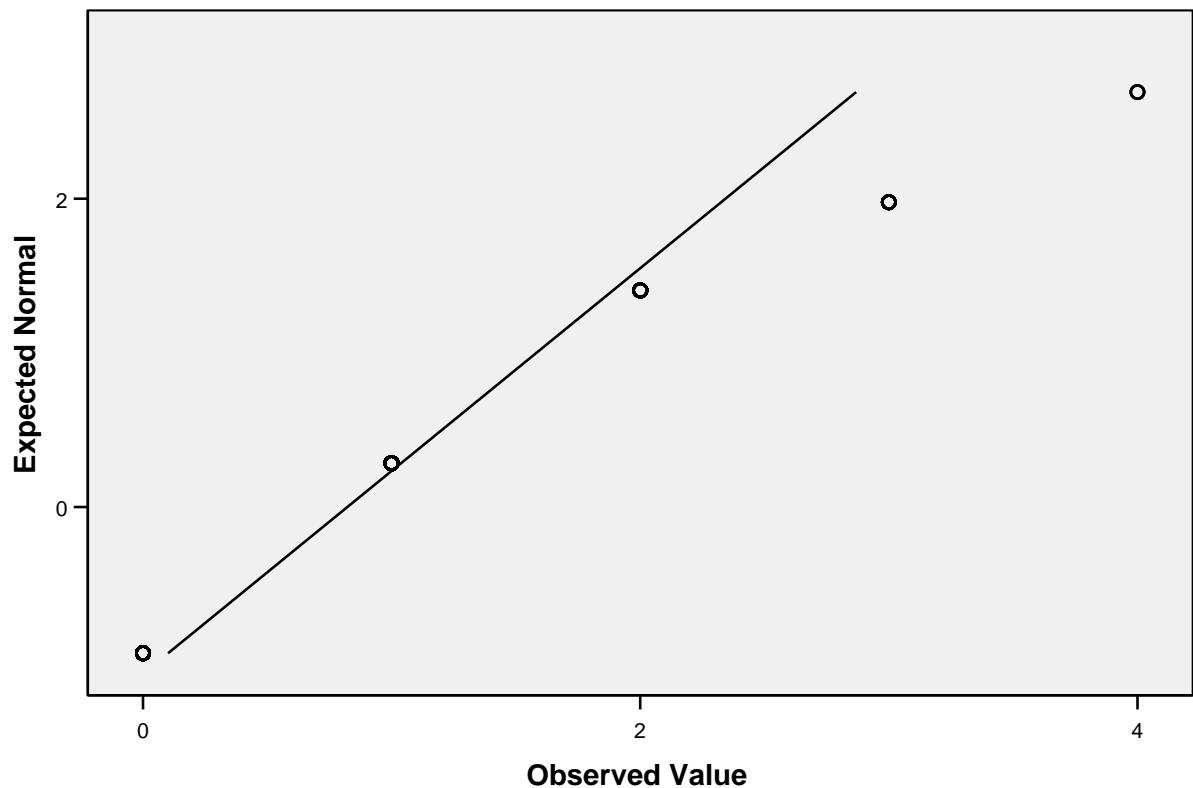


Normal Q-Q Plot of Length of depression

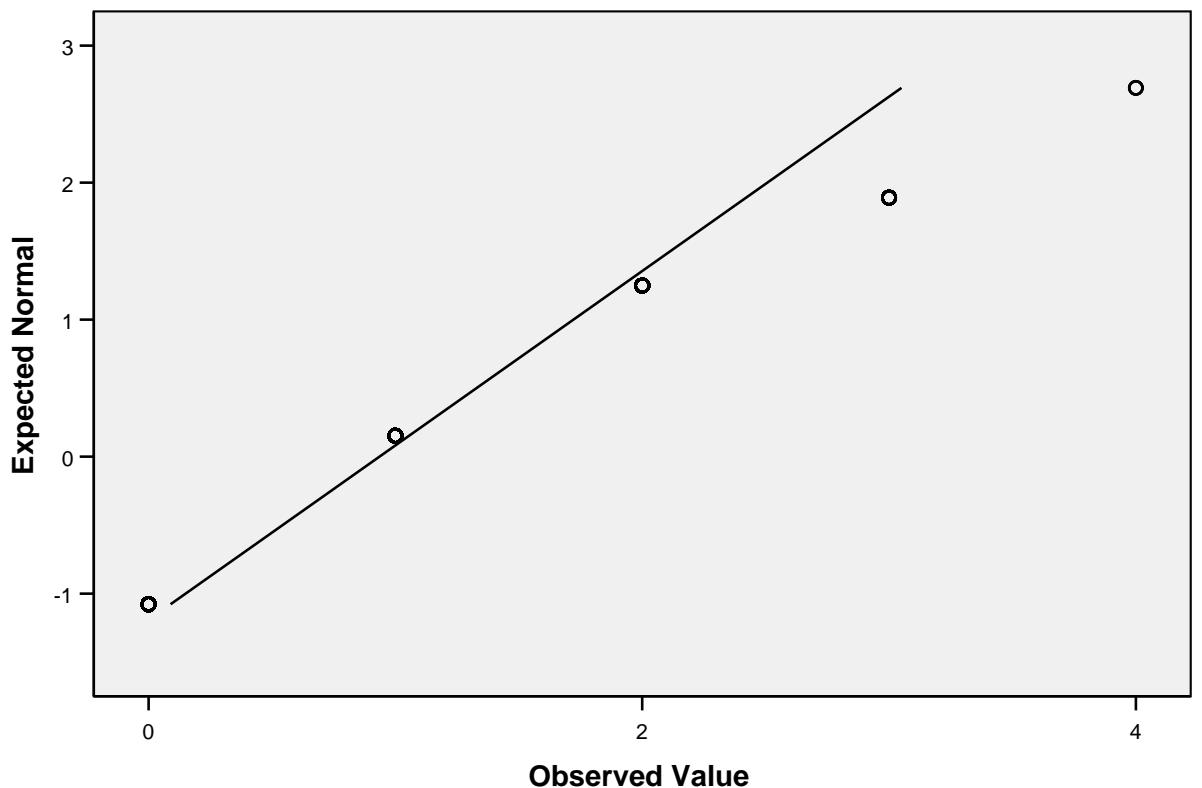


Job Satisfaction Subscale

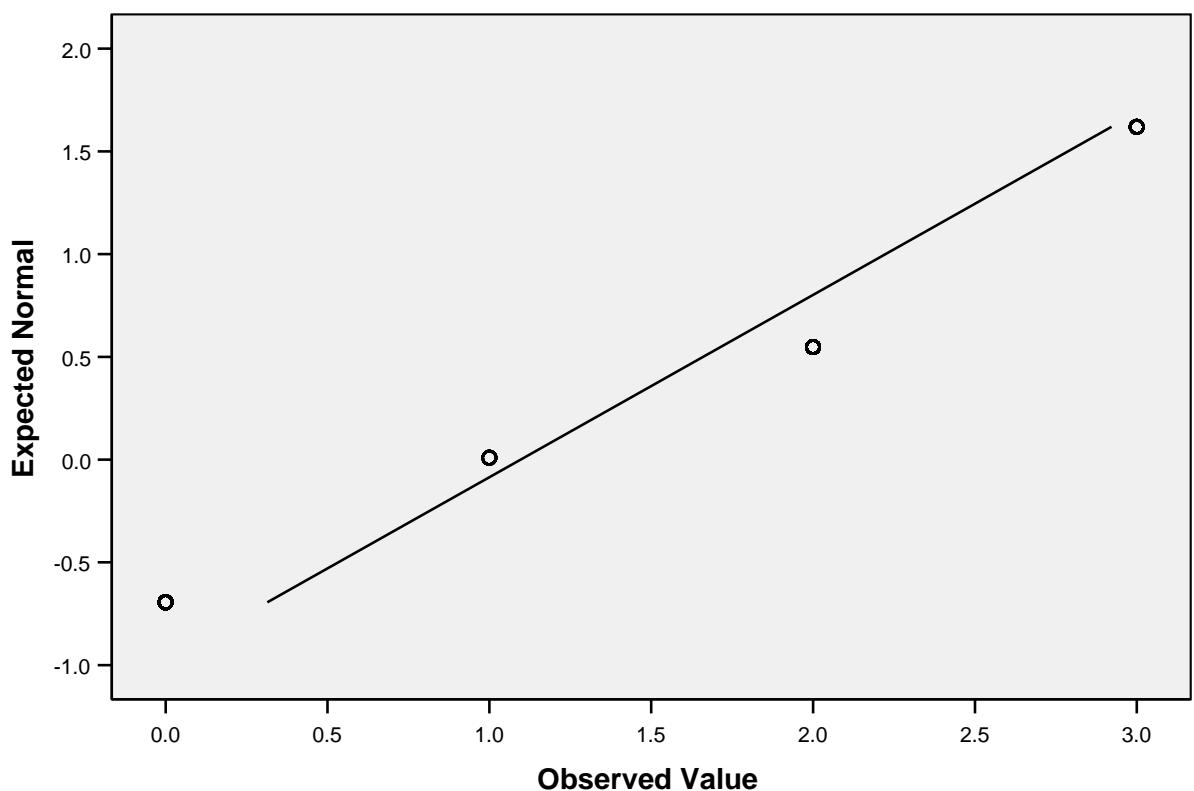
Normal Q-Q Plot of Suited to work



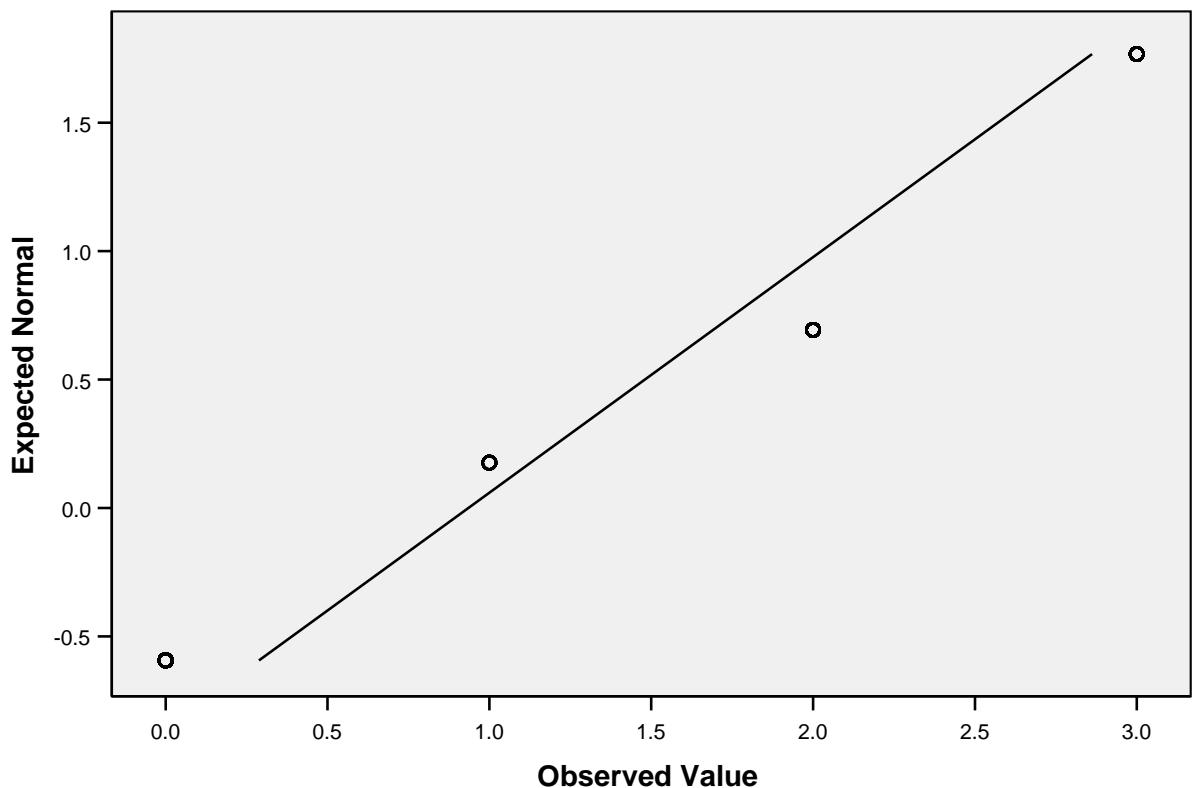
Normal Q-Q Plot of Enjoy work



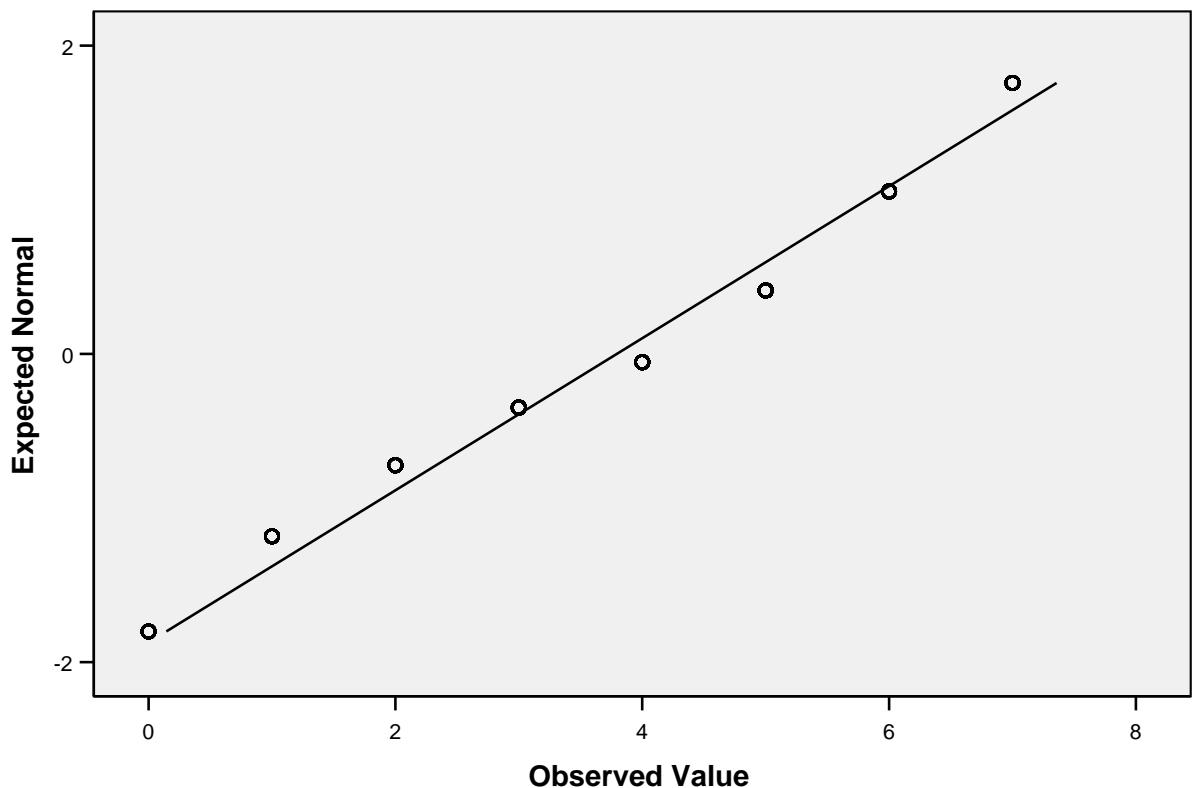
Normal Q-Q Plot of Change area of practice



Normal Q-Q Plot of Like to leave professional discipline

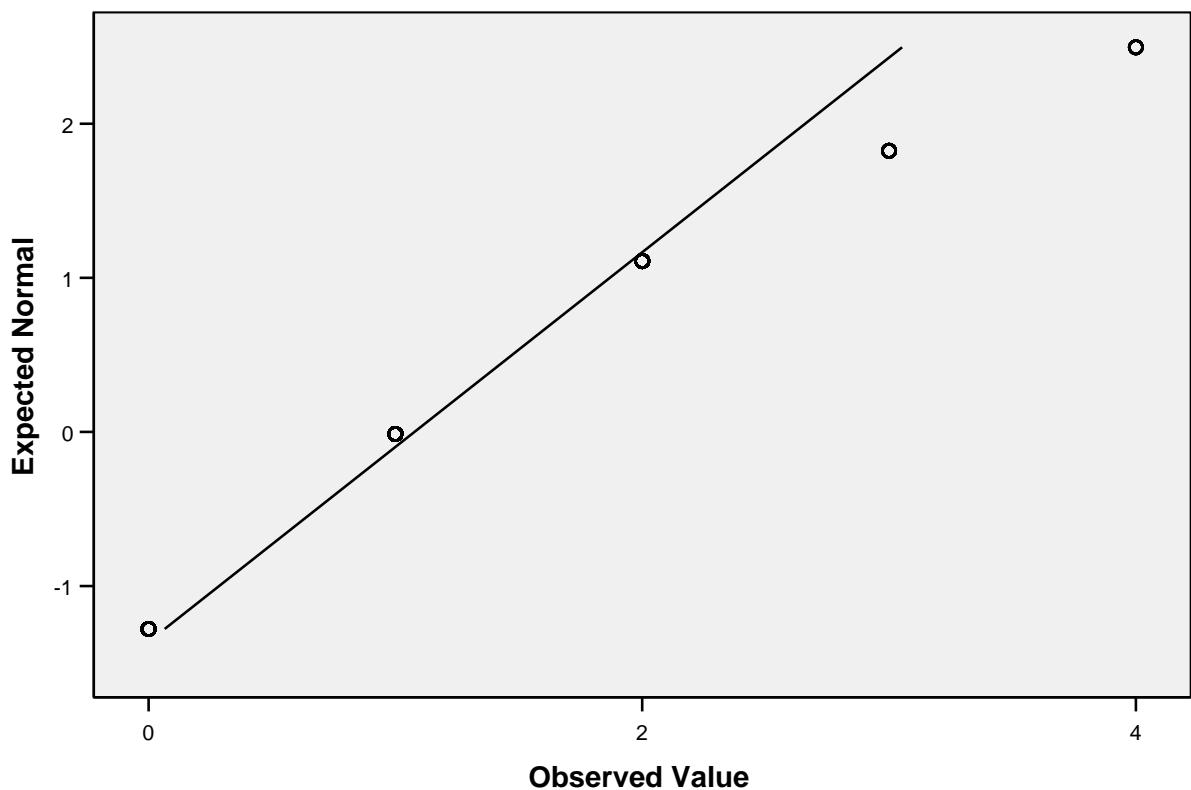


Normal Q-Q Plot of Job dissatisfaction

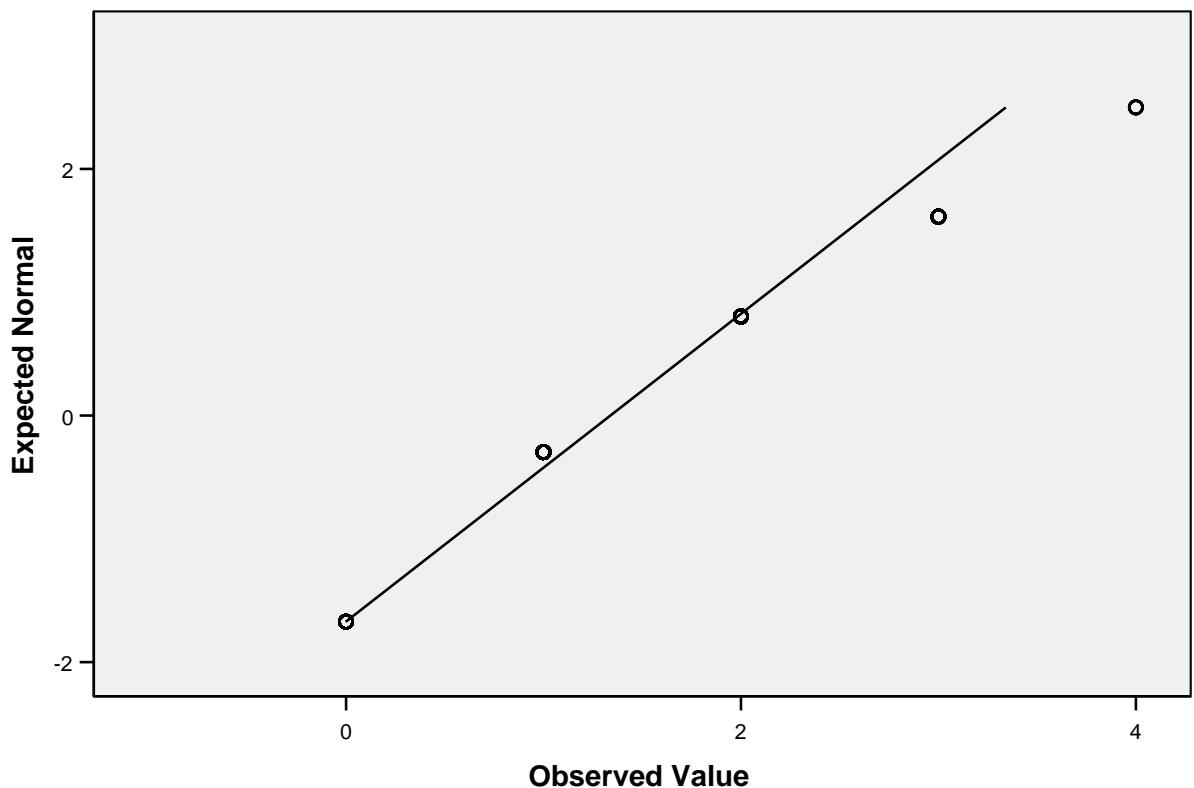


Exhaustion Subscale

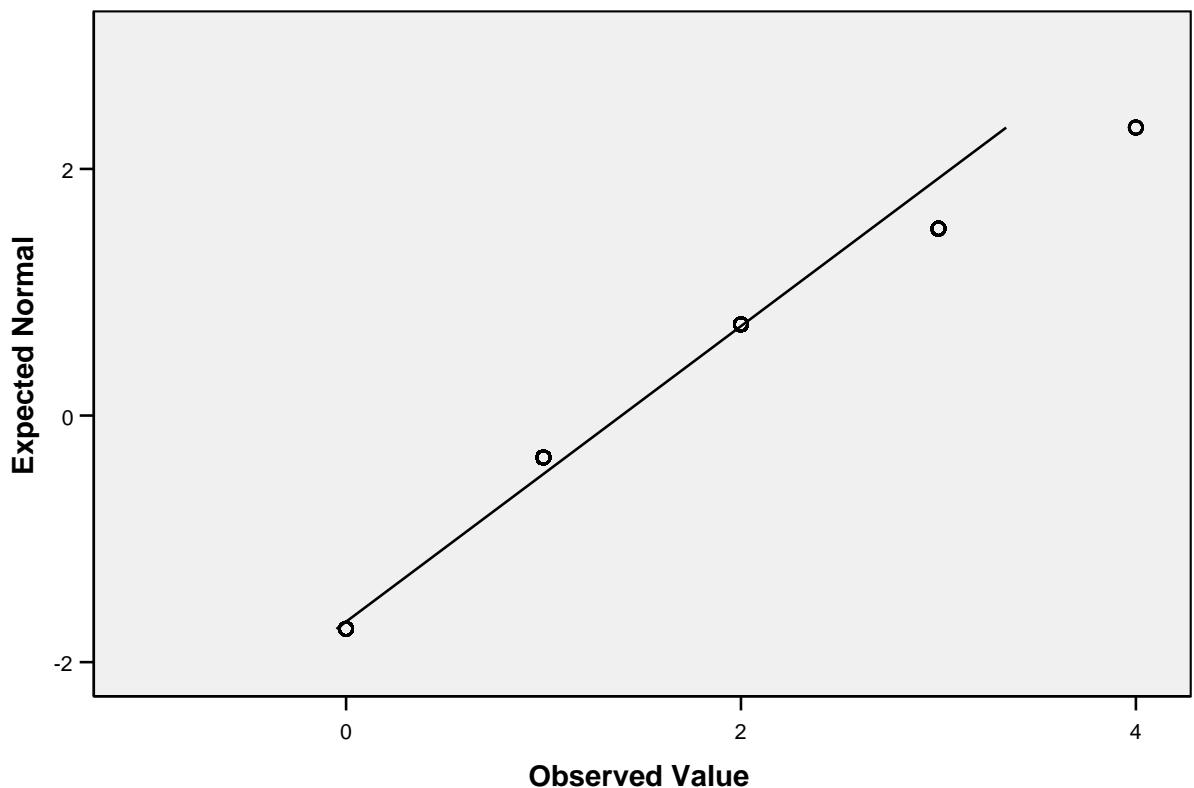
Normal Q-Q Plot of Apathy



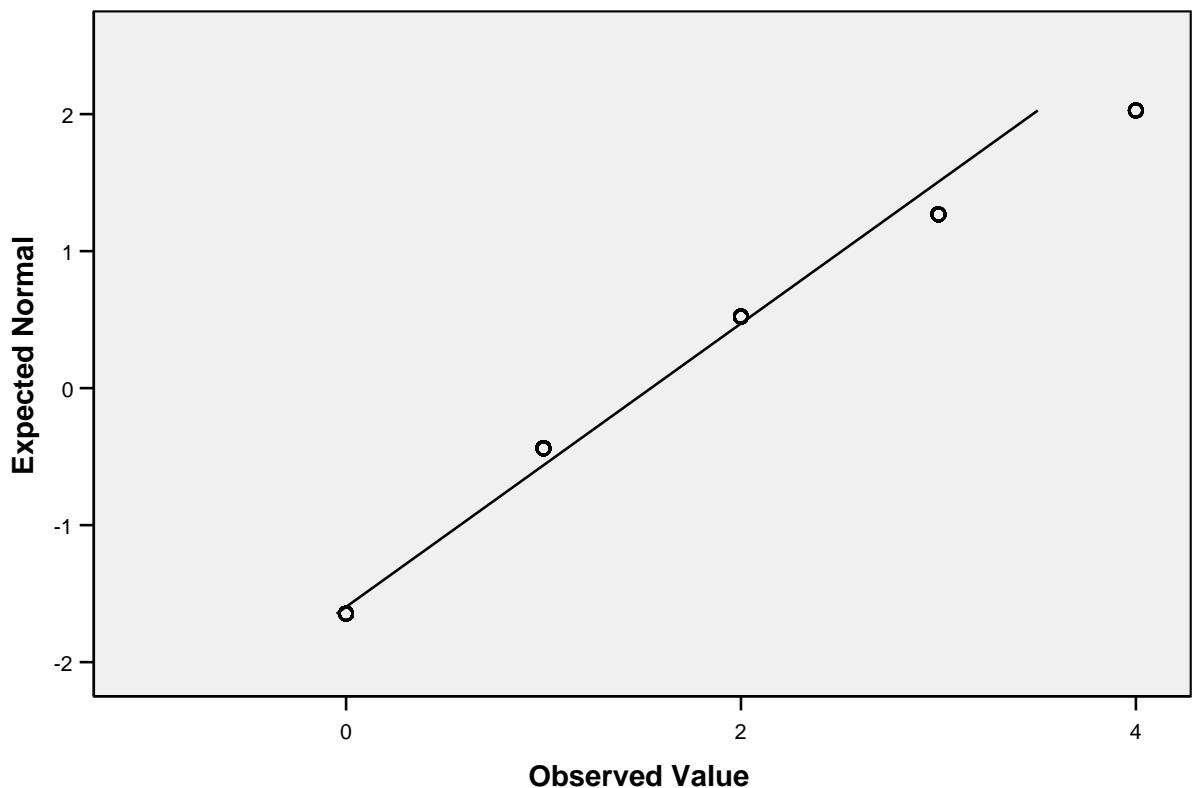
Normal Q-Q Plot of Low morale



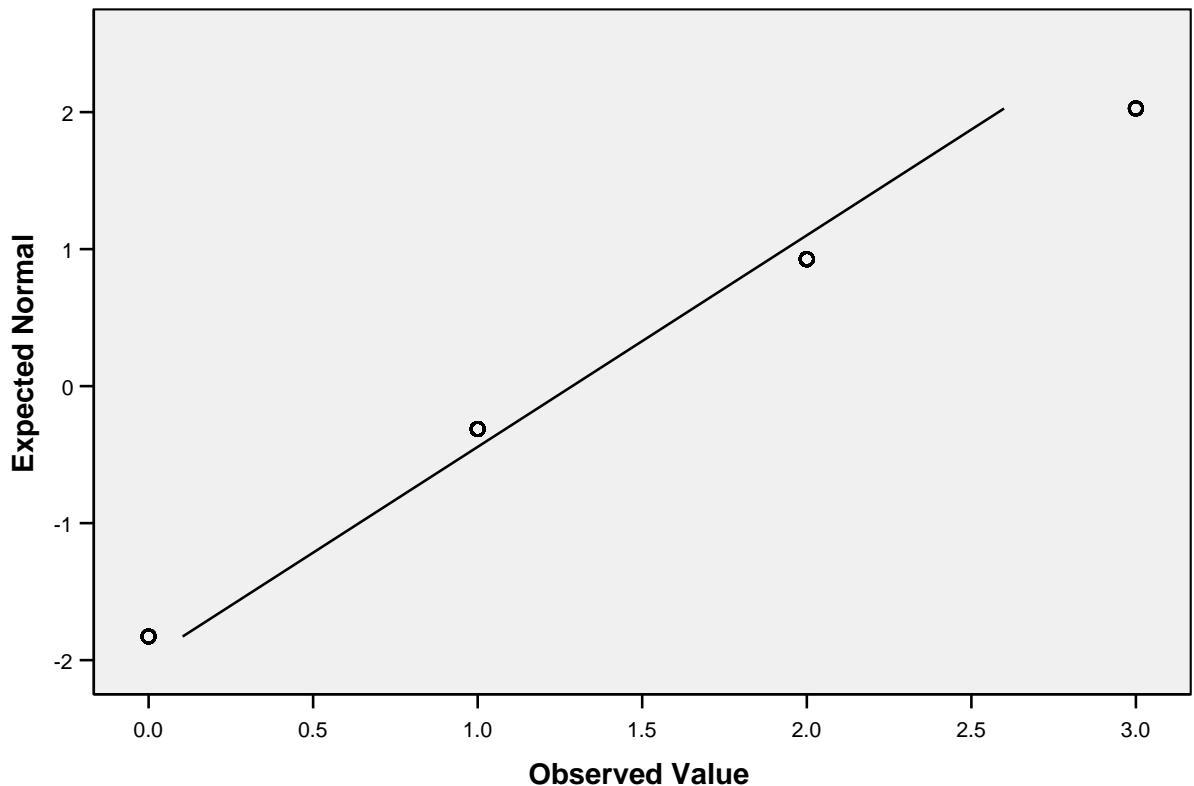
Normal Q-Q Plot of Powerlessness



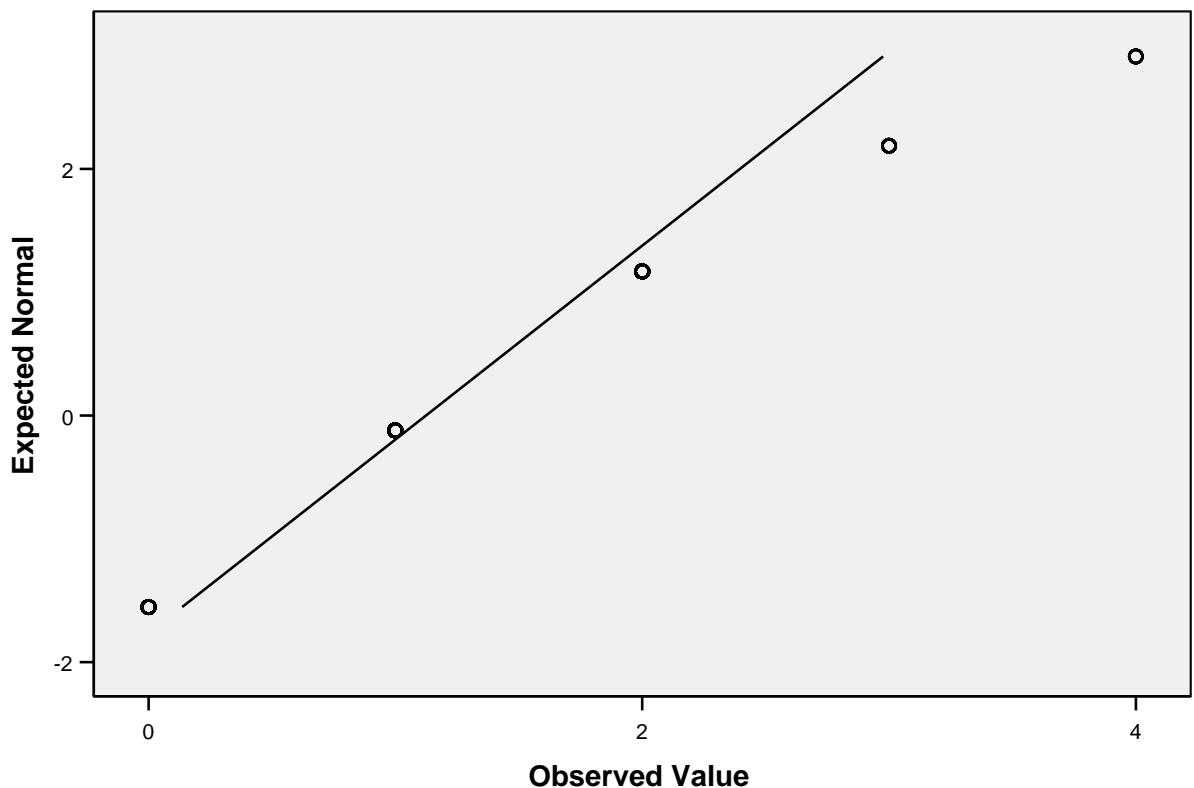
Normal Q-Q Plot of Feeling undervalued



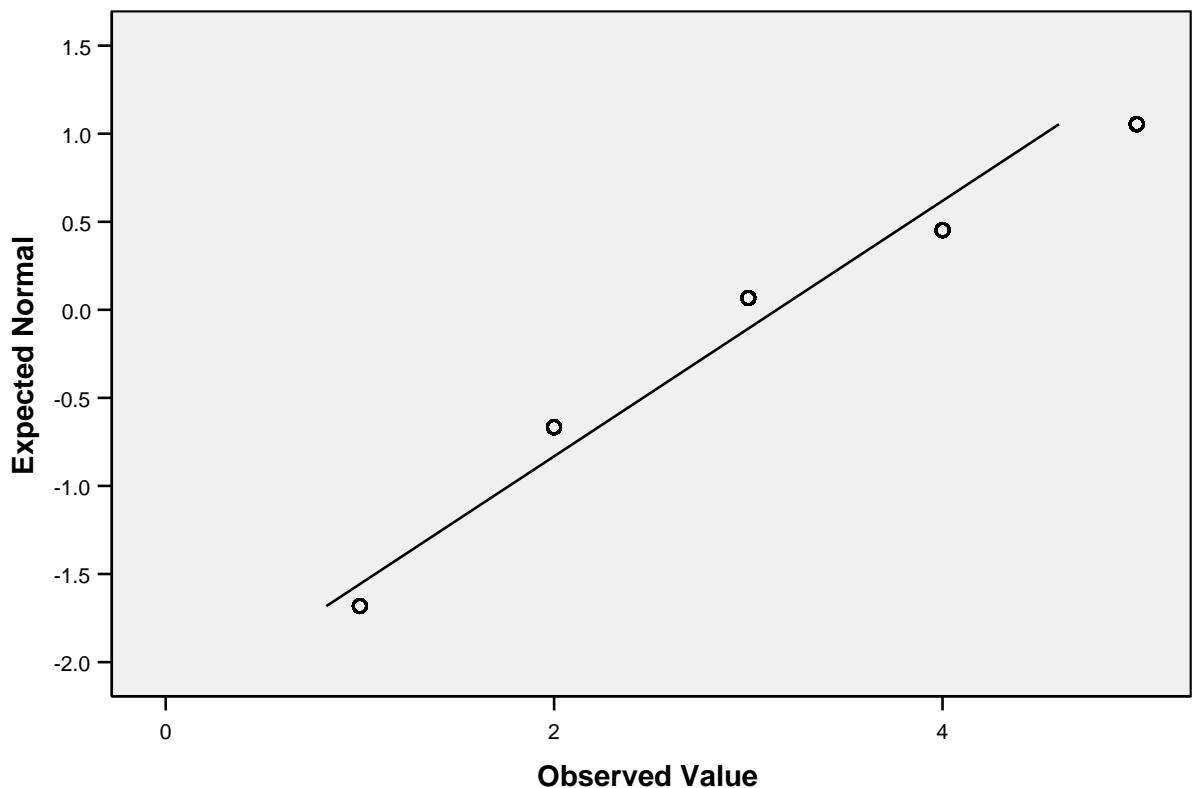
Normal Q-Q Plot of Feeling overwhelmed



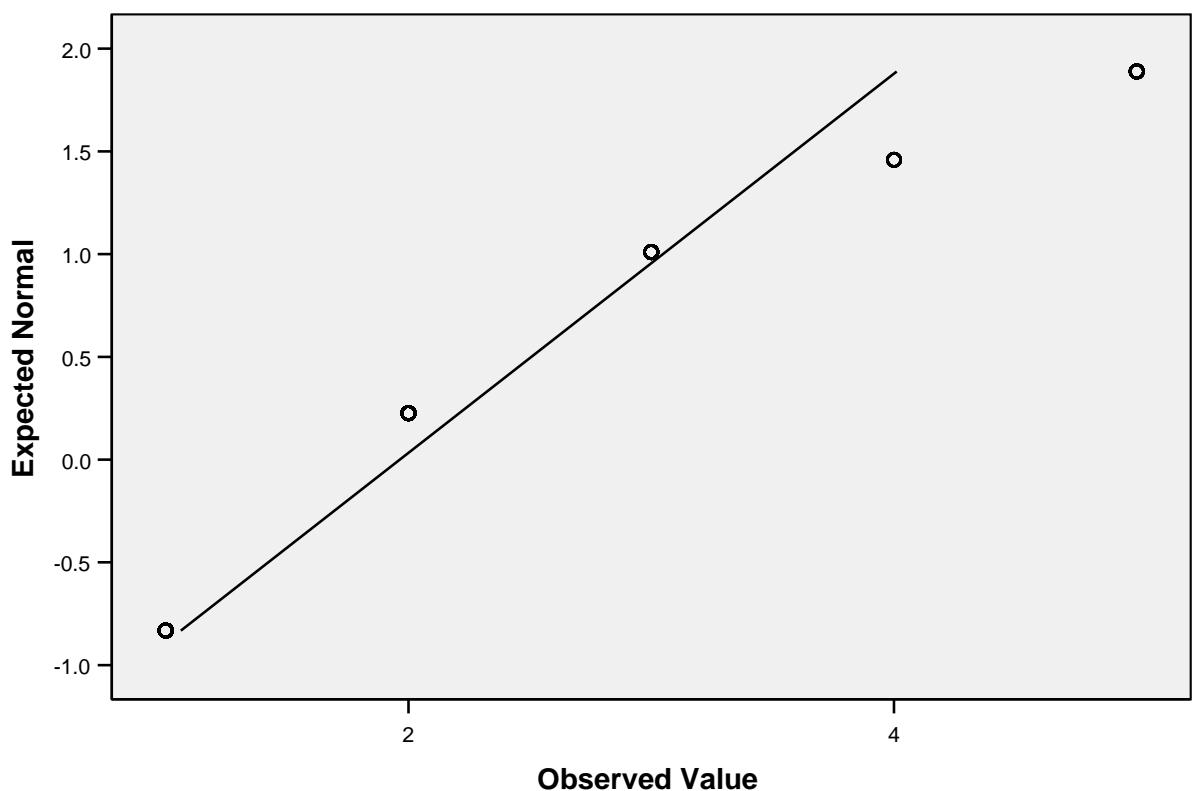
Normal Q-Q Plot of Feelings of incompetence



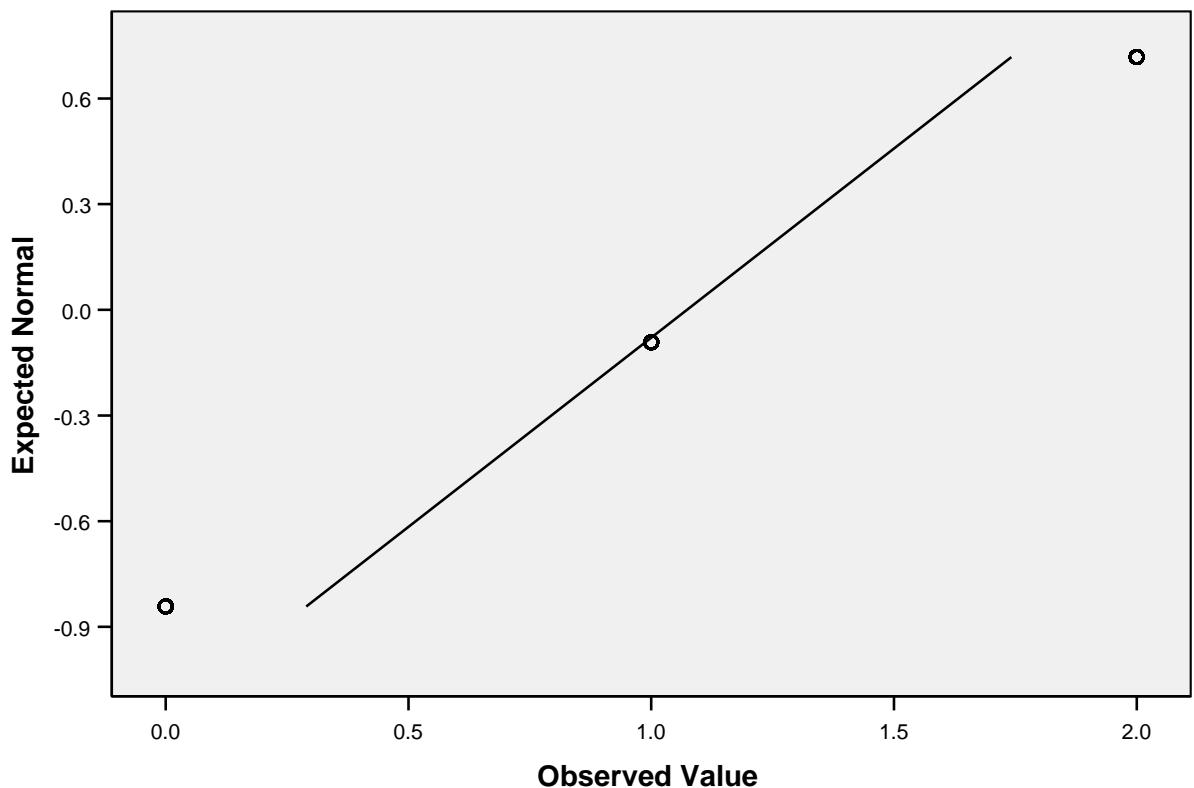
Normal Q-Q Plot of Feeling fatigued



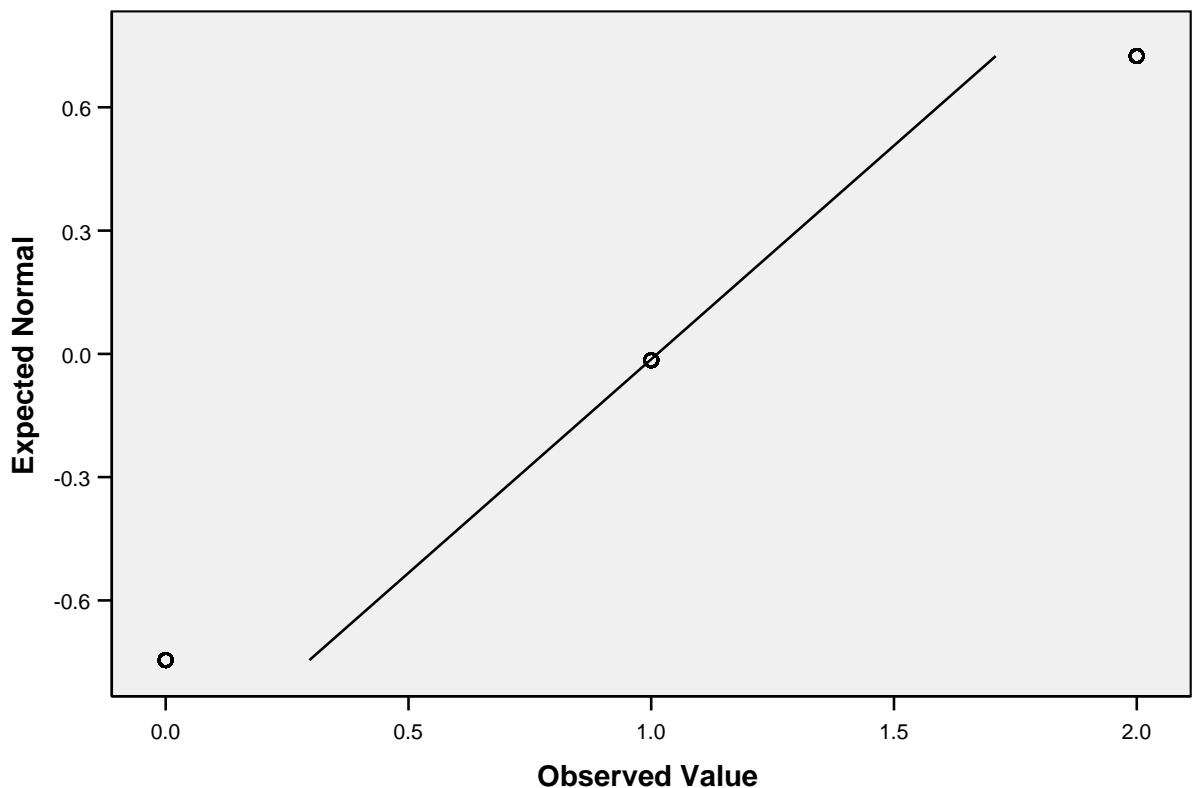
Normal Q-Q Plot of Feeling emotionally drained



Normal Q-Q Plot of Loss of empathy for colleagues

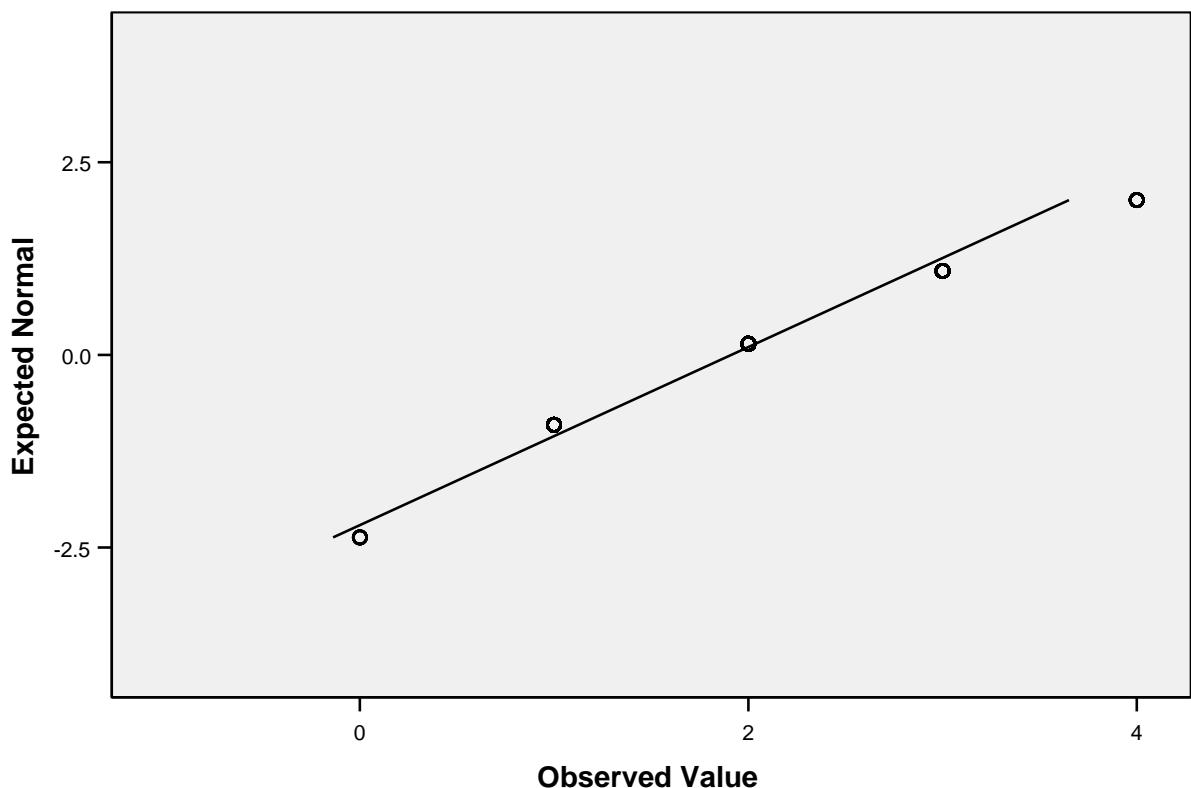


Normal Q-Q Plot of Loss of empathy for clients

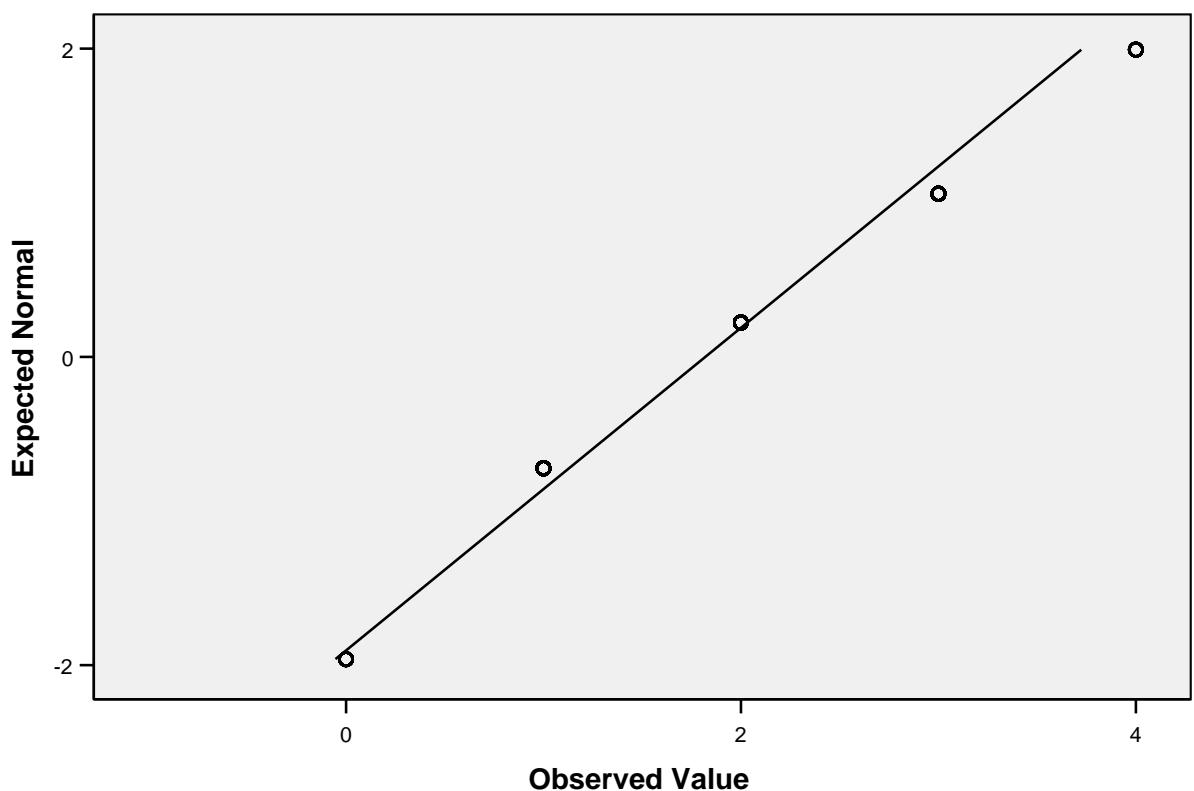


Pressure and Motivation Subscale

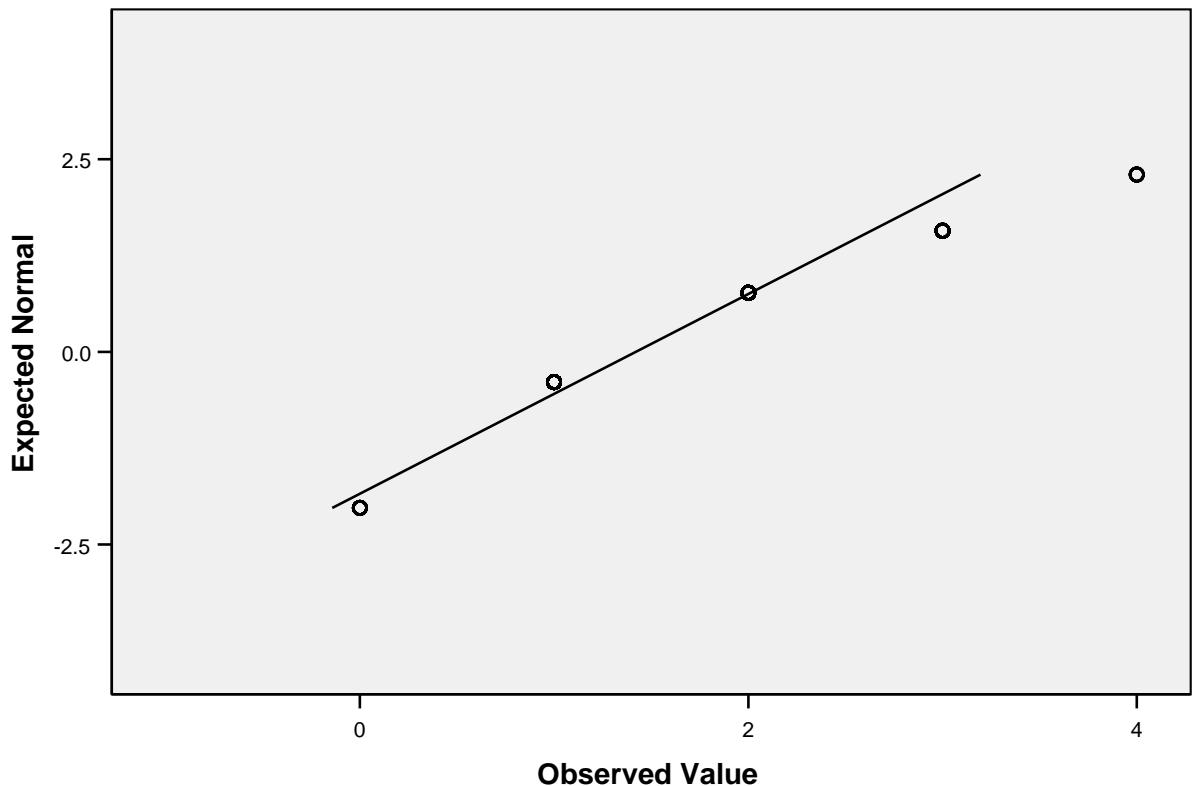
Normal Q-Q Plot of Achieving more in less time



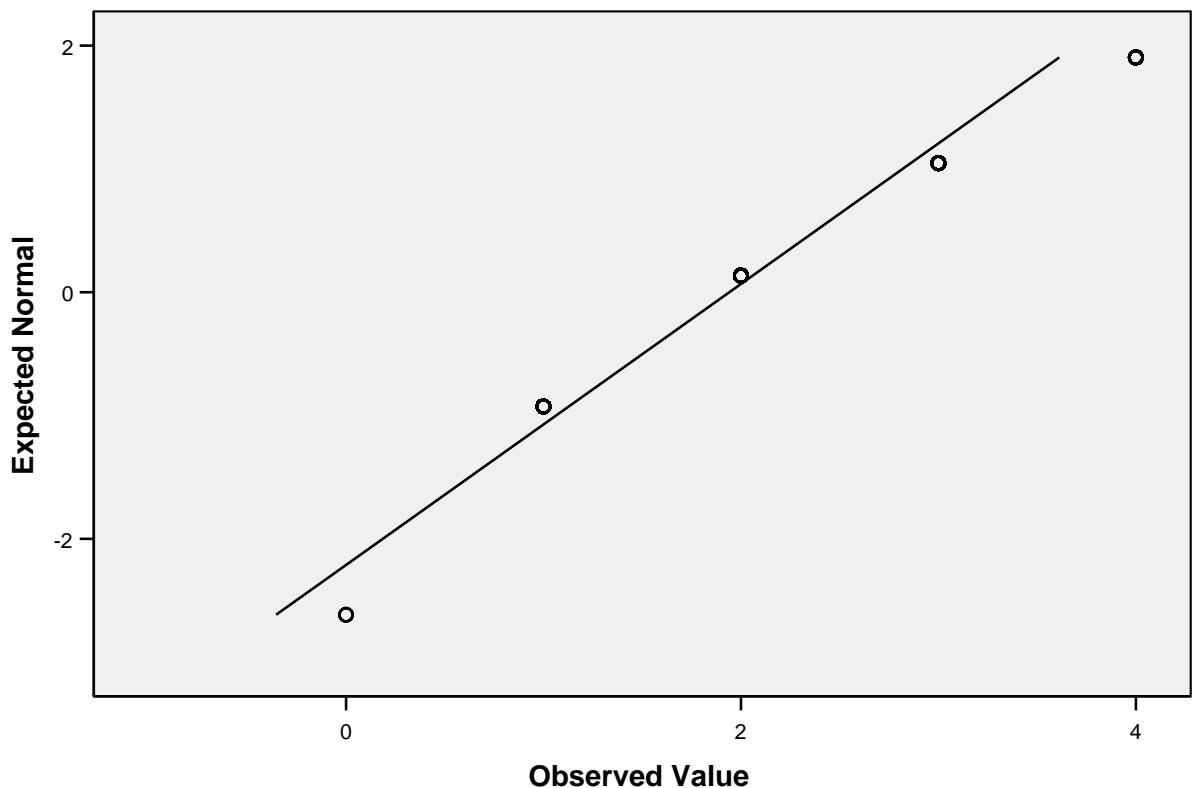
Normal Q-Q Plot of Unreasonable expectations



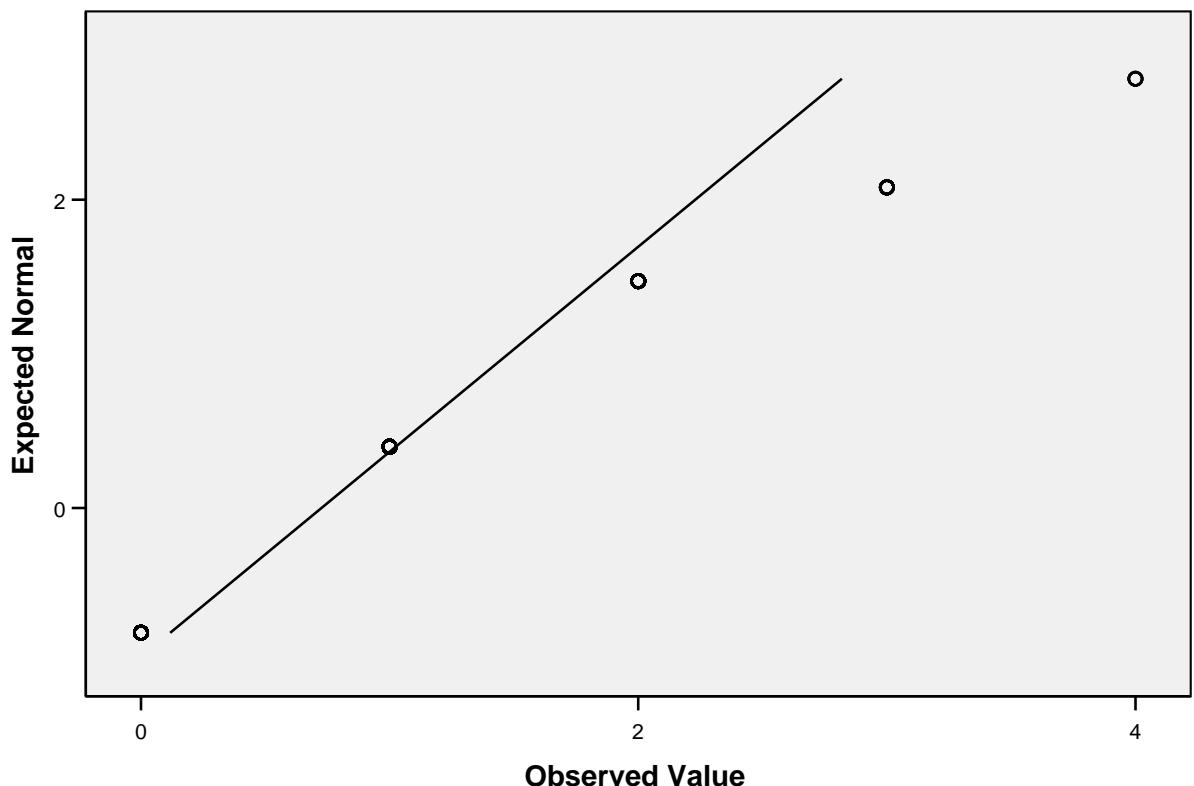
Normal Q-Q Plot of Irritability



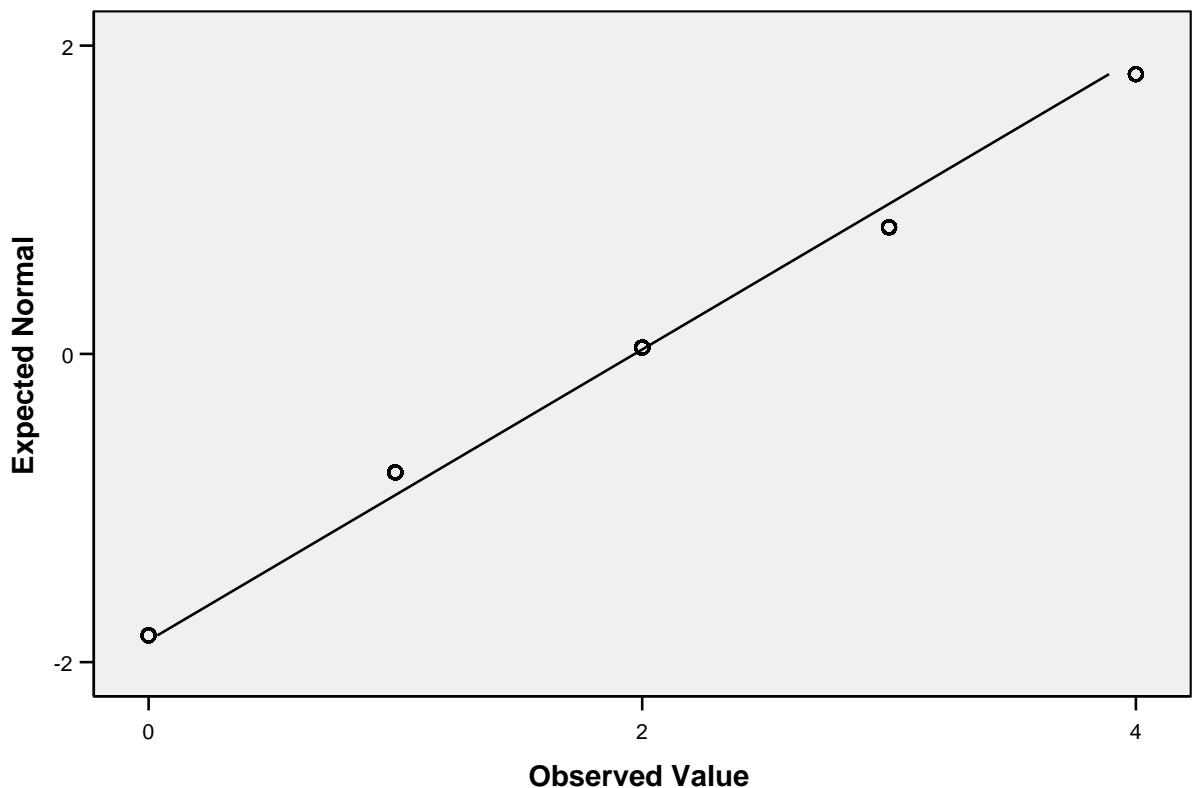
Normal Q-Q Plot of Pushed for time



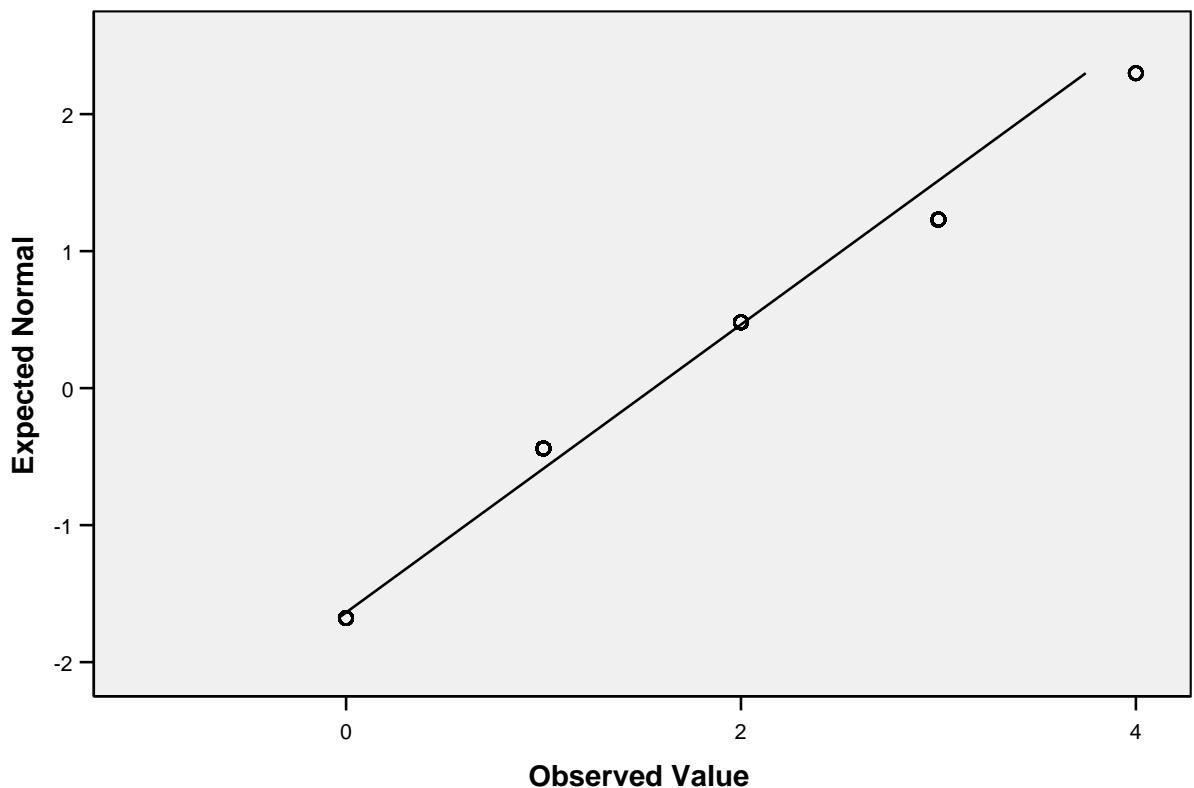
Normal Q-Q Plot of Difficulty slowing down



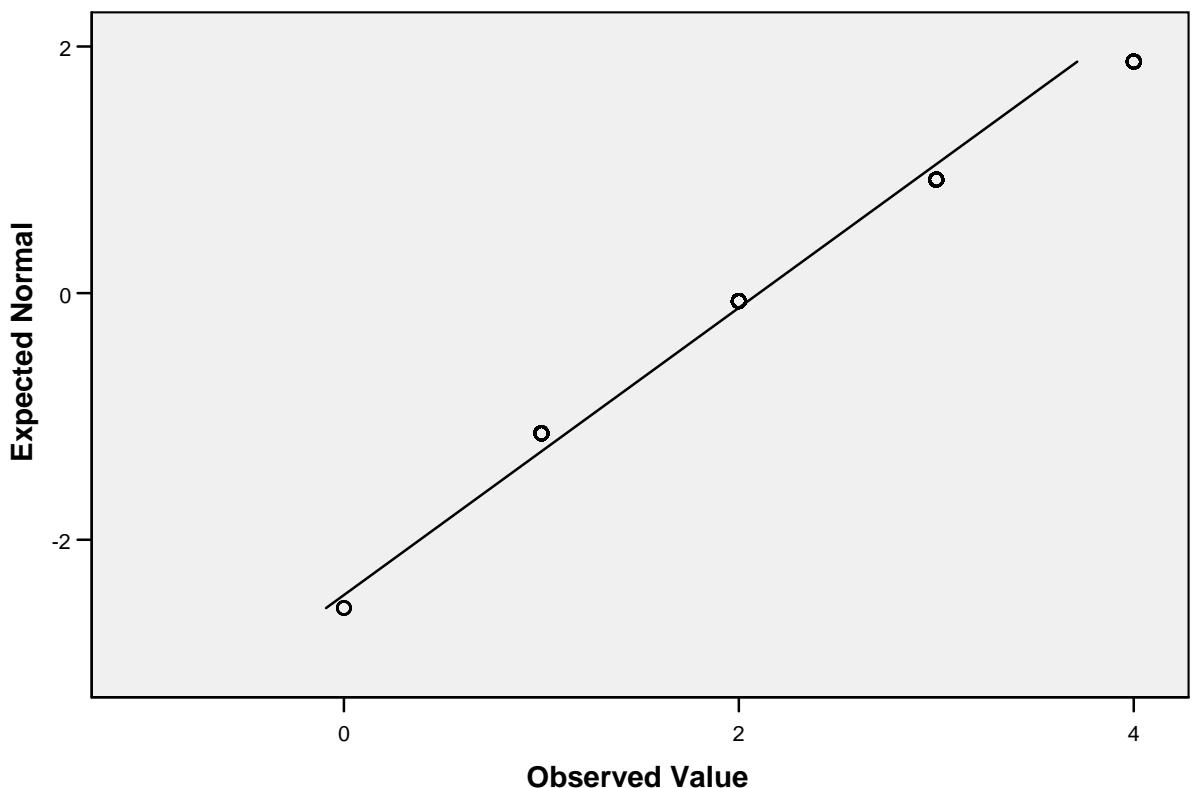
Normal Q-Q Plot of Working at high performance



Normal Q-Q Plot of Keyed up



Normal Q-Q Plot of Multi-tasking



Appendix 9 Cronbach's alpha reliability on subscales and themes following factor analysis

Subscale- Work Environment- Occupational stress

Overall Cronbach's α reliability- 0.759		
	Correlations between variables	Cronbach's α if variable deleted
Frequency of stress	0.555	0.711
Time management- workload	0.684	0.663
Rushing to complete tasks	0.649	0.677
Finishing work late	0.451	0.746
Organisational support	0.384	*0.781

*larger than overall Cronbach's α reliability

Subscale- Psychosocial Effects- Stress related to ill health

Overall Cronbach's α reliability- 0.794		
	Correlations between variables	Cronbach's α if variable deleted
Experiencing increased anxiety	0.540	0.766
Sleeplessness over past decade	0.612	0.754
Depression over past decade	0.617	0.754
Sleeplessness over past week	0.525	0.781
Headaches requiring analgesia	0.322	0.794
Stress requiring treatment	0.503	0.774
Mental health leave	0.340	0.791
Helplessness over past decade	0.452	0.785
Length of depression	0.595	0.761

Subscale- Job Satisfaction- Job Compatibility

Overall Cronbach's α reliability- 0.681		
	Correlations between variables	Cronbach's α if variable deleted
Suited to work	0.429	0.650
Enjoys work	0.541	0.618
Wanting to change area of practice	0.525	0.595
Wanting to leave professional discipline	0.526	0.597
Job dissatisfaction	0.439	*0.719

*larger than overall Cronbach's α reliability

Subscale- Exhaustion- Prolonged exposure to stress Theme- Burnout

Overall Cronbach's α reliability- 0.793		
	Correlations between variables	Cronbach's α if variable deleted
Apathy	0.471	0.775
Low morale	0.640	0.757
Powerlessness	0.657	0.754
Feeling undervalued	0.569	0.762
Feeling overwhelmed	0.521	0.773
Feelings of incompetence	0.472	0.777
Feeling emotionally drained	0.531	0.767
Feeling fatigued	0.393	0.796
Loss of empathy for colleagues	*0.296	**0.795
Loss of empathy for clients	0.327	0.792

*less than 0.3 **larger than overall Cronbach's α reliability

Subscale-

Pressure and Motivation- Work behaviours such as self-imposed work pressure and motivation Theme- Individual responses

Overall Cronbach's α reliability- 0.772		
	Correlations between variables	Cronbach's α if variable deleted
Achieving more in less time	0.576	0.730
Unreasonable expectations	0.562	0.731
Irritability	0.433	0.754
Pushed for time	0.583	0.728
Difficulty slowing down	0.371	0.763
Working at high performance	0.351	*0.773
Keyed up	0.487	0.745
Multi-tasking	0.445	0.752

*larger than overall Cronbach's α reliability

Theme- Stress

Overall Cronbach's α reliability- 0.843		
	Correlations between variables	Cronbach's α if variable deleted
Frequency of stress	0.573	0.835
Time management- workload	0.442	0.838
Rushing to complete tasks	0.461	0.837
Finishing work late	*0.236	0.843
Organisational support	0.448	0.836
Experiencing increased anxiety	0.574	0.828
Sleeplessness over past decade	0.565	0.829
Depression over past decade	0.586	0.827
Sleeplessness over past week	0.520	0.835
Headaches requiring analgesia	0.345	0.840
Stress requiring treatment	0.530	0.832
Mental health leave	0.376	0.838
Helplessness over past decade	0.417	0.842
Length of depression	0.589	0.828
Suited to work	*0.281	0.842
Enjoys work	0.371	0.839
Wanting to change area of practice	0.383	0.838
Wanting to leave professional discipline	0.382	0.838
Job dissatisfaction	0.531	0.831

*less than 0.3

All Subscales- Calculated on Overall Addition of Scores for Subscales

Overall Cronbach's α reliability- 0.744		
	Correlations between subscales	Cronbach's α if subscale deleted
Work environment (Stress)	0.623	0.706
Psychosocial effects (Stress)	0.636	0.730
Job satisfaction (Stress)	0.508	0.710
Exhaustion (Burnout)	0.725	0.619
Pressure and motivation (Individual responses)	0.427	0.728

Appendix 10 Overall Cronbach's reliability

Overall Cronbach's α reliability - 0.875	Correlations between variables	Cronbach's α if variable deleted
Frequency of stress	0.627	0.870
Time management- workload	0.516	0.871
Rushing to complete tasks	0.533	0.871
Finishing work late	#0.294	0.873
Apathy	0.435	0.872
Low morale	0.603	0.870
Powerlessness	0.633	0.869
Feeling undervalued	0.59	0.869
Feeling overwhelmed	0.512	0.872
Feelings of incompetence	0.409	0.873
Treated with respect by clients	#0.255	0.874
Control over work	0.366	0.872
Organisational support	0.467	0.871
Work colleagues unsupportive	#0.227	0.874
Suited to work	#0.222	0.874
Enjoys work	0.304	0.873
Experiencing increased anxiety	0.532	0.869
Sleeplessness over past decade	0.487	0.870
Depression over past decade	0.526	0.869
Sleeplessness over past week	0.544	0.870
Feeling fatigued	0.459	0.870
Headaches requiring analgesia	0.406	0.872
Feeling emotionally drained	0.609	0.869
Wanting to change area of practice	0.335	0.873
Wanting to leave professional discipline	0.334	0.873
Is stress healthy?	#.047	*0.876
Loss of empathy for colleagues	#0.199	0.874
Loss of empathy for clients	#0.287	0.873
Is burnout unavoidable	#-0.175	*0.879
Expect work to be "stress" free	#0.098	0.875
Stress requiring treatment	0.529	0.869
Job dissatisfaction	0.558	0.868
Mental health leave	0.358	0.872
Helplessness over past decade	0.372	0.874
Length of depression	0.526	0.869
Length of holiday	#-.014	*0.880
Prefers working independently	#.014	*0.877
Achieving more in less time	0.327	0.873
Unreasonable expectations	0.425	0.872
Irritability	0.383	0.872
Pushed for time	0.471	0.871
Difficulty slowing down	0.345	0.873
Working at high performance	#0.181	0.875
Arriving early for appointments	#0.124	*0.876
Reporting sick if unwell	#.069	*0.876
Continuing on at work if unwell	#.089	*0.876
Motivated by controlling environment	#0.164	0.875
Keyed up	0.388	0.872
Multi-tasking	#0.293	0.873
Constantly looking for challenges	#0.139	0.875
Commitment to work	#-0.112	*0.878
Reactions when irritable	#-.05	*0.877

less than 0.3

*larger than overall Cronbach's α reliability

Appendix 11 Other variables relating to individual responses to stress and burnout not included in subscales

Question deemed unreliable by work environment subscale

The following question was removed from the work environment subscale as the variable showed a much higher value (0.759) compared to the overall reliability of 0.728. Following removal of this question the overall reliability for the remaining five questions for the work environment subscale increased to 0.759. The correlations between variables was also much less than 0.3, being 0.188.

The majority (83.1%) of nurses and midwives in this sample indicated that they never or occasionally felt unsupported by their colleagues (Table 1). For 16.9 per cent of this sample, unsupportive colleagues were a problem.

Table 1 Finding Work Colleagues Unsupportive

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	110	357	64	25	6	562
Percentage	19.6	63.5	11.4	4.4	1.1	100

Reliable questions

The following two reliable questions were not included in the original pilot study's subscales.

The majority (65.8%) of this sample were treated with respect by their patients most of the time (Table 2).

Table 2 Respected by Patients

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	0	30	108	369	54	561
Percentage	0.0	5.3	19.3	65.8	9.6	100

Nearly two-fifths (38.3%) of the sample never or occasionally felt as though they had control over their work (Table 3).

Table 3 Control over Work

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	38	177	117	212	18	562
Percentage	6.8	31.5	20.8	37.7	3.2	100

Unreliable questions from stress and burnout section of questionnaire

Overall reliability of the questionnaire was assessed and finalised by Cronbach's alpha, (α) on all questions for the total questionnaire (Appendix 10) and each of the five subscales (Appendix 9) for this sample of 562 nurses and midwives. Even though 12 out of 52 questions were unreliable, it was believed that these questions could provide important information. Acceptable levels are 0.7 or higher. To determine reliability, the corrected-item correlations are correlations between each individual item and the overall total score from the questionnaire. These correlations should be at least 0.3. With bigger sample sizes, smaller correlations are acceptable. If there are very low correlation coefficients, (which the following questions demonstrate) these items do not correlate with the total scale overall. If values for each question are greater than the alpha (α) level overall, these items are deemed unreliable and may then be deleted to improve reliability (Field, 2005).

Following removal of the following question from the total questionnaire, the overall reliability increased from 0.875 to 0.876. The corrected-item correlation was also much less than 0.3 (0.047). The majority (73.8%) of nurses and midwives thought that a certain amount of stress was healthy (Table 4).

Table 4 Is Stress Healthy?

Responses	Yes	No	Unsure	Total
Number	411	69	77	557
Percentage	73.8	12.4	13.8	100

Following removal of the following question the overall reliability increased from 0.875 to 0.879. The corrected-item correlation was also much less than 0.3 (0.175). There was almost an equal number of nurses and midwives answering ‘yes’ (40.8%) and ‘no’ (38.9%) to whether “burnout” was unavoidable in their job (Table 5).

Table 5 Is “Burnout” Unavoidable?

Responses	Yes	No	Unsure	Total
Number	227	216	113	556
Percentage	40.8	38.9	20.3	100

For the following question, the corrected-item correlation was much less than 0.3 (0.098), even though the overall reliability (0.875) would have been the same if the question was removed. The majority (89.8%) of nurses and midwives did not expect a “stress” free work environment (Table 6).

Table 6 Expecting Work Environment to be “Stress” Free

Responses	Yes	No	Unsure	Total
Number	38	502	19	559
Percentage	6.8	89.8	3.4	100

Following removal of the following question the overall reliability increased from 0.875 to 0.88. The corrected-item correlation was also much less than 0.3 (-0.014). The majority (71.1%) of this samples’ length of holiday was two or three weeks or less over the past year (Table 7).

Table 7 Length of Holiday over Past Year

Responses	Numbers	Percentage
For 7 to 10 weeks	28	5.0
For 5 or 6 weeks	42	7.5
For a month	92	16.4
For 2 or 3 weeks	283	50.5
For a week	69	12.3
For 3 to 5 days	22	3.9
For 2 days	3	0.6
For a day	2	0.4
No holiday	19	3.4
Total	560	100

Following removal of the following question the overall reliability increased from 0.875 to 0.877. The corrected-item correlation was also much less than 0.3 (0.014). Nearly half (49.8%) of this sample occasionally preferred to work independently (Table 8).

Table 8 Preference for Working Independently

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	150	278	77	47	6	558
Percentage	26.9	49.8	13.8	8.4	1.1	100

Unreliable questions from individual responses section of questionnaire

Following removal of the following question the overall reliability increased from 0.875 to 0.876. The corrected-item correlation was also much less than 0.3 (0.124). Over two-thirds (67.6%) of this sample of nurses and midwives arrived early for appointments either frequently, most of the time or always (Table 9).

Table 9 Arriving Early for Appointments

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	28	154	96	177	107	562
Percentage	5.0	27.4	17.1	31.5	19.0	100

Following removal of the following question the overall reliability increased from 0.875 to 0.876. The corrected-item correlation was also much less than 0.3 (0.069). The majority (74.2%) of nurses and midwives never or occasionally reported sick for work if unwell (Table 10).

Table 10 Reporting Sick if Unwell

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	99	318	45	79	21	562
Percentage	17.6	56.6	8.0	14.1	3.7	100

Following removal of the following question the overall reliability increased from 0.875 to 0.876. The corrected-item correlation was also much less than 0.3 (0.089).

Even though the majority (74.2%) of nurses and midwives would never or occasionally report sick for work if unwell, almost half (49.1%) would never or occasionally continue on at work if unwell (Table 11).

Table 11 Continuing On at Work if Unwell

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	27	249	85	153	48	562
Percentage	4.8	44.3	15.1	27.2	8.5	100

For the following question, the corrected-item correlation was much less than 0.3 (0.164), even though the overall reliability (0.875) would have been the same if the question was removed. The majority (68.9%) of nurses and midwives were either frequently, most of the time or always motivated by wanting to control their work environment (Table 12).

Table 12 Motivated by Controlling Environment

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	31	143	157	178	51	560
Percentage	5.5	25.5	28.0	31.8	9.1	100

For the following question, the corrected-item correlation was much less than 0.3 (0.139), even though the overall reliability (0.875) would have been the same if the question was removed. Almost half (47.6%) of this sample of nurses and midwives never or occasionally look for challenges in their work (Table 13).

Table 13 Looking for Challenges

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	52	215	163	104	28	562
Percentage	9.3	38.3	29.0	18.5	5.0	100

Following removal of the following question the overall reliability increased from 0.875 to 0.878. The corrected-item correlation was also much less than 0.3 (-0.112). The majority (83.2%) of nurses and midwives occasionally or never had a strong commitment to work (Table 14).

Table 14 Strong Commitment to Work

Responses	Never	Occasionally	Frequently	Most of the time	Always	Total
Number	216	252	60	31	3	562
Percentage	38.4	44.8	10.7	5.5	0.5	100

Following removal of the following question the overall reliability increased from 0.875 to 0.877. The corrected-item correlation was also much less than 0.3 (-0.05). The majority (88.4%) of nurses and midwives reacted mildly when irritable (Table 15).

Table 15 Reactions when Irritable

Responses	Numbers	Percentage
Bottle your feelings inside	142	25.7
Verbalise your feelings in a controlled manner	347	62.7
Verbalise your feelings in a disruptive manner	41	7.4
Swear and shout	23	4.2
Total	553	100

Appendix 12 Comparison of study sample with state and national statistics of areas of practice in all jobs

Numbers of nurses / midwives in areas of work, all jobs, study sample, N = 554, Australia, 2005, national sample, N = 201,753, Australia, 2001 and NSW sample, N = 35,664, NSW, 2003

Area of work	Study sample Number	Research sample %	National sample Number	National sample %	NSW sample Number	NSW sample %
Accident & Emergency	38	6.9%	7,531	3.7%	2,341	3.7%
Aged care	15	2.7%	32,218	16%	8,505	15.1%
Community	124	22.4%	8,564	4.2%	3,088	5.2%
Critical care	23	4.2%	10,665	5.3%	2,662	5%
Education	31	5.6%	Not reported	Not reported	Not reported	Not reported
Management	20	3.6%	Not reported	Not reported	Not reported	Not reported
Medical	36	6.5%	20,462	10.1%	4,918	8.8%
Midwife	309	55.8%	13,865	6.9%	3,713	6.4%
Neonatal	80	14.4%	Not reported	Not reported	628	1%
Oncology	5	0.9%	3,685	1.8%	937	1.2%
Operating Theatre / Recovery	18	3.2%	15,256	7.6%	4,552	7.7%
Surgical	36	6.5%	16,175	8%	2,398	4.1%
Other	29	5.2%	7,499	3.7%	1,922	4%

Percentages of critical care areas, accident and emergency, oncology and medical areas are almost the same for the study and NSW Health sample. These areas are very similar for the national sample. Percentages of the midwifery study sample are substantially greater than the NSW Health and national sample. Percentages of neonatal and community areas are greater in the study sample than the NSW Health sample. The percentage of the community study sample is also much larger than the national sample. Percentages of operating theatres, recovery and surgical areas are similar in all samples. Percentages of nurses working in other areas are greater in the NSW Health sample compared to the study and national samples. The percentages of nurses working in the aged care sector are considerably lower in the study sample compared with the NSW Health and national samples.

Appendix 13 Factor analysis

Stress

Subscales- work environment, psychosocial effects and job satisfaction

The first part of factor analysis involved checking for multicollinearity by way of looking at a correlation matrix to determine that the variables correlated fairly well (Tables 1, 2, 3 & 4) (see Chapter 3, section 3.5.4. C. a.). The determinant for these variables was .002 that was greater than .00001 indicating that multicollinearity was not a problem. The following matrices that comprise one large matrix (Tables 1, 2, 3 & 4) showed that the majority of variables were not greater than .05. All of the correlation coefficients were less than 0.9.

Table 1 Correlation Matrix for Observed Data for Theme Stress

	Stress	Time Mgt	Rush for tasks	Finish work late	Org support	Anxiety	Sleeplessness decade	Depression decade	Sleeplessness week
Correlation Incidence of stress	1.000	0.529	0.509	0.289	0.341	0.370	0.317	0.312	0.394
Time management	0.529	1.000	0.650	0.438	0.379	0.269	0.182	0.206	0.265
Rush to complete tasks	0.509	0.650	1.000	0.460	0.304	0.282	0.231	0.244	0.319
Finish work late	0.289	0.438	0.460	1.000	0.199	0.183	0.170	0.099	0.226
Org support	0.341	0.379	0.304	0.199	1.000	0.301	0.226	0.279	0.295
Anxiety	0.370	0.269	0.282	0.183	0.301	1.000	0.492	0.411	0.294
Sleeplessness decade	0.317	0.182	0.231	0.170	0.226	0.492	1.000	0.508	0.542
Depression decade	0.312	0.206	0.244	0.099	0.279	0.411	0.411	1.000	0.380
Sleeplessness week	0.394	0.265	0.319	0.226	0.295	0.294	0.294	0.380	1.000
Sig. (1-tailed) Incidence of stress		.000	.000	.000	.000	.000	.000	.000	.000
Time management	.000		.000	.000	.000	.000	.000	.000	.000
Rush to complete tasks	.000	.000		.000	.000	.000	.000	.000	.000
Finish work late	.000	.000	.000		.000	.000	.000	.011	.000
Org support	.000	.000	.000	.000		.000	.000	.000	.000
Anxiety	.000	.000	.000	.000	.000		.000	.000	.000
Sleeplessness decade	.000	.000	.000	.000	.000	.000		.000	.000
Depression decade	.000	.000	.000	.011	.000	.000	.000		.000
Sleeplessness week	.000	.000	.000	.000	.000	.000	.000	.000	

Determinant = .002

Table 2 Correlation Matrix for Observed Data for Theme Stress

	Headaches	Treatment	Leave	Helplessness	Depression	Suited to work	Enjoy work	Change area	Leave discipline	Dissatisfaction
Correlation Incidence of stress	0.265	0.392	0.239	0.250	0.345	0.107	0.180	0.211	0.213	0.394
Time management	0.190	0.226	0.194	0.172	0.225	0.079	0.143	0.157	0.108	0.341
Rush to complete tasks	0.212	0.265	0.139	0.193	0.265	0.007	0.101	0.141	0.096	0.353
Finish work late	0.159	0.127	- 0.009	0.109	0.118	- 0.051	- 0.038	-0.003	-0.002	0.129
Org support	0.160	0.233	0.146	0.170	0.276	0.177	0.214	0.255	0.184	0.377
Anxiety	0.175	0.332	0.210	0.374	0.346	0.153	0.215	0.206	0.262	0.340
Sleeplessness decade	0.187	0.345	0.185	0.361	0.418	0.160	0.179	0.181	0.187	0.228
Depression decade	0.205	0.345	0.281	0.355	0.584	0.205	0.230	0.198	0.210	0.242
Sleeplessness week	0.325	0.338	0.196	0.220	0.406	0.071	0.068	0.127	0.123	0.277
Sig. (1-tailed) Incidence of stress	.000	.000	.000	.000	.000	.007	.000	.000	.000	.000
Time management	.000	.000	.000	.000	.000	.035	.000	.000	.006	.000
Rush to complete tasks	.000	.000	.001	.000	.000	0.440	.010	.001	.013	.000
Finish work late	.000	.002	0.421	.006	.003	0.122	0.191	0.477	0.482	.001
Org support	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Anxiety	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Sleeplessness decade	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Depression decade	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Sleeplessness week	.000	.000	.000	.000	.000	.051	.059	.002	.002	.000

Determinant = .002

Table 3 Correlation Matrix for Observed Data for Theme Stress

	Stress	Time Mgt	Rush for tasks	Finish work late	Org support	Anxiety	Sleeplessness decade	Depression decade	Sleeplessness week
Correlation									
Headaches	0.265	0.190	0.212	0.159	0.160	0.175	0.187	0.205	0.326
Treatment	0.392	0.226	0.265	0.127	0.233	0.332	0.345	0.345	0.338
Leave	0.239	0.194	0.139	-0.009	0.146	0.210	0.185	0.281	0.196
Helplessness	0.250	0.172	0.193	0.109	0.170	0.374	0.361	0.355	0.220
Depression	0.345	0.225	0.265	0.118	0.276	0.346	0.418	0.584	0.406
Suited to work	0.107	0.079	0.007	-0.051	0.177	0.153	0.160	0.205	0.071
Enjoy work	0.180	0.143	0.101	-0.038	0.214	0.215	0.179	0.230	0.068
Change area	0.211	0.157	0.141	-0.003	0.255	0.206	0.181	0.198	0.127
Leave discipline	0.213	0.108	0.096	-0.002	0.184	0.262	0.187	0.210	0.123
Dissatisfaction	0.394	0.341	0.353	0.129	0.377	0.340	0.228	0.242	0.277
Sig. (1-tailed)									
Headaches	.000	.000	.000	.000	.000	.000	.000	.000	.000
Treatment	.000	.000	.000	.000	.002	.000	.000	.000	.000
Leave	.000	.000	.001		0.421	.000	.000	.000	.000
Helplessness	.000	.000	.000	.000	.006	.000	.000	.000	.000
Depression	.000	.000	.000	.000	.003	.000	.000	.000	.000
Suited to work	.007	.035	0.440	.000	0.122	.000	.000	.000	.000
Enjoy work	.000	.000	.010	.011	0.191	.000	.000	.000	.000
Change area	.000	.000	.001	.000	0.477	.000	.000	.000	.000
Leave discipline	.000	.006	.000	.013	0.482	.000	.000	.000	.000
Dissatisfaction	.000	.000	.000	.000	.001	.000	.000	.000	.000

Determinant = .002

Table 4 Correlation Matrix for Observed Data for Theme Stress

	Headaches	Treatment	Leave	Helplessness	Depression	Suited to work	Enjoy work	Change area	Leave discipline	Dissatisfaction
Correlation Headaches	1.000	0.476	0.112	0.063	0.196	0.005	0.041	0.129	0.117	0.239
Treatment	0.476	1.000	0.257	0.240	0.399	0.124	0.201	0.215	0.183	0.379
Leave	0.112	0.257	1.000	0.228	0.277	0.150	0.183	0.269	0.227	0.262
Helplessness	0.063	0.240	0.228	1.000	0.338	0.084	0.164	0.067	0.143	0.206
Depression	0.196	0.399	0.277	0.338	1.000	0.135	0.145	0.250	0.209	0.323
Suited to work	0.005	0.124	0.150	0.084	0.135	1.000	0.533	0.307	0.328	0.241
Enjoy work	0.041	0.201	0.183	0.164	0.145	0.533	1.000	0.370	0.410	0.337
Change area	0.129	0.215	0.269	0.067	0.250	0.307	0.370	1.000	0.482	0.364
Leave discipline	0.117	0.183	0.227	0.143	0.209	0.328	0.410	0.482	1.000	0.339
Dissatisfaction	0.239	0.379	0.262	0.206	0.323	0.241	0.337	0.364	0.339	1.000
Sig. (1-tailed) Headaches		.000	.005	.073	.000	0.452	0.176	.001	.003	.000
Treatment	.000		.000	.000	.000	.002	.000	.000	.000	.000
Leave	.005	.00		.000	.000	.000	.000	.000	.000	.000
Helplessness	.073	.000	.000		.000	.026	.000	.062	.000	.000
Depression	.000	.000	.000	.000		.001	.000	.000	.000	.000
Suited to work	0.452	.002	.000	.026	.001		.000	.000	.000	.000
Enjoy work	0.176	.000	.000	.000	.000	.000		.000	.000	.000
Change area	.001	.000	.000	.062	.000	.000	.000		.000	.000
Leave discipline	.003	.000	.000	.000	.000	.000	.000	.000		.000
Dissatisfaction	.000	.000	.000	.000	.000	.000	.000	.000	.000	

Determinant = .002

Bartlett's test was highly significant, ($p<0.001$), meaning factor analysis was appropriate for these data (see Chapter 3, section 3.5.4. C. c.). Based on the above results (Tables 1-4), an inspection of these data by way of an anti-image correlation matrix was warranted in order to establish whether any variable running diagonally had a value of at least 0.5 (Tables 5 & 6) (see Chapter 3, section 3.5.4. C. d.). Tables 5 and 6 comprise one large matrix. In this instance the values ranged between 0.785 (headaches and suited to work) and 0.933 (incidence of stress). All off-diagonal variable correlations should be very small, representing partial correlations between the variables (they are for these data) (Tables 5 & 6) (Field, 2005).

Table 5 Correlation Matrix to Assess Suitability for Factor Analysis and Measure of Sampling Adequacy for Stress

Variables	Stress	Time Mgt	Rush for tasks	Finish work late	Org support	Anxiety	Sleeplessness decade	Depression decade	Sleeplessness week
Incidence of stress	- 0.933	-0.243	-0.158	-0.009	-0.040	-0.091	-0.001	-0.004	-0.130
Time management	- 0.243	0.830	0.427	-0.204	-0.172	-0.017	0.042	0.017	0.026
Rush to complete tasks	- 0.158	-0.427	0.851	-0.230	0.021	-0.017	0.012	-0.050	-0.062
Finish work late	- 0.009	-0.204	-0.230	0.855	-0.038	-0.045	-0.052	0.042	-0.050
Org support	- 0.040	-0.172	0.021	-0.038	0.923	-0.090	0.048	-0.075	-0.114
Anxiety	- 0.091	-0.017	-0.017	-0.045	-0.090	0.910	-0.281	-0.101	0.083
Sleeplessness decade	- 0.001	0.042	0.012	-0.052	0.048	-0.281	0.841	-0.218	-0.395
Depression decade	- 0.004	0.017	-0.050	0.042	-0.075	-0.101	-0.218	0.873	-0.019
Sleeplessness week	- 0.130	0.026	-0.062	-0.050	-0.114	0.083	-0.395	-0.019	0.856
Headaches	- 0.019	-0.023	0.000	-0.053	0.008	0.002	0.059	-0.064	-0.181
Treatment	- 0.136	0.052	-0.018	0.013	0.008	-0.057	-0.084	-0.0009	0.009
Leave	- 0.039	-0.102	0.043	0.092	0.050	-0.008	0.046	-0.097	-0.056
Helplessness	- 0.034	0.002	-0.019	-0.017	-0.003	-0.160	-0.129	-0.083	0.036
Depression	-0.038	0.010	-0.021	0.010	-0.028	0.005	-0.024	-0.391	-0.130
Suited to work	0.011	-0.034	0.091	0.014	-0.043	0.012	-0.040	-0.070	-0.003
Enjoy work	- 0.006	-0.034	-0.014	0.065	-0.034	-0.004	-0.025	-0.074	0.068
Change area	- 0.003	0.000	-0.024	0.041	-0.098	0.011	-0.052	0.037	0.053
Leave discipline	- 0.059	0.046	0.030	-0.001	0.025	-0.097	0.002	-0.006	0.008
Dissatisfaction	- 0.068	-0.041	-0.122	0.046	-0.154	-0.101	0.061	0.089	-0.054

Table 6 Correlation Matrix to Assess Suitability for Factor Analysis and Measure of Sampling Adequacy for Stress

Variables	Headaches	Treatment	Leave	Helplessness	Depression	Suited to work	Enjoy work	Change area	Leave discipline	Dissatisfaction
Incidence of stress	-0.019	-0.136	- 0.039	0.034	-0.038	0.011	- 0.006	-0.003	-0.059	-0.068
Time management	-0.023	0.052	- 0.102	0.002	0.010	- 0.034	- 0.034	0.000	0.046	-0.041
Rush to complete tasks	0.000	-0.018	0.043	-0.019	-0.021	0.091	- 0.014	0.024	0.030	-0.122
Finish work late	-0.053	0.013	0.092	-0.017	0.010	0.014	0.065	0.041	-0.001	0.046
Org support	-0.008	0.008	0.050	-0.003	-0.028	- 0.043	- 0.034	-0.098	0.025	-0.154
Anxiety	0.002	-0.057	- 0.008	-0.160	0.005	0.012	- 0.004	0.011	-0.097	-0.101
Sleeplessness decade	0.059	-0.084	0.046	-0.129	-0.024	- 0.040	- 0.025	-0.052	0.002	0.061
Depression decade	-0.064	-0.009	- 0.097	-0.083	-0.391	- 0.070	- 0.074	0.037	-0.006	0.089
Sleeplessness week	-0.181	0.009	- 0.056	0.036	-0.130	- 0.003	0.068	0.053	0.008	-0.054
Headaches	0.785	-0.387	0.032	0.074	0.064	0.050	0.055	-0.030	-0.046	-0.046
Treatment	-0.387	0.870	- 0.087	-0.039	-0.153	0.004	- 0.072	-0.008	0.048	-0.131
Leave	0.032	-0.087	0.903	-0.108	-0.044	- 0.012	0.006	-0.129	-0.052	-0.062
Helplessness	0.074	-0.039	- 0.108	0.902	-0.111	0.041	- 0.066	0.111	-0.023	-0.022
Depression	0.064	-0.153	- 0.044	-0.111	0.880	0.007	0.089	-0.100	-0.017	-0.083
Suited to work	0.050	0.004	- 0.012	0.041	0.007	0.785	- 0.411	-0.073	-0.086	-0.044
Enjoy work	0.055	-0.072	0.006	-0.066	0.089	- 0.411	0.802	-0.113	-0.177	-0.120
Change area	-0.030	-0.008	- 0.129	0.111	-0.100	- 0.073	- 0.113	0.850	-0.318	-0.116
Leave discipline	-0.046	0.048	- 0.052	-0.023	-0.017	- 0.086	- 0.177	-0.318	0.857	-0.102
Dissatisfaction	-0.046	-0.131	- 0.062	-0.022	-0.083	- 0.044	- 0.120	-0.116	-0.102	0.922

As no variables were required to be excluded, progression to the next step, extracting communalities, could be embarked upon. This was done by principal component analysis (see Chapter 3, section 3.5.4. C. f.). As factor analysis involves discovering underlying dimensions, it is essential to discover common variance. The communalities are a percentage of variance explaining the underlying factor. Once factors are extracted, it is easier to distinguish, in reality, the amount of common variance (Field, 2005). For the variable inefficient time management (for example, due to excessive workloads), 72.7 per cent of variance is shared or common variance for stress (Table 7).

Table 7 Communalities for Stress

Stress	Factor Extraction
Question or variable	
Mental health leave	0.242
Organisational support	0.360
Experiencing increased anxiety	0.480
Helplessness over past decade	0.483
Sleeplessness over past week	0.505
Leave professional discipline	0.514
Job dissatisfaction	0.515
Being suited to the work	0.521
Finish work late	0.528
Change area of practice	0.532
Length of depression	0.539
Incidence of stress	0.558
Enjoying the type of work	0.606
Depression over past decade	0.611
Sleeplessness over past decade	0.617
Stress requiring treatment	0.627
Rush to complete tasks	0.699
Headaches requiring analgesia	0.716
Time management- workload	0.727

The following matrices that comprise one large matrix (Tables 8, 9, 10 & 11) contain correlation coefficients between all questions based on this factor model. The matrices diagonals contain the communalities (bold type) as seen in table 7. These reproduced correlations stem from the factor model rather than observed data (as seen in Tables 1, 2, 3 & 4) (see Chapter 3, section 3.5.4. C. h.). If the model was perfect, the reproduced correlations would be exactly the same as those original correlations (Tables 1, 2, 3 & 4) (Field, 2005).

To assess the model's fit, differences between correlations from the observed data and model correlations are calculated. For example, the observed data correlation for rush to complete tasks is 0.509 (Table 1). The model correlation for rush to complete tasks is 0.576 (Table 8). This residual, the difference between the observed and model correlation, is -0.067 (residual = $r_{\text{observed}} - r_{\text{from model}}$ $0.509 - 0.576 = -0.067$) (Table 4). For a good model, all values will be small, and 50 per cent should be preferably less than 0.05, otherwise generalisations to other samples is limited (Field, 2005). Tables 8, 9, 10 & 11 also illustrate that 39 per cent of residuals have a value greater than 0.05. This means that factor analysis results relating to stress can be generalised to a wider population.

Table 8 Reproduced Model Correlations and Residuals for Stress

Reproduced Correlation	Stress	Time Mgt	Rush for tasks	Finish work late	Org support	Anxiety	Sleeplessness decade	Depression decade	Sleeplessness week
Incidence of stress	0.558	0.572	0.576	0.418	0.422	0.387	0.343	0.337	0.416
Time management	0.572	0.727	0.705	0.575	0.449	0.306	0.185	0.168	0.291
Rush to complete tasks	0.576	0.705	0.699	0.576	0.430	0.322	0.231	0.206	0.342
Finish work late	0.418	0.575	0.576	0.528	0.290	0.195	0.126	0.084	0.230
Org support	0.422	0.449	0.430	0.290	0.360	0.320	0.253	0.264	0.265
Anxiety	0.387	0.306	0.322	0.195	0.320	0.480	0.512	0.514	0.401
Sleeplessness decade	0.343	0.185	0.231	0.126	0.253	0.512	0.617	0.608	0.485
Depression decade	0.337	0.168	0.206	0.084	0.264	0.514	0.608	0.611	0.466
Sleeplessness week	0.416	0.291	0.342	0.230	0.265	0.401	0.485	0.466	0.505
Residuals	Stress	Time mgt	Rush for tasks	Finish work late	Org support	Anxiety	Sleeplessness decade	Depression decade	Sleeplessness week
Incidence of stress		-0.043	-0.067 ¹ (1)	-0.129 ¹ (2)	-0.081 ¹ (3)	-0.016	-0.026	-0.024	-0.022
Time management	-0.043		-0.055 ¹ (4)	-0.136 ¹ (5)	-0.069 ¹ (6)	-0.037	-0.002	0.038	-0.026
Rush to complete tasks	-0.067 ¹ (1)		-0.055 ¹ (4)	-0.117 ¹ (7)	-0.126 ¹ (8)	-0.040	0.000	0.038	-0.024
Finish work late	-0.129 ¹ (2)		-0.136 ¹ (5)	-0.117 ¹ (7)	-0.091 ¹ (9)	-0.012	0.044	0.015	-0.004
Org support	-0.081 ¹ (3)		-0.069 ¹ (6)	-0.126 ¹ (8)	-0.091 ¹ (9)		-0.019	-0.027	0.014
Anxiety	-0.016		-0.037	-0.040	-0.012	-0.027		-0.103 ¹ (10)	-0.107 ¹ (11)
Sleeplessness decade	-0.026		-0.002	0.000	0.044	0.014	-0.020	-0.100 ¹ (12)	0.057 ¹ (13)
Depression decade	-0.024		0.038	0.038	0.015	0.030	-0.103 ¹ (10)	-0.100 ¹ (12)	-0.086 ¹ (14)
Sleeplessness week	-0.022		-0.026	-0.024	-0.004	0.002	-0.107 ¹ (11)	0.057 ¹ (13)	-0.086 ¹ (14)

1. These 14 (out of 67 for Tables 8, 9, 10 & 11) (total 39%) nonredundant residuals have absolute values greater than 0.05.

Table 9 Reproduced Model Correlations and Residuals for Stress

Reproduced Correlation	Headaches	Treatment	Leave	Helplessness	Depression	Suited to work	Enjoy work	Change area	Leave discipline	Dissatisfaction
Correlation Incidence of stress	0.328	0.402	0.231	0.249	0.366	0.110	0.188	0.245	0.210	0.447
Time management	0.173	0.216	0.121	0.170	0.201	0.066	0.148	0.171	0.130	0.406
Rush to complete tasks	0.220	0.257	0.122	0.195	0.241	0.008	0.085	0.125	0.084	0.382
Finish work late	0.100	0.097	0.002	0.129	0.112	- 0.127	- 0.077	-0.054	-0.085	0.189
Org support	0.158	0.259	0.206	0.211	0.271	0.214	0.278	0.279	0.263	0.388
Anxiety	0.114	0.312	0.274	0.443	0.475	0.211	0.252	0.250	0.235	0.316
Sleeplessness decade	0.176	0.379	0.287	0.508	0.563	0.127	0.153	0.129	0.164	0.245
Depression decade	0.176	0.390	0.314	0.499	0.564	0.194	0.223	0.195	0.230	0.281
Sleeplessness week	0.395	0.478	0.243	0.331	0.478	- 0.011	0.032	0.112	0.098	0.292
Residuals	Headaches	Treatment	Leave	Helplessness	Depression	Suited to work	Enjoy work	Change area	Leave discipline	Dissatisfaction
Incidence of stress	-0.063 ¹ (15)	-0.010	0.008	0.002	-0.021	- 0.003	- 0.008	-0.034	0.002	-0.053 ¹ (39)
Time management	0.018	0.010	0.073 ¹ (20)	0.001	0.024	0.013	- 0.006	-0.014	-0.022	-0.066 ¹ (40)
Rush to complete tasks	-0.008	0.009	0.017	-0.002	0.024	- 0.001	0.016	0.017	0.012	-0.029
Finish work late	0.059 ¹ (16)	0.030	- 0.011	-0.021	0.005	0.076 ¹ (31)	0.039	0.051 ¹ (35)	0.083 ¹ (37)	-0.060 ¹ (41)
Org support	0.002	-0.026	- 0.059 ¹ (21)	-0.041	0.005	- 0.036	- 0.063 ¹ (34)	-0.024	-0.079 ¹ (38)	-0.011
Anxiety	0.060 ¹ (17)	0.021	- 0.064 ¹ (22)	-0.069 ¹ (24)	0.129 ¹ (28)	- 0.058 ¹ (32)	0.037	-0.004	0.027	0.024
Sleeplessness decade	0.011	-0.034	- 0.102 ¹ (23)	-0.147 ¹ (25)	-0.145 ¹ (29)	0.033	0.026	0.052 ¹ (36)	0.023	-0.017
Depression decade	0.029	-0.045	- 0.033	-0.144 ¹ (26)	0.020	0.011	0.007	0.003	-0.020	-0.039
Sleeplessness week	-0.069 ¹ (18)	-0.140 ¹ (19)	- 0.047	-0.111 ¹ (27)	-0.073 ¹ (30)	0.082 ¹ (33)	0.036	0.015	0.025	-0.015

1. These 27 (15-41 out of 67 for Tables 8, 9, 10 & 11) (total 39%) nonredundant residuals have absolute values greater than 0.05.

Table 10 Reproduced Model Correlations and Residuals for Stress

Reproduced Correlation	Stress	Time mgt	Rush for tasks	Finish work late	Org support	Anxiety	Sleeplessness decade	Depression decade	Sleeplessness week
Headaches	0.328	0.173	0.220	0.100	0.158	0.114	0.176	0.176	0.395
Treatment	0.402	0.216	0.257	0.097	0.259	0.312	0.379	0.390	0.478
Leave	0.231	0.121	0.122	0.002	0.206	0.274	0.287	0.314	0.243
Helplessness	0.249	0.170	0.195	0.129	0.211	0.443	0.508	0.499	0.331
Depression	0.366	0.201	0.241	0.112	0.271	0.475	0.563	0.564	0.478
Suited to work	0.110	0.066	0.008	-0.127	0.214	0.211	0.127	0.194	-0.011
Enjoy work	0.188	0.148	0.085	-0.077	0.278	0.252	0.153	0.223	0.032
Change area	0.245	0.171	0.125	-0.054	0.279	0.210	0.129	0.195	0.112
Leave discipline	0.210	0.130	0.084	-0.085	0.263	0.235	0.164	0.230	0.098
Dissatisfaction	0.447	0.406	0.382	0.189	0.388	0.316	0.245	0.281	0.292
Residuals	Stress	Workload	Rush for tasks	Finish work late	Org support	Anxiety	Sleeplessness decade	Depression decade	Sleeplessness week
Headaches	- 0.063 ¹ (15)	0.018	-0.008	0.059 ¹ (16)	0.002	0.060 ¹ (17)	0.011	0.029	-0.069 ¹ (18)
Treatment	- 0.010	0.010	0.009	0.030	-0.026	0.021	-0.034	-0.045	-0.140 ¹ (19)
Leave	0.008	0.073 ¹ (20)	0.017	-0.011	0.059 ¹ (21)	-0.064 ¹ (22)	-0.102 ¹ (23)	-0.033	-0.047
Helplessness	0.002	0.001	-0.002	-0.021	-0.041	-0.069 ¹ (24)	-0.147 ¹ (25)	-0.144 ¹ (26)	-0.111 ¹ (27)
Depression	- 0.021	0.024	0.024	0.005	0.005	-0.129 ¹ (28)	-0.145 ¹ (29)	0.020	-0.073 ¹ (30)
Suited to work	- 0.003	0.013	-0.001	0.076 ¹ (31)	-0.036	-0.058 ¹ (32)	0.033	0.011	0.082 ¹ (33)
Enjoy work	- 0.008	-0.006	0.016	0.039	-0.063 ¹ (34)	-0.037	0.026	0.007	0.036
Change area	- 0.034	-0.014	0.017	0.051 ¹ (35)	-0.024	-0.004	0.052 ¹ (36)	0.003	0.015
Leave discipline	0.002	-0.022	0.012	0.083 ¹ (37)	-0.079 ¹ (38)	0.027	0.023	-0.020	0.025
Dissatisfaction	- 0.053 ¹ (39)	-0.066 ¹ (40)	-0.029	-0.060 ¹ (41)	-0.011	0.024	-0.017	-0.039	-0.015

1. These 27 (15-41 out of 67 for Tables 8, 9, 10 & 11) (total 39%) nonredundant residuals have absolute values greater than 0.05.

Table 11 Reproduced Model Correlations and Residuals for Stress

Reproduced Correlation	Headaches	Treatment	Leave	Helplessness	Depression	Suited to work	Enjoy work	Change area	Leave discipline	Dissatisfaction
Headaches	0.716	0.607	0.197	-0.054	0.271	-0.097	-0.044	0.194	0.112	0.326
Treatment	0.607	0.627	0.306	0.163	0.441	0.077	0.136	0.296	0.248	0.411
Leave	0.197	0.306	0.242	0.202	0.307	0.239	0.275	0.288	0.289	0.294
Helplessness	-0.054	0.163	0.202	0.483	0.431	0.145	0.158	0.065	0.117	0.146
Depression	0.271	0.441	0.307	0.431	0.539	0.153	0.189	0.203	0.219	0.309
Suited to work	-0.097	0.077	0.239	0.145	0.153	0.521	0.557	0.461	0.486	0.321
Enjoy work	-0.044	0.136	0.275	0.158	0.189	0.557	0.606	0.522	0.539	0.400
Change area	0.194	0.296	0.288	0.065	0.203	0.461	0.522	0.532	0.515	0.452
Leave discipline	0.112	0.248	0.289	0.117	0.219	0.486	0.539	0.515	0.514	0.417
Dissatisfaction	0.326	0.411	0.294	0.146	0.309	0.321	0.400	0.452	0.417	0.515
Residuals	Headaches	Treatment	Leave	Helplessness	Depression	Suited to work	Enjoy work	Change area	Leave discipline	Dissatisfaction
Headaches		-0.130 ¹ (42)	-0.085 ¹ (43)	0.118 ¹ (44)	-0.075 ¹ (45)	0.102 ¹ (46)	0.084 ¹ (47)	-0.065 ¹ (48)	0.005	-0.087 ¹ (49)
Treatment	-0.130 ¹ (42)		-0.049	0.077 ¹ (50)	-0.041	0.047	0.066 ¹ (51)	-0.080 ¹ (52)	-0.065 ¹ (53)	-0.032
Leave	-0.085 ¹ (43)	-0.049		0.026	-0.030	-0.089 ¹ (54)	-0.092 ¹ (55)	-0.020	-0.062 ¹ (56)	-0.032
Helplessness	0.118 ¹ (44)	0.077 ¹ (50)	0.026		-0.093 ¹ (57)	-0.061 ¹ (58)	0.006	0.002	0.026	0.059 ¹ (59)
Depression	-0.075 ¹ (45)	-0.041	-0.030	-0.093 ¹ (57)		-0.018	-0.044	0.047	-0.011	0.014
Suited to work	0.102 ¹ (46)	0.047	-0.089 ¹ (54)	-0.061 ¹ (58)	-0.018		-0.024	-0.154 ¹ (60)	-0.158 ¹ (61)	-0.080 ¹ (62)
Enjoy work	0.084 ¹ (47)	0.066 ¹ (55)	-0.092 ¹ (55)	0.006	-0.044	-0.024		-0.152 ¹ (63)	-0.129 ¹ (64)	-0.063 ¹ (65)
Change area	-0.065 ¹ (48)	-0.080 ¹ (52)	-0.020	0.002	0.047	-0.154 ¹ (60)	-0.152 ¹ (63)		-0.033	0.088 ¹ (66)
Leave discipline	0.005	-0.065 ¹ (53)	-0.062 ¹ (56)	0.026	-0.011	-0.158 ¹ (61)	-0.129 ¹ (64)	-0.033		-0.078 ¹ (67)
Dissatisfaction	-0.087 ¹ (49)	-0.032	-0.032	0.059 ¹ (59)	0.014	-0.080 ¹ (62)	-0.063 ¹ (65)	-0.088 ¹ (66)	-0.078 ¹ (67)	

1. These 26 (42-67 out of 67 for Tables 8, 9, 10 & 11) (total 39%) nonredundant residuals have absolute values greater than 0.05.

The structure matrix (Table 12) shows the relationship between the factors and is produced from the pattern matrix that contains information about unique contributions of variables to a factor (see Chapter 3, section 3.5.4. C. i.). Four variables load onto two or three factors (sleeplessness over past week, job dissatisfaction, incidence of stress and stress requiring treatment) (0.598, 0.454, 0.406 and 0.748).

**Table 12 Relationships Between Factors Following Oblique Rotation for Stress
(Structure Matrix)**

Stress	Factor 1 Psychosocial effects	Factor 2 Job satisfaction	Factor 3 Work environment	Factor 4 Physical Ailments
Question or variable	Unique contribution	Unique contribution	Unique contribution	Unique contribution
Sleeplessness over past decade	0.783			
Depression over decade	0.776			
Length of depression	0.711			
Experiencing increased anxiety	0.665			
Helplessness over past decade	0.660			
Sleeplessness over past week	0.598			0.497
Enjoying the type of work		0.767		
Leave professional discipline		0.714		
Change area of practice		0.709		
Suited to work		0.695		
Job dissatisfaction		0.566	0.454	0.423
Mental health leave				
Time management- workload			0.848	
Rush to complete tasks			0.835	
Finishing work late			0.690	
Incidence of stress	0.443		0.681	0.406
Organisational support			0.515	
Headaches requiring analgesia				0.841
Stress requiring treatment	0.455			0.748

Discrepancies between the pattern matrix for oblique (direct oblimin) rotation and the orthogonal (varimax) rotation component matrix (see Chapter 4, section 2.3.1. A. Tables 80 & 82) further reinforce interrelated factors and amalgamation of the four factors into three (Pallant, 2005).

Burnout

Subscale- exhaustion

For the fourth subscale, exhaustion, inspection of a correlation matrix showed that all significance values were less than .05 and there were no correlation coefficients

greater than 0.9; the determinant was .057. This means that multicollinearity was not a problem (Table 13) (see Chapter 3, section 3.5.4. C. a.).

Table 13 Correlation Matrix for Observed Data for Factor Exhaustion

	Apathy	Low morale	Powerless	Undervalued	Overwhelmed	Incompetence	Fatigue	Drained	Loss of empathy colleagues	Loss of empathy clients
Correlation Apathy	1.000	0.461	0.375	0.298	0.333	0.267	0.225	0.291	0.202	0.223
Low morale	0.461	1.000	0.644	0.575	0.459	0.404	0.280	0.403	0.147	0.191
Powerless	0.375	0.644	1.000	0.620	0.424	0.372	0.327	0.403	0.196	0.231
Undervalued	0.298	0.575	0.620	1.000	0.436	0.278	0.280	0.411	0.161	0.124
Overwhelmed	0.333	0.459	0.424	0.436	1.000	0.403	0.213	0.430	0.094	0.161
Feeling incompetent	0.267	0.404	0.372	0.278	0.403	1.000	0.272	0.282	0.176	0.222
Fatigue	0.225	0.280	0.327	0.280	0.213	0.272	1.000	0.377	0.112	0.116
Emotionally drained	0.291	0.403	0.403	0.411	0.430	0.282	0.377	1.000	0.135	0.180
Loss of empathy colleagues	0.202	0.147	0.196	0.161	0.094	0.176	0.112	0.135	1.000	0.450
Loss of empathy clients	0.223	0.191	0.231	0.124	0.161	0.222	0.116	0.180	0.450	1.000
Sig. 1-tailed Apathy		.000	.000	.000	.000	.000	.000	.000	.000	.000
Low morale	.000		.000	.000	.000	.000	.000	.000	.000	.000
Powerless	.000	.000		.000	.000	.000	.000	.000	.000	.000
Undervalued	.000	.000	.000		.000	.000	.000	.000	.000	.002
Overwhelmed	.000	.000	.000	.000		.000		.000	.014	.000
Feeling incompetent	.000	.000	.000	.000	.000		.000	.000	.000	.000
Fatigue	.000	.000	.000	.000	.010	.000		.000	.004	.003
Emotionally drained	.000	.000	.000	.000	.000	.000	.000		.001	.000
Loss of empathy colleagues	.000	.000	.000	.000	.014	.000	.004	.001		.000
Loss of empathy clients	.000	.000	.000	.002	.000	.000	.003	.000	.000	

Determinant = .057

Bartlett's test was highly significant, ($p<0.001$), meaning factor analysis was appropriate for these data. Inspection of an anti-image correlation matrix showed the values ranged between 0.678 (loss of empathy for colleagues) and 0.895 (apathy) (Table 14) (see Chapter 3, section 3.5.4. C. d.). All off-diagonal variable correlations should be very small (they are for these data) (Table 14).

Table 14 Correlation Matrix to Assess Suitability for Factor Analysis and Measure of Sampling Adequacy for Exhaustion

	Apathy	Low morale	Powerless	Undervalued	Overwhelmed	Incompetence	Fatigue	Drained	Loss of empathy colleagues	Loss of empathy clients
Apathy	0.895	- 0.252	-0.053	0.036	-0.108	-0.016	- 0.062	-0.050	-0.090	-0.076
Low morale	- 0.252	0.857	-0.337	-0.235	-0.101	-0.152	0.006	-0.064	0.043	-0.008
Powerless	- 0.053	- 0.337	0.857	-0.350	-0.046	-0.083	- 0.105	-0.048	-0.033	-0.087
Undervalued	0.036	- 0.235	-0.350	0.851	-0.157	0.058	- 0.045	-0.125	-0.077	0.081
Overwhelmed	- 0.108	- 0.101	-0.046	-0.157	0.876	-0.229	0.052	-0.225	0.061	-0.027
Feeling incompetent	- 0.016	- 0.152	-0.083	0.058	-0.229	0.881	- 0.133	-0.010	-0.060	-0.085
Fatigue	- 0.062	0.006	-0.105	-0.045	0.052	-0.133	0.859	-0.247	-0.015	0.012
Emotionally drained	- 0.050	- 0.064	-0.048	-0.125	-0.225	-0.010	- 0.247	0.881	-0.006	-0.059
Loss of empathy colleagues	- 0.090	0.043	-0.033	-0.077	0.061	-0.060	- 0.015	-0.006	0.678	-0.407
Loss of empathy clients	- 0.076	- 0.008	-0.087	.081	-0.027	-0.085	0.012	-0.059	-0.407	0.708

Table 15 displays the communalities extracted by principal component analysis (see Chapter 3, section 3.5.4. C. f.). For the variable, loss of empathy for colleagues, 70.8 per cent of variance is shared or common variance for exhaustion.

Table 15 Communalities for Exhaustion

Exhaustion	Factor
Question or variable	Extraction
Feeling fatigued	0.263
Feeling of incompetence	0.356
Apathy	0.364
Feeling emotionally drained	0.440
Feeling overwhelmed	0.485
Feeling undervalued	0.578
Powerless	0.635
Low morale	0.651
Loss of empathy for clients	0.707
Loss of empathy for colleagues	0.708

The following matrix (Table 16) contains correlation coefficients between all questions based on this factor model. The matrix diagonal contains the communalities (bold type) as seen in Table 15. These reproduced correlations stem from the factor model rather than observed data (as seen in Table 13) (see Chapter 3, section 3.6.4. C. h.). The observed data correlation for low morale is 0.461 (Table 13). The model correlation for low morale is 0.456 (Table 16). This residual, the difference between the observed and model correlation, is -0.001 (residual = $r_{\text{observed}} - r_{\text{from model}}$ 0.461 – 0.456 = 0.005) (Table 16). Table 16 also illustrates that 55 per cent of residuals have a value greater than 0.05. This means that factor analysis results relating to exhaustion cannot be generalised to a wider population.

Table 16 Reproduced Model Correlations and Residuals for Exhaustion

Reproduced Correlation	Apathy	Low morale	Powerless	Undervalued	Overwhelmed	Incompetence	Fatigue	Drained	Loss of empathy colleagues	Loss of empathy clients
Apathy	0.364	0.462	0.460	0.412	0.383	0.359	0.292	0.375	0.276	0.301
Low morale	0.456	0.651	0.642	0.611	0.561	0.461	0.414	0.535	0.148	0.187
Powerless	0.460	0.642	0.635	0.598	0.550	0.463	0.408	0.527	0.187	0.225
Undervalued	0.412	0.611	0.598	0.578	0.529	0.420	0.387	0.502	0.078	0.116
Overwhelmed	0.383	0.561	0.550	0.529	0.485	0.389	0.356	0.461	0.090	0.125
Feeling incompetent	0.359	0.461	0.463	0.420	0.389	0.356	0.294	0.379	0.245	0.271
Fatigue	0.292	0.414	0.408	0.387	0.356	0.294	0.363	0.340	0.101	0.126
Emotionally drained	0.375	0.535	0.527	0.502	0.461	0.379	0.340	0.440	0.122	0.154
Loss of empathy colleagues	0.276	0.148	0.187	0.078	0.090	0.245	0.101	0.122	0.708	0.706
Loss of empathy clients	0.301	0.187	0.225	0.116	0.125	0.271	0.126	0.154	0.706	0.707
Residual	Apathy	Low morale	Powerless	Undervalued	Overwhelmed	Incompetence	Fatigue	Drained	Loss of empathy colleagues	Loss of empathy clients
Apathy		0.005	-0.085 ¹ (1)	-0.114 ¹⁽²⁾	-0.051 ¹⁽³⁾	-0.092 ¹⁽⁴⁾	-0.066 ¹ (5)	-0.084 ¹ (6)	-0.074 ¹ (7)	-0.077 ¹ (8)
Low morale	0.005		0.002	-0.036	-0.102 ¹⁽⁹⁾	-0.057 ¹⁽⁹⁾	-0.134 ¹ (11)	-0.132 ¹ (12)	0.000	0.004
Powerless	-0.085 ¹ (1)	0.002		0.022	-0.126 ¹⁽²²⁾	-0.091 ¹⁽¹⁴⁾	-0.081 ¹ (15)	-0.124 ¹ (16)	0.009	0.005
Undervalued	-0.114 ¹ (2)	-0.036	0.022		-0.093 ¹⁽¹⁷⁾	-0.142 ¹⁽¹⁸⁾	-0.107 ¹ (19)	-0.091 ¹ (120)	0.083 ¹ (21)	0.008
Overwhelmed	-0.051 ¹ (3)	-0.102 ¹ (9)	-0.126 ¹ (13)	-0.093 ¹⁽¹⁷⁾		0.014	-0.142 ¹ (18)	-0.031	0.004	0.036
Feeling incompetent	-0.092 ¹ (4)	-0.057 ¹ (10)	-0.091 ¹ (14)	-0.142 ¹⁽¹⁸⁾	0.014		-0.022	-0.097 ¹ (23)	-0.069 ¹ (24)	-0.049
Fatigue	-0.066 ¹ (5)	-0.134 ¹ (11)	-0.081 ¹ (15)	-0.107 ¹⁽¹⁹⁾	-0.142 ¹⁽¹⁸⁾	-0.022		0.037	0.011	-0.010
Emotionally drained	-0.084 ¹ (6)	-0.132 ¹ (12)	-0.124 ¹ (16)	-0.091 ¹⁽²⁰⁾	-0.031	-0.097 ¹⁽²³⁾	0.037		0.013	0.026
Loss of empathy colleagues	-0.074 ¹ (7)	0.000	0.009	0.083 ¹⁽²¹⁾	0.004	-0.069 ¹⁽²⁴⁾	0.011	0.013		-0.256 ¹ (25)
Loss of empathy clients	-0.077 ¹ (8)	0.004	0.005	0.008	0.036	-0.049	-0.010	0.026	-0.256 ¹ (25)	

1. These 25 nonredundant residuals have absolute values greater than 0.05.

The structure matrix (Table 17) shows the relationship between the factors.

Table 17 Relationships Between Factors Following Oblique Rotation for Exhaustion (Structure Matrix)

Exhaustion	Factor 1 Related to Individual	Factor 2 Related to Others
Question or variable	Relationships	Relationships
Low morale	0.806	
Powerless	0.796	
Feeling undervalued	0.753	
Feeling overwhelmed	0.693	
Feeling emotionally drained	0.663	
Feelings of incompetence	0.578	
Apathy	0.573	
Feeling fatigued	0.513	
Loss of empathy for colleagues		0.841
Loss of empathy for clients		0.840

Discrepancies between the pattern matrix for oblique (direct oblimin) rotation and the orthogonal (varimax) rotation component matrix (see Chapter 4, section 2.3.1. B. Tables 85 & 87) further reinforce interrelated factors and amalgamation of the two factors into one (Pallant, 2005).

Individual responses

Subscale- pressure and motivation

For the fifth subscale, pressure and motivation, inspection of a correlation matrix showed that none of the significance values were over .05 and all of the correlation coefficients were less than 0.9; the determinant value was 0.163. This means that there was no multicollinearity in the data (Table 18) (see Chapter 3, section 3.5.4. C. a.).

Table 18 Correlation Matrix for Observed Data for Factor Pressure and Motivation

	Achieving more	Unreasonable expectations	Irritability	Pushed for time	Difficulty slowing down	Working at high performance	Keyed up	Mtask
Correlation	1.000	0.615	0.315	0.496	0.216	0.297	0.272	0.268
Achieving more in less time								
Unreasonable expectations	0.615	1.000	0.361	0.443	0.245	0.255	0.293	0.250
Irritability	0.315	0.361	1.000	0.387	0.320	0.136	0.261	0.182
Pushed for time	0.496	0.443	0.387	1.000	0.311	0.238	0.346	0.329
Difficulty slowing down	0.216	0.245	0.320	0.311	1.000	0.155	0.309	0.190
Working at high performance	0.297	0.255	0.136	0.238	0.155	1.000	0.246	0.291
Keyed up	0.272	0.293	0.261	0.346	0.309	0.246	1.000	0.439
Multi-tasking	0.268	0.250	0.182	0.329	0.190	0.291	0.439	1.000
Sig. (1-tailed) Achieving more in less time		.000	.000	.000	.000	.000	.000	.000
Unreasonable expectations	.000		.000	.000	.000	.000	.000	.000
Irritability	.000	.000		.000	.000	.001	.000	.000
Pushed for time	.000	.000	.000		.000	.000	.000	.000
Difficulty slowing down	.000	.000	.000	.000		.003	.000	.000
Working at high performance	.000	.000	.001	.000	.003		.000	.000
Keyed up	.000	.000	.000	.000	.000	.000		.000
Multi-tasking	.000	.000	.000	.000	.000	.000	.000	

Determinant = 0.163

Bartlett's test was highly significant, ($p<0.001$), meaning factor analysis was appropriate for these data. Inspection of an anti-image correlation matrix should reveal all variables running diagonally to have a value of at least 0.5 (Field, 2005). The diagonal values ranged between 0.765 (achieving more in less time) and 0.87 (working at high performance) (Table 19) (see Chapter 3, section 3.5.4. C. d.). All off-diagonal variable correlations should be very small (they are for these data) (Table 19).

Table 19 Correlation Matrix to Assess Suitability for Factor Analysis and Measure of Sampling Adequacy for Pressure and Motivation

	Achieving more	Expectations	Irritability	Pushed for time	Difficulty slowing down	Working at high performance	Keyed up	Mtask
Achieving more in less time	0.765	-0.468	-0.041	-0.260	-0.003	-0.134	-0.004	-0.041
Unreasonable expectations	-0.468	0.787	-0.153	-0.111	-0.047	-0.056	-0.069	-0.018
Irritability	-0.041	-0.153	0.857	-0.188	-0.187	0.010	0.071	0.007
Pushed for time	-0.260	-0.111	-0.188	0.858	-0.127	-0.035	-0.103	-0.132
Difficulty slowing down	-0.003	-0.047	-0.187	-0.127	0.842	0.010	-0.176	-0.013
Working at high performance	-0.134	-0.056	-0.010	-0.035	-0.010	0.870	-0.086	-0.167
Keyed up	-0.004	-0.069	-0.071	-0.103	-0.176	-0.086	0.810	-0.323
Multi-tasking	-0.041	-0.018	0.007	-0.132	-0.013	-0.167	-0.323	0.795

As no variables were required to be excluded, progression to the next step, extracting communalities, could be embarked upon by principal component analysis (see Chapter 3, section 3.5.4. C. f.). For the variable multi-tasking, 66.6 per cent of variance is shared or common variance for pressure and motivation (Table 20).

Table 20 Communalities for Pressure and Motivation

Pressure and motivation	Factor
Question or variable	Extraction
Difficulty slowing down	0.287
Working at high performance	0.433
Irritability	0.495
Keyed up	0.553
Pushed for time	0.565
Achieving more in less time	0.589
Unreasonable expectations	0.609
Multi-tasking	0.666

The following matrix (Table 21) contains correlation coefficients between all questions based on this factor model. The matrix diagonal contains the communalities (bold type) as seen in Table 20. These reproduced correlations stem from the factor model rather than observed data (as seen in Table 18) (see Chapter 3, section 3.5.4. C. h.). The observed data correlation for irritability is 0.315 (Table 18). The model correlation for irritability is 0.522 (Table 21). This residual, the difference between the observed and model correlation, is -0.207 (residual = $r_{\text{observed}} - r_{\text{from model}}$ $0.315 - 0.522 = -0.207$) (Table 21). Table 21 also illustrates that 57 per cent of residuals have a value greater than 0.05. This means that factor analysis results relating to pressure and motivation cannot be generalised to a wider population.

Table 21**Reproduced Model Correlations and Residuals for Pressure and Motivation**

Reproduced Correlation	Achieving more	Expectations	Irritability	Pushed for time	Difficulty slowing down	Working at high performance	Keyed up	Mtask
Achieving more in less time	0.589	0.597	0.522	0.573	0.411	0.242	0.358	0.279
Unreasonable expectations	0.597	0.609	0.539	0.577	0.416	0.216	0.334	0.245
Irritability	0.522	0.539	0.495	0.493	0.361	0.111	0.213	0.115
Pushed for time	0.573	0.577	0.493	0.565	0.401	0.285	0.398	0.334
Difficulty slowing down	0.411	0.416	0.361	0.401	0.287	0.179	0.260	0.207
Working at high performance	0.242	0.216	0.111	0.285	0.179	0.433	0.482	0.536
Keyed up	0.358	0.334	0.213	0.398	0.260	0.482	0.553	0.593
Multi-tasking	0.279	0.245	0.115	0.334	0.207	0.536	0.593	0.666
Residual	Achieving more	Expectations	Irritability	Pushed for time	Difficulty slowing down	Working at high performance	Keyed up	Mtask
Achieving more in less time		0.017	-0.207 ¹ (1)	-0.077 ¹ (2)	-0.194 ¹ (3)	0.055 ¹⁽⁴⁾	-0.086 ¹ (5)	-0.011
Unreasonable expectations	0.017		-0.178 ¹ (6)	-0.134 ¹ (7)	-0.171 ¹ (8)	0.039	-0.041	0.005
Irritability	-0.207 ¹ (1)	-0.178 ¹⁽⁶⁾		-0.105 ¹ (9)	-0.042	0.026	0.048	0.067 ¹ (10)
Pushed for time	-0.077 ¹ (2)	-0.134 ¹⁽⁷⁾	-0.105 ¹ (9)		-0.091 ¹ (11)	-0.048	-0.052 ¹ (12)	-0.005
Difficulty slowing down	-0.194 ¹ (3)	-0.171 ¹⁽⁸⁾	-0.042	-0.091 ¹ (11)		-0.064 ¹⁽¹³⁾	0.049	-0.017
Working at high performance	0.055 ¹⁽⁴⁾	0.039	0.026	-0.048	-0.064 ¹ (13)		-0.235 ¹ (14)	-0.245 ¹ (15)
Keyed up	0-0.086 ¹ (5)	-0.041	0.048	-0.052 ¹ (12)	0.049	-0.235 ¹⁽¹⁴⁾		-0.154 ¹ (16)
Multi-tasking	-0.011	0.005	0.067 ¹ (10)	-0.005	-0.017	-0.245 ¹⁽¹⁵⁾	-0.154 ¹ (16)	

1. These 16 nonredundant residuals have absolute values greater than 0.05.

The structure matrix (Table 22) shows the relationship between the factors and is produced from the pattern matrix that contains information about unique contributions of variables to a factor (see Chapter 3, section 3.5.4. C. i.). Two variables load onto two factors (pushed for time and keyed up) (0.739 and 0.734).

Table 22 Relationships Between Factors Following Oblique Rotation for Pressure and Motivation (Structure Matrix)

Pressure and motivation	Factor 1 Pressure	Factor 2 Motivation
Question or variable	Relationships	Relationships
Unreasonable expectations	0.780	
Achieving more in less time	0.765	
Pushed for time	0.739	0.442
Irritability	0.691	
Difficulty slowing down	0.533	
Multi-tasking		0.815
Keyed up	0.426	0.734
Working at high performance		0.658

As oblique (direct oblimin) rotation for the subscale pressure and motivation, resulted in correlations above 0.3 (0.431) (see Chapter 4, section 2.3.1. C. Table 91), this shows that the factors are interrelated and this was the most accurate rotation to use.

Appendix 14 Kruskal-Wallis calculations

The following Kruskal-Wallis statistics satisfy all data requirements for Kruskal-Wallis calculations (Chapter 4, section 2.4.). When establishing the significance of the finding in large samples, the Monte Carlo method is more accurate if this result is different from the asymptotic value. It creates a distribution similar to the one found in this sample and then takes several samples from this distribution. The mean significance and confidence interval can then be created (Field, 2005).

1. Statistically significant findings

1.1. Demographics

1.1.1. Age

Age was significantly different among all predominant areas of practice ($H(13) = 34.986$, $p < 0.0001$) (Table 1).

Table 1 Test Statistics for Age

Predominant Area of Work	Age
Chi-square	34.986
df	13
Asymp. Sig.	0.001
Monte Carlo	0.000
99% Confidence Interval	
Lower Bound	0.000
Upper Bound	0.001

Nurses working in aged care and accident and emergency were the oldest groups, with the youngest working in oncology (Table 2).

Table 2 Age Ranks Among Predominant Area of Work

Predominant Area of Work	Number	Mean Rank Age
Aged care	3	432.33
Accident & Emergency	19	320.47
Management	14	310.50
Community	111	305.49
Midwife	243	261.33
Education	14	249.46
Medical	12	241.75
Neonatal Care	54	239.93
Operating Theatre	9	224.17
Other area	18	217.14
Recovery	2	206.75
Surgical	11	204.55
Critical Care	16	159.88
Oncology	2	7.50
Total	528	

1.1.2. Hours worked

Hours worked were highly significantly different among all predominant areas of practice ($H(13) = 35.159$, $p<0.0001$) (Table 3).

Table 3 Test Statistics for Hours Worked

Predominant Area of Work	Hours Worked
Chi-square	35.159
df	13
Asymp. Sig.	0.001
Monte Carlo	0.000
99% Confidence Interval Lower Bound	0.000
Upper Bound	0.000

Nurses and midwives working in management and oncology worked the longest hours whereas nurses working in the operating theatre worked the least amount of hours (Table 4).

Table 4 Hours Worked Ranks Among Predominant Area of Work

Predominant Area of Work	Number	Mean Rank Hours Worked
Management	14	427.75
Oncology	2	391.00
Other area	18	347.44
Medical	12	343.42
Recovery	2	331.50
Education	14	325.64
Surgical	11	290.77
Critical Care	16	271.47
Midwife	247	264.61
Accident & Emergency	20	257.78
Community	110	243.14
Aged Care	3	234.17
Neonatal Care	55	226.52
Operating Theatre	9	220.28
Total	533	

1.1.3. Years in profession

Years in the profession were significantly different among all predominant areas of practice ($H(13) = 23.954$, $p<0.05$) (Table 5).

Table 5 Test Statistics for Years in Profession

Predominant Area of Work	Years in Profession
Chi-square	23.954
df	13
Asymp. Sig.	0.032
Monte Carlo	0.026
99% Confidence Interval Lower Bound	0.022
Upper Bound	0.030

Nurses and midwives working in accident and emergency and management have spent the most number of years in the profession, with nurses working in oncology having spent the least number of years in the profession (Table 6).

Table 6 Years in Profession Ranks Among Predominant Area of Work

Predominant Area of Work	Number	Mean Rank Years in Profession
Accident & Emergency	20	348.03
Management	14	341.79
Community	111	289.69
Education	13	277.46
Aged Care	3	271.50
Operating Theatre	9	260.94
Midwife	245	258.87
Neonatal Care	54	257.76
Recovery	2	253.00
Medical	13	249.73
Other area	18	220.53
Surgical	11	220.05
Critical Care	16	193.56
Oncology	2	23.50
Total	531	

1.2. Stress

1.2.1. Incidence of stress

Incidence of stress at work was significantly different among all predominant areas of practice ($H(13) = 22.566$, $p<0.05$) (Table 7).

Table 7 Test Statistics for Incidence of Stress

Predominant Area of Work	Incidence of Stress
Chi-square	22.566
df	13
Asymp. Sig.	0.047
Monte Carlo	0.042
99% Confidence Interval Lower Bound	0.037
Upper Bound	0.047

Operating theatre and surgical areas had the highest scores, with recovery area reporting the lowest (Table 8).

Table 8 Incidence of Stress Among Predominant Area of Work

Predominant Area of Work	Number	Mean Rank Incidence of Stress
Operating Theatre	9	355.28
Surgical	11	343.32
Accident & Emergency	20	326.10
Oncology	2	309.00
Critical Care	16	307.00
Aged Care	3	298.83
Midwife	247	273.21
Medical	12	269.08
Management	13	258.42
Other area	17	257.74
Community	110	232.15
Education	14	252.93
Neonatal Care	54	238.02
Recovery	2	204.50
Total	530	

1.2.2. Anxiety

Experiencing anxiety as a psychosocial effect was significantly different among all predominant areas of practice ($H(13) = 22.036$, $p<0.05$) (Table 9).

Table 9 Test Statistics for Anxiety

Predominant Area of Work	Anxiety
Chi-square	22.036
df	13
Asymp. Sig.	0.055
Monte Carlo	0.047
99% Confidence Interval Lower Bound	0.041
Upper Bound	0.052

Aged care areas and accident and emergency reported experiencing most anxiety, with critical care area reporting the least anxiety (Table 10).

Table 10 Anxiety Among Predominant Area of Work

Predominant Area of Work	Number	Mean Rank Anxiety
Aged Care	3	351.67
Accident & Emergency	20	314.23
Surgical	11	312.64
Management	14	302.86
Education	14	289.82
Midwife	246	282.23
Community	110	252.65
Medical	12	247.13
Neonatal Care	55	237.93
Other area	18	233.53
Recovery	2	212.25
Oncology	2	203.00
Operating Theatre	9	178.61
Critical Care	16	174.31
Total	532	

1.3. Burnout

1.3.1. Feelings of powerlessness

Feelings of powerlessness as an effect of prolonged exposure to stress were significantly different among all predominant areas of practice ($H(13) = 23.129$, $p<0.05$) (Table 11).

Table11 Test Statistics for Powerlessness

Predominant Area of Work	Powerlessness
Chi-square	23.129
df	13
Asymp. Sig.	0.040
Monte Carlo	0.034
99% Confidence Interval Lower Bound	0.029
Upper Bound	0.038

Accident and emergency and oncology areas had the highest scores, with recovery area reporting the lowest (Table 12).

Table 12 Powerlessness Among Predominant Area of Work

Predominant Area of Work	Number	Mean Rank Powerlessness
Accident & Emergency	20	377.80
Oncology	2	348.50
Aged Care	3	340.67
Critical Care	16	301.94
Medical	12	293.88
Other area	18	292.53
Operating Theatre	9	273.06
Midwife	247	270.28
Surgical	11	267.05
Neonatal Care	55	250.96
Management	14	244.68
Community	111	244.00
Education	14	220.61
Recovery	2	196.00
Total	534	

2. Statistically non-significant findings

2.1. Stress

2.1.1. Depression

Depression as a psychosocial effect was not significantly different among predominant areas of practice ($H(13) = 11.557$, $p>0.05$) (Table 13).

Table 13 Test Statistics for Depression

Predominant Area of Work	Depression
Chi-square	11.557
df	13
Asymp. Sig.	0.564
Monte Carlo	0.581
99% Confidence Interval	
Lower Bound	0.568
Upper Bound	0.593

Oncology and aged care areas had the highest scores, with operating theatre reporting the lowest (Table 14).

Table 14 Depression Among Predominant Area of Work

Predominant Area of Work	Number	Mean Rank Depression
Oncology	2	395.50
Aged Care	3	389.83
Education	14	319.18
Recovery	2	297.75
Neonatal Care	55	274.20
Midwife	245	270.93
Surgical	11	264.95
Critical Care	16	263.75
Community	110	258.73
Accident & Emergency	20	257.03
Medical	13	235.54
Other area	18	234.19
Management	14	230.96
Operating Theatre	9	227.61
Total	532	

2.1.2. Helplessness

Helplessness as a psychosocial effect was not significantly different among predominant areas of practice ($H(13) = 21.145$, $p>0.05$) (Table 15).

Table 15 Test Statistics for Helplessness

Predominant Area of Work	Helplessness
Chi-square	21.145
df	13
Asymp. Sig.	0.070
Monte Carlo	0.055
99% Confidence Interval Lower Bound	0.050
Upper Bound	0.061

Oncology and management areas had the highest scores, with other areas reporting the lowest (Table 16).

Table 16 Helplessness Among Predominant Area of Work

Predominant Area of Work	Number	Mean Rank Helplessness
Oncology	2	346.00
Management	14	302.18
Accident & Emergency	20	285.18
Surgical	11	284.91
Midwife	242	279.55
Neonatal Care	53	272.75
Recovery	2	269.5
Community	110	255.16
Aged Care	3	244.67
Education	14	227.39
Operating Theatre	9	220.39
Medical	13	189.35
Critical Care	16	187.16
Other area	18	183.11
Total	527	

2.1.3. Job dissatisfaction

Job dissatisfaction relating to job incompatibility was not significantly different among predominant areas of practice ($H(13) = 18.836$, $p>0.05$) (Table 17).

Table 17 Test Statistics for Job Dissatisfaction

Predominant Area of Work	Job Dissatisfaction
Chi-square	18.836
df	13
Asymp. Sig.	0.128
Monte Carlo	0.120
99% Confidence Interval Lower Bound	0.111
Upper Bound	0.128

Accident and emergency and aged care areas had the highest scores, with other areas reporting the lowest (Table 18).

Table 18 Job Dissatisfaction Among Predominant Area of Work

Predominant Area of Work	Number	Mean Rank Job Dissatisfaction
Accident & Emergency	20	358.25
Aged Care	3	334.50
Oncology	2	326.00
Operating Theatre	9	283.11
Midwife	244	279.89
Surgical	11	272.36
Education	14	260.96
Medical	13	257.54
Community	109	247.37
Recovery	2	239.25
Neonatal Care	55	236.14
Critical Care	16	232.31
Management	14	220.64
Other area	18	212.33
Total	530	

2.2. Burnout

2.2.1. Apathy

Apathy as an effect of prolonged exposure to stress was not significantly different among predominant areas of practice ($H(13) = 8.446$, $p>0.05$) (Table 19).

Table 19 Test Statistics for Apathy

Predominant Area of Work	Apathy
Chi-square	8.446
df	13
Asymp. Sig.	0.813
Monte Carlo	0.823
99% Confidence Interval	
Lower Bound	0.813
Upper Bound	0.832

Oncology and aged care areas had the highest scores, with other areas reporting the lowest (Table 20).

Table 20 Apathy Among Predominant Area of Work

Predominant Area of Work	Number	Mean Rank Apathy
Oncology	1	459.50
Aged Care	3	341.17
Education	14	308.79
Surgical	10	302.30
Operating Theatre	9	289.06
Accident & Emergency	20	283.95
Medical	13	276.04
Critical Care	16	269.28
Neonatal Care	55	268.61
Recovery	2	263.00
Community	110	261.70
Midwife	243	259.76
Management	14	235.71
Other area	18	230.11
Total	528	

2.2.2. Low morale

Low morale as an effect of prolonged exposure to stress was not significantly different among predominant areas of practice ($H(13) = 20.958$, $p>0.05$) (Table 21).

Table 21 Test Statistics for Low Morale

Predominant Area of Work	Low Morale
Chi-square	20.958
df	13
Asymp. Sig.	0.074
Monte Carlo	0.065
99% Confidence Interval Lower Bound	0.058
Upper Bound	0.071

Oncology and aged care areas had the highest scores, with recovery reporting the lowest (Table 22).

Table 22 Low Morale Among Predominant Area of Work

Predominant Area of Work	Number	Mean Rank Low Morale
Oncology	2	519.00
Aged Care	3	352.00
Accident & Emergency	20	325.80
Medical	12	289.38
Operating Theatre	9	279.50
Midwife	247	272.16
Surgical	11	269.59
Neonatal Care	55	269.10
Community	110	258.91
Management	14	231.00
Other area	18	227.08
Education	14	225.11
Critical Care	16	221.16
Recovery	2	116.25
Total	533	

2.2.3. Fatigue

Fatigue as an effect of prolonged exposure to stress was not significantly different among predominant areas of practice ($H(13) = 10.981$, $p>0.05$) (Table 23).

Table 23 Test Statistics for Fatigue

Predominant Area of Work	Fatigue
Chi-square	10.981
df	13
Asymp. Sig.	0.612
Monte Carlo	0.635
99% Confidence Interval Lower Bound	0.622
Upper Bound	0.647

Aged care areas and oncology had the highest scores, with recovery reporting the lowest (Table 24).

Table 24 Fatigue Among Predominant Area of Work

Predominant Area of Work	Number	Mean Rank Fatigue
Aged Care	3	398.33
Oncology	2	369.75
Accident & Emergency	20	312.63
Surgical	11	306.55
Operating Theatre	9	297.06
Education	14	294.21
Medical	12	285.29
Midwife	247	269.88
Neonatal Care	55	265.05
Critical Care	16	259.19
Other area	14	258.64
Community	110	244.16
Management	14	229.71
Recovery	2	211.00
Total	533	

2.2.4. Feeling emotionally drained

Feeling emotionally drained as an effect of prolonged exposure to stress was not significantly different among predominant areas of practice ($H(13) = 13.381$, $p>0.05$) (Table 25).

Table 25 Test Statistics for Feeling Emotionally Drained

Predominant Area of Work	Feeling Emotionally Drained
Chi-square	13.381
df	13
Asymp. Sig.	0.419
Monte Carlo	0.427
99% Confidence Interval	
Lower Bound	0.414
Upper Bound	0.440

Oncology and medical areas had the highest scores, with operating theatres reporting the lowest (Table 26).

Table 26 Feeling Emotionally Drained Among Predominant Area of Work

Predominant Area of Work	Number	Mean Rank Feeling Emotionally Drained
Oncology	2	481.50
Medical	13	317.81
Recovery	13	317.81
Accident & Emergency	19	301.87
Management	14	288.64
Surgical	11	282.09
Midwife	244	269.23
Community	111	263.82
Education	14	259.61
Critical Care	16	253.41
Aged Care	3	245.33
Neonatal Care	55	244.44
Other area	18	226.14
Operating Theatre	9	192.06
Total	531	

Appendix 15 Response rates for selected studies focusing on stress and burnout

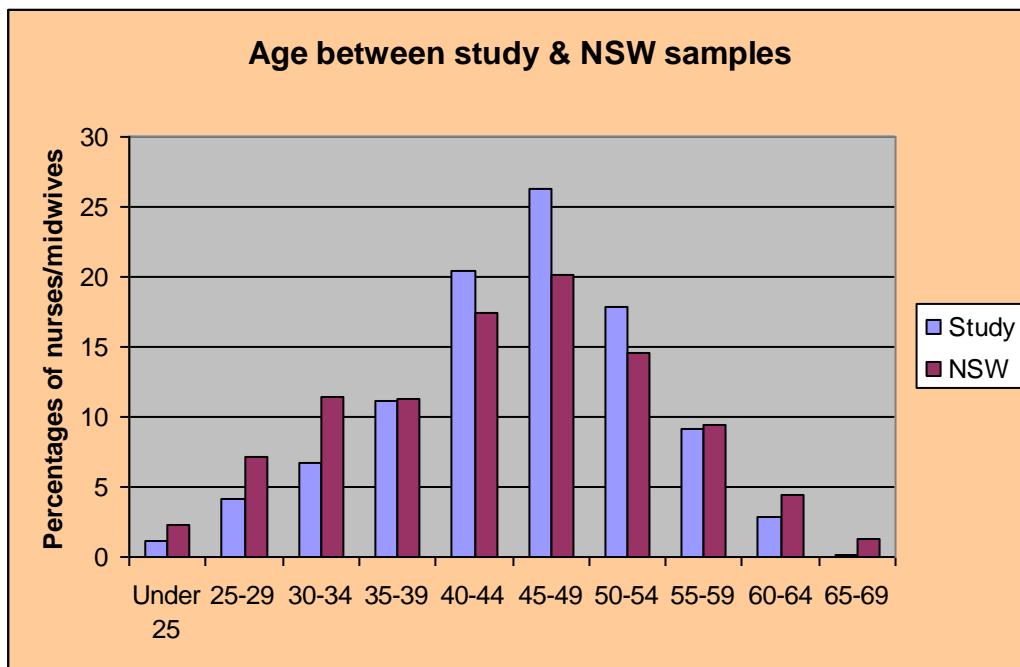
Table 1 Response Rates for Selected Studies Focusing on Stress and Burnout

Author	Participants	Sample population	Response rate	Year of study
Ames, Kilpatrick, Zoller, Sistino, Blackwell & Acsell	Perfusionists	1478	22%	2004
Barton, Spelton, Totterdell, Smith, Folkard & Costa	Nurses, midwives, industrial & service workers	1532	42.3%	1995
Chopra, Sotile & Sotile	Physicians Review of other studies	Not stated	More than 60%	1984-2001 2004 (article published)
De Lange, Taris, Kompier, Houtman & Bongers	Dutch employees	668	85%	2004
Edwards, Burnard, Hannigan, Cooper, Adams, Juggessur, Fothergil & Coyle	Community mental health nurses	260	32%	2006
Greenglass & Burke	Hospital nurses	1363	35%	2001
Griva & Joekes	Teachers	588	28%	2003
Hall	Nurses	1134	38%	2001
Hillhouse & Adler	Hospital nurses	709	36.7%	1997
Kant, Bultmann, Schroer, Beurskens, Van Amelsvoort & Swaen	Working population	12,161	45%	2003
Laschinger, Heather, Finegan, Shamian & Almost	Nurses	404	72%	2001
Morrow, McElroy & Elliott	Hospital nurses	272	32.3%	1994
Ryan & Quayle	Psychiatric nurses	179	42%	1999
Sciacchitano, Goldstein & DiPlacido	Radiographers	250	38%	2001
Skinner	Nurses & midwives	562	41.4%	2005
Skipper, Jung & Coffey	Hospital nurses	482	54.6%	1990
Spooner-Lane & Patton	Public hospital nurses	273	67.7%	2008
Stordeur, D'Hoore & Vandenberghe	Hospital nurses	625	39.2%	2001
Van der Hulst & Geurts	Dutch Postal Service employees	751	64%	2001

Appendix 16 Age and hours per week comparison with study sample, NSW and National statistics

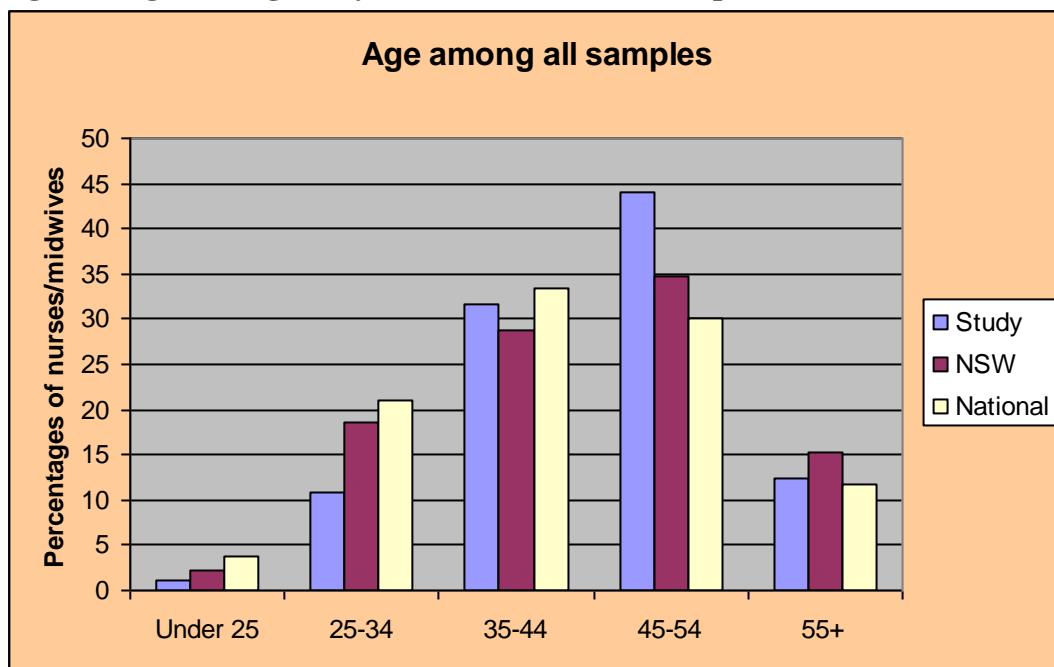
The 35-39 and 55-59 year age groups showed similar percentages for both NSW (11.3% and 9.5%, respectively) and this study sample (11.2% and 9.2%, respectively) (see Figure 1). The remaining age groups were similar which suggests the study sample closely mirrors the NSW sample.

Figure 1 Age Comparison Between Study and NSW Samples



The 35-44 and 55+ age categories were similar percentages for NSW (28.8% and 15.3%, respectively), national (33.5% and 11.8%, respectively) and this study sample (31.7% and 12.3%, respectively) (see Figure 2). The percentage of 45-54 age category was higher in the study sample (44%) than the other two samples (34.7% for NSW and 30% for national). The percentage of under 25 and 25-34 age categories were lower in the study sample (1.1% and 10.8%, respectively compared to NSW, 2.3% and 18.5%, respectively and national, 3.7% and 21%, respectively).

Figure 2 Age Among Study, NSW and National Samples



All of the following information is displayed in Table 1. The most commonly occurring age in this study sample was 44 years. Similarly, in 2001, the Australian Health and Welfare Institute reported the average age for all employed nurses and midwives in Australia was 42.2 years and 41.8 years for all employed clinical nurses (Chrisopoulos and Waters 2003). The average age for nurses and midwives working in NSW in 2003 was 43.7 years and the modal age range was 45 to 49 years (Workforce Planning NSW Health 1999-2003). In 2004, the average age for nurses and midwives in Australia was 43.2 years (AIHW, 2006).

Table 1 Descriptive Statistics for Study, NSW and National Samples

Samples	Australia	NSW	Australia	Current Study
Year	2001	2003	2004	2005
Mean	42.2	43.7	43.2	45
Mode		45-49		44

The number of hours worked per week in NSW by enrolled nurses in 2003 was 38 to 44 hours per week and for registered nurses, 40 to 44 hours per week from 1999 to 2003 (Workforce Planning NSW Health 1999-2003). The Australian statistics (Chrisopolous & Waters, 2003) collected information on fulltime equivalent nurses per 100,000 population and comparisons of average hours worked by state or territory of Australia were made. As the state of work was only able to be determined for 314 respondents (56%) of the study sample, a comparison to Australian statistics was not meaningful (eg. FTE/100,000 population).