EXPERIENCES OF WORK AND LIFE CIRCUMSTANCES, BURNOUT, WORK ENGAGEMENT AND PERFORMANCE AMONG MILITARY NURSING STUDENTS IN GAUTENG

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NOTE

- The publication and reference style used in this mini-dissertation is in accordance with the fourth edition of the *Publication Manual of the American Psychological Association* (APA). The APA-style of publication and reference is prescribed for the Programme in Industrial Psychology at the North-West University.

- The mini-dissertation is submitted in the form of a research article. The name of the study leader appears on the article as it was submitted for publication.

PREFACE

I would like to acknowledge the following people, without whom none of this would have been possible:

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SUMMARY

Subject: Experiences of work and life circumstances, burnout, work engagement and performance among military nursing students in Gauteng.

Key terms: Burnout, engagement, job demands, job resources, performance.

The global shortage of registered nursing practitioners is widely reported in the literature. This shortage can be attributed to a decrease in enrolments for nursing studies, fewer students graduating from nursing education programmes, more nurses leaving the profession shortly after completion of their studies, and other factors. Burnout amongst registered nurses may contribute to the above and can also serve as an indication of the reason these shortages in the nursing profession occur.

The South African National Defence Force (SANDF) is also affected by the shortage of registered nurses. This shortage is increased by the involvement of the SANDF in peacekeeping missions outside South Africa. A need therefore exists for sufficient numbers of registered nursing personnel to qualify from the South African Military Health Services (SAMHS) Nursing College. In order to increase the number of students qualifying from this college and, to retain them after qualifying, research is needed regarding the occurrence of non-completion of studies at the college and the tendency to leave the SANDF shortly after qualifying. The objective of this study was to identify possible stressors (job demands and/or job resources) in the military nursing-student environment, to investigate their effects on students (burnout or engagement), and to assess whether it has any influence on their academic performance.

A cross-sectional survey design was used. A sample of 167 nursing students (completing the four-year integrated nursing diploma) at second, third and fourth-year levels was obtained. The Clinical Environmental Characteristics Scale (CECS), developed by the authors, and the Wellness Survey (WS), together with a biographical questionnaire, were administered. The Wellness Survey (WS) include scales from three inventories, namely the Maslach Burnout Inventory – General Survey (MBI-GS – Maslach, Jackson & Leiter, 1996), Cognitive

Weariness Scale (CWS – Van Horn, Taris, Schaufeli & Schreurs, in press) and Utrecht Work Engagement Scale (UWES - Shaufeli, Salanova, González-Romá, & Bakker, 2002).

Descriptive statistics, exploratory and confirmatory factor analysis, Pearson correlations and structural equation modelling were used to analyse the results.

The results showed that job demands (consisting of overload, organisational influences and work-life balance) had a strong relationship with burnout (consisting of exhaustion, cynicism and cognitive weariness). A negative relationship was found between burnout and academic performance. Job resources (consisting of social support, growth and advancement, contact with others and organisational support) had a strong relationship with work engagement (consisting of vigour and dedication) and a significant negative relationship with performance (academic results). A negative relationship was also shown to exist between work engagement and academic performance.

Recommendations for future research are made.

OPSOMMING

Onderwerp: Belewenis van werk- en lewensomstandighede, uitbranding, werksbegeestering en prestasie van militêre verpleegstudente in Gauteng.

Sleutelterme: Uitbranding, begeestering, werkseise, werkhulpbronne, prestasie.

Die wêreldwye tekort aan geregistreerde verpleegkundiges word dikwels in die literatuur gerapporteer. Hierdie tekort kan toegeskryf word aan 'n afname in registrasies vir verpleegstudie, minder studente wat gradueer vanuit verpleegopleidingsprogramme, meer verpleegkundiges wat die professie verlaat kort na voltooiing van hul studies en ander faktore. Uitbranding onder geregistreerde verpleegkundiges kan bydra tot die bogenoemde en kan dien as 'n aanduiding van redes waarom tekorte in die verpleegprofessie voorkom.

Die Suid-Afrikaanse Nasionale Weermag (SANW) word ook deur die tekort aan geregistreerde verpleegkundiges beïnvloed. Hierdie tekort word vererger deur die SANW se toenemende betrokkenheid by vredesoperasies buite Suid-Afrika. Hierdie situasie vergroot die behoefte aan geregistreerde verpleegpersoneel wat kwalifiseer by die Suid-Afrikaanse Militêre Geneeskundige Dienste (SAMGD) Verpleegkollege. Ten einde die getal studente wat hul studies by hierdie kollege voltooi te verhoog en hulle dienste te behou nadat hulle gekwalifiseer het, is dit noodsaaklik om navorsing te onderneem rakende die oorsake van nievoltooiing van studie asook die tendens om die SANW te verlaat kort na kwalifisering. Die doel van hierdie studie was om moontlike stressors (werkseise en/of werkhulpbronne) in die militêre verpleegstudent se omgewing te identifiseer, die uitwerking daarvan op hulle te bepaal (in terme van uitbranding of begeestering) en om te bepaal of dit enige invloed op hul akademiese prestasie het.

'n Dwarsdeursnee opname-ontwerp is gebruik. 'n Steekproef van 167 verpleegstudente (besig met die vier-jaar geïntegreerde verpleegdiploma) op tweede, derde en vierdejaarvlak is by dié ondersoek betrek. Die Kliniese Omgewing Eienskappe-skaal, ontwikkel deur die outeurs, Welstandsvraelys en 'n biografiese vraelys is gebruik. Die Welstandsvraelys het skale van drie vraelyste ingesluit, naamlik die Maslach Uitbranding Vraelys – Algemene Vraelys (Maslach, Jackson & Leiter, 1996), Kognitiewe Afmattingskaal (Van Horn, Taris, Schaufeli

& Schreurs, in druk) en Utrecht Werksbegeesteringskaal (Schaufeli, Salanova, González-Romá, & Bakker, 2002).

Beskrywende statistiek, verkennende en bevestigende faktoranalise, Pearson korrelasies en strukturele vergelykingsmodellering is gebruik om die data te ontleed.

Die resultate het getoon dat werkseise (bestaande uit werk-oorlading, organisatoriese invloede en werk- en lewensbalans) 'n sterk verband toon met uitbranding (bestaande uit uitputting, sinisme en kognitiewe afmatting). 'n Negatiewe verhouding is gevind tussen uitbranding en akademiese prestasie. Werkhulpbronne (bestaande uit sosiale ondersteuning, ontwikkeling en vooruitgang, kontak met andere en organisatoriese ondersteuning) het 'n sterk verhouding getoon met werksbegeestering (bestaande uit energie en toegewydheid) en 'n sterk negatiewe verband met prestasie (akademiese resultate). 'n Negatiewe verband is tussen werksbegeestering en akademiese prestasie gevind.

Aanbevelings vir toekomstige navorsing word aan die hand gedoen.

CHAPTER 1

INTRODUCTION

This study investigates the effect that job demands and job resources have on burnout and engagement and the resulting effect on academic results of military nursing students completing the four-year integrated nursing diploma.

In Chapter 1 the motivation for the research is discussed in terms of the problem statement and aims of the research. The research method and the division of chapters are discussed.

1.1 PROBLEM STATEMENT

The phenomenon of burnout has received widespread attention in the literature. According to Cilliers (2002), burnout is the highest among people in so-called "people careers" such as social workers, police workers, managers and nurses. McConnell (1982) states that although the work these professionals do differ, they have one thing in common: close contact with people that is often emotionally demanding. Except for the emotionally taxing work they do, they share certain personality characteristics (e.g., a high degree of empathy, understanding and commitment) and a client-centred orientation. It is precisely these characteristics that make these professionals vulnerable to burnout. Cilliers (2002) stated that internationally, at least 20% of nurses are categorised as having severe burnout.

There is no single definition of the term *burnout.* However, the definitions given below provide a comprehensive description of the term. Burnout is described as a persistent, negative, work-related state of mind (or syndrome) which develops gradually over time in individuals who were highly motivated, striving, achieving and non-compromising, with good intentions and high expectations (sometimes out of touch with reality), who stretch themselves beyond the normal work boundaries for a long period of time in their quest for meaning (Cilliers, 2002). The individual then develops an array of physical, psychological and attitudinal symptoms, primarily emotional exhaustion, accompanied by distress, depersonalisation, a sense of reduced effectiveness, decreased motivation and the development of dysfunctional personal and societal attitudes and behaviours at work.

Maslach and Jackson (1986, p. 1) defined burnout as a psychological syndrome of emotional exhaustion, depersonalisation, and reduced personal accomplishment that can occur among individuals who work with other people in some capacity. Schaufeli and Enzmann (1998, p. 36) defined burnout as "a persistent, negative, work-related state of mind in 'normal' individuals. It is primarily characterised by exhaustion, accompanied by distress, a sense of reduced effectiveness, decreased motivation, and the development of dysfunctional attitudes and behaviours at work. The psychological condition develops gradually but may not be noticed by the affected individual. It results from a misfit between intentions and reality in the job. Often burnout is self-perpetuating because of inadequate coping strategies that are associated with the syndrome."

In their definition, Maslach and Jackson (1986) identified emotional exhaustion as the core indicator of burnout and a sense of reduced effectiveness as the accompanying symptom. Other researchers identified distress (affective, cognitive, physical and behavioural), decreased motivation, and dysfunctional attitudes and behaviours at work as additional general symptoms of burnout (Storm & Rothmann, 2003).

Cilliers (2002) stated that burnout is not the same thing as stress. According to Govender (1995), stress can lead to burnout, but not all people who are stressed burn out. Stress could be regarded as a more encompassing term, whereas 'burnout' more specifically focuses on the person-environment (work) fit. Burnout can therefore be regarded as the final step in the progression of inadequate attempts at coping in chronically stressful work situations

Burnout develops in response to job stressors (job demands and lack of resources). The first stage of burnout involves an imbalance between job resources and job demands, that eventually leads to feelings of exhaustion. In the second stage, a set of negative, indifferent or overly detached attitudes develops (cynicism) as an attempt to cope with the exhaustion. Finally, feelings of incompetence, being unsuccessful in achieving goals or providing a service leads the professional to develop reduced professional efficacy (Barkhuizen, Rothmann, & Tytherleigh, 2004).

Recently the concept of burnout has been expanded toward all types of professions and occupation groups, whereas it was originally restricted to the human services domain (e.g.

health care, education and social work). The initial assumption that burnout occurs exclusively among employees who do people work of some kind appears to be invalid (Schaufeli, Martínez, Pinto, Salanova, & Bakker, 2002). The research focus therefore shifted from a crisis in one's relationship with people at work (depersonalisation) to indifferent or distant attitudes towards one's work in general (cynicism) (Barkhuizen, et al., 2004).

Govender (1995) noted that research in the field of burnout revealed that people in helping professions (including nurses) are increasingly withdrawing from work because of excessive and accumulated stress and dissatisfaction. Although personality variables such as locus of control, hardiness and sense of coherence are seen as moderators between job characteristics and occupational burnout/engagement, it is said that the search for causes must be directed away from identifying the bad people toward uncovering the characteristics of bad situations where many good people function.

Work and organisational characteristics that might lead to burnout can be explained in terms of job demands and a lack of job resources. Demerouti, Bakker, Nachreiner, and Schaufeli (2001) developed the Job Demands-Resources (JD-R) model. According to them, job demands are those things that have to be done, and include the physical, social or organisational aspects of the job that require sustained physiological and psychological effort. These may include high workload or emotionally demanding relationships with clients.

Demands in human services (nursing) can be interpreted as quantitative (pace and amount of work) and qualitative (emotional overload) job demands. Quantitative job demands refer to the amount of work required and the available time frame, while qualitative job demands involve employees' affective reactions to their jobs. Quantitative and emotional job demands, along with organisational job demands, are significantly related to burnout, especially to exhaustion and cynicism. Burnout research has focused extensively on quantitative job demands, and it has found that burnout is a response to work overload (Barkhuizen, et al., 2004).

According to Demerouti, et al. (2001), job resources refer to those physical, psychological, social or organisational job aspects that are necessary, firstly to achieve work goals; secondly to reduce job demands (with the associated physiological and psychological costs), and thirdly to stimulate growth and development. Job characteristics such as variety,

independence, opportunities for learning and participation, opportunities to participate, role clarity, effective communication, advancement, remuneration and good relationships with supervisors and colleagues are all examples of job resources. Schaufeli and Enzmann (1998) identified certain job characteristics that might lead to burnout. These include workload (time pressure, role conflict or ambiguity and hours worked); direct client contact (number of clients and severity of clients' problems); social support from colleagues or superiors and lack of feedback (participation in decision making and autonomy).

Research showed that, even when exposed to high job demands and working long hours, some individuals do not show symptoms of burnout. Instead, they seem to find pleasure in dealing with these stressors. From a positive psychology perspective, these individuals could be described as engaged in their work (Fourie & Rothmann, 2004). Schutte, Toppinen, Kalimo and Schaufeli (2000) define engagement as an energetic state in which the practitioner (e.g. nurse) is dedicated to excellent performance and is confident of his or her effectiveness. According to Schaufeli, et al. (2002), work engagement is a concept that includes three dimensions: vigour, dedication and absorption. Vigour involves high levels of energy and mental resilience while working, and includes the willingness and ability to exert effort in one's work even through difficult times. Dedication involves a sense of significance, enthusiasm, inspiration, pride, and challenge. Absorption involves being fully concentrated and immersed in one's work, whereby time passes quickly and one feels carried away by one's job. Vigour and dedication are the direct opposites of emotional exhaustion and mental distance (depersonalisation).

Fourie and Rothmann (2004) stated that job demands are primarily related to the exhaustion component of burnout whereas lack of job resources is primarily related to disengagement Research done by Barkhuizen, et al. (2004) concluded that academic staff in higher education institutions are likely to become victims of burnout when there is an increase in job demands without any corresponding increase in job resources. This could also be the case in the nursing profession.

Ample job resources can create psychological meaningfulness and safety for employees; in order to be engaged in one's job this is exactly what is needed. Since meaningful work leads to eustress (the extent to which cognitive appraisal of a stressful situation is seen to benefit or enhance an individual's well-being) it would promote engagement even if the situation were

demanding (Jackson, Rothmann, & Van de Vijver, in press). The focus on engagement as the positive antithesis of burnout promises to yield new perspectives on interventions for promoting healthy perceptions, beliefs, and physical well-being and alleviating burnout.

The dual-process model, developed by Schaufeli and Bakker (2004), is an extension of the JD-R model developed by Demerouti, et al. (2001). The dual-process model includes work engagement and additional indicators for health impairment and organisational withdrawal. The model is quite helpful in explaining the relationships between job demands, job resources, burnout and engagement. In this model two psychological processes are assumed, namely an energetic and a motivational process. In the energetic process, job demands are linked with health problems via burnout, while the motivational process links job resources via engagement with organisational outcomes.

In line with the job characteristics identified by Schaufeli and Enzmann (1998) as possible causes of burnout, Govender (1995) came up with a summary of specific physical, psychological and social system stressors that exist within the working environment of nurses. These stressors were identified during his studies on stress within different hospital departments such as surgery, oncology and the general wards, and included the following: workload (including physically arduous work such as the lifting of patients and heavy objects); death and dying; inadequacy of preparation to meet the emotional needs of patients and their families; shift work; relationships with other professional groups, doctors and other nurses; uncertainty concerning treatment due to the unpredictability of the work situation and patient condition, especially if doctors are not available; staff support; role conflict; responsibility; home-work conflict; career status; poor promotion prospects; low status and change (i.e. professional developments and new technology). Nixon (1995) confirmed most of theses stressors in his work on burnout, work environment and coping in surgical hospital nurses.

Hospitals are often described as constituting a stressful working environment. This is ascribed to the inherent organisational characteristics including multiple levels of authority, specialisation and work interdependence. Nurses in all types of positions are at risk of occupational burnout, as they work closely with others in helping relationships. However, not all nurses are equally at risk. The area in which they work (oncology, general ward, and intensive care), the repertoires of inadequate coping strategies or a combination of the two

may increase the nurses' susceptibility to burnout (McConnell, 1982). If this statement is true, nursing students should even be more susceptible to burnout, since they are rotated amongst wards in the hospital in order to receive the necessary training. Student nurses experience the same stress as the permanent staff and also have to adapt to the ever-changing environment caused by rotation.

Most students find tertiary education to be highly stressful. Deary, Watson, and Hogston, (2003) mentioned that stress among nursing students increases throughout nursing programmes. High levels of stress may lead to disruptions in physiological and psychological health, and may adversely affect the quality of nursing care delivered by student nurses. Intense anxiety and stress associated with nursing education are familiar topics in the subject literature. Although problems arise from adjusting to both tertiary education and the clinical environment, nursing students (male and female) identified the latter as being the major source of stress (Lo, 2002).

Stressors like the fear of assessment, the fact that what is taught in theory is not always applied in practice, dual roles as student and staff member (Strachan, 1999), that students have no status so no one listens to them (Swain, Pufahl, & Williamson, 2003), non-nursing tasks, and reality shock (Van Velden, Van Wyk, & Van Niekerk, 1998) are also found amongst nursing students. Du Rand and Viljoen (1999) mentions that students from a disadvantaged background may encounter additional stressors such as educational deficit, culture shock and language problems. Military nursing students do have some unique stressors such as fitting into the military culture, military bureaucracy and dual roles as nurse and military practitioner.

The clinical learning experience is prescribed, both nationally and internationally, by the nursing profession and forms an integral component of nursing training programmes. Carelse (2003) and Trotskie, Guwa and Booyens (1998) agree with other researchers that the clinical learning experience is regarded as the heart of professional education, since it provides the opportunity for students to consolidate their knowledge, to socialise in the profession and to acquire the professional values. Care must be taken that students' clinical experience is directed to satisfying their educational needs and not only to be extra "hands" in the clinical units (becoming part of the work force). No learning can be facilitated when students are

stressed, burned-out or feeling unhappy about the space and extent of the clinical learning experience (Van Velden et al., 1998).

With the large numbers of patients that currently visit health services, military as well as civilian, nurses are constantly doing more than they are supposed to (Levert, Lucas, & Ortlepp, 2000). They frequently have to stand in for other occupational groups during personnel shortages. They are kept busy with non-nursing tasks, which keeps them from carrying out their primary task, namely 'nursing' (Fischer & Muller, 2000). Nursing personnel perform more and more specialised tasks since there are no other health workers available (Anon, 1994).

Nurses have the ability not only to serve as the backbone of the health system, but also to serve as the driving force of a well-run and highly effective health system (Strachan, 1999). They are the largest group of health workers in the country, and therefore it is especially important to study the occurrence of stress and burnout within this group. Nurses operate at primary, secondary and tertiary levels of care; they have close contact with patients as well as with the families and communities of these patients; and they occupy a key position in relation to other health workers. Burned out nurses will not be able to function effectively on all these levels.

The South African Military Health Services (SAMHS) Nursing College in cooperation with the University of South Africa (UNISA) plays an important role in providing qualified registered nurses to the South African National Defence Force (SANDF). This college is unique in that it is a military institution offering training to students simultaneously for a military and a professional occupation. Students are offered a four- year Nursing Diploma, which entitles them to officer's appointments after qualifying, and also to registration as registered nurses with the South African Nursing Council (SANC) (Wentzel, 1996).

The SAMHS is currently experiencing a shortage of registered nurses (as is the case in the broader public service and private sector). This shortage is aggravated by the involvement of the SANDF in more and more peacekeeping missions all over Africa. Registered nurses are taken from their working environments for deployment, for months at a time, outside the South African border, resulting in the shift of their workloads to those members staying behind. Many registered nurses leave the SANDF for appointments in the private sector or

even in other countries. Some nursing students do not complete their studies and so never enter the nursing profession as registered nurses.

In order for the SAMHS Nursing College to meet the high demand for registered nurses (decreasing the nurse-patient ratio) and to ensure that they deliver service of a high standard, it is imperative that the physical and psychological needs of student nurses are met while they are active in the military clinical environment (military hospital). The military clinical environment is where the nursing students learn the practical side of nursing, where they are assessed practically and where they are utilised as members of the work force. Students experience the clinical environment as most stressful. Prolonged stress in this environment may lead to burnout and can have an impact on personnel turnover, pass rates and the supply of military nurses to the SANDF.

The literature also mentions that dysfunctional stress (burnout) includes two forms of withdrawal. Firstly, the registered nurse may leave the SANDF and seek work elsewhere. Secondly, it can take the form of a more subtle withdrawal; the registered nurse remains on the SANDF payroll, but will do the bare minimum rather than his or her best (Barkhuizen, et al., 2004). Breakwell (1990) also mentions that burnout is associated with a growing lack of interest in the welfare of patients and a desire to withdraw from them.

The study of burnout, engagement, the experience of work circumstances (job demands and job resources) may provide answers not only to why students perform the way they do, but also to why registered nurses leave the SANDF. It may also provide answers regarding costs to company issues such as absenteeism, high accident rates, negligence, decline in service provided, decreased productivity, low morale, tardiness and low organisational commitment.

Identifying the military nursing student's perceptions of various potential environmental or situational stressors (or antecedents of burnout) inherent to the military clinical environment has the advantage that stress management programmes can be developed and tailored to the manipulation of the military clinical environment and not be aimed only at an individual level. Preventative steps taken early in the student nurses' military careers may help them develop those coping skills that will prevent them from burning out in their later careers. It may also improve the pass rate and performance of nursing students, ensuring that the integrated nursing diploma is completed within the prescribed time of four years. This poses

advantages to both the individual and the SANDF, ensuring a constant flow of qualified registered nurses into the SANDF and a reduction in the costs to company.

The following research questions arise on the basis of the description of the research problem:

- How are burnout, engagement, experience of work circumstances (job demands and job resources) and the relationships amongst these constructs conceptualised in the literature?
- What is the relationship between experience of work circumstances (job demands and job resources), burnout, engagement and performance (academic results)?
- Are there any differences amongst nursing students at second, third and fourth year level with regard to burnout, engagement, experience of work circumstances and performance (academic results)?

1.2 RESEARCH OBJECTIVES

1.2.1 General objective

The general objective of this study is to investigate the relationship between burnout, engagement, experience of work circumstances (job demands and job resources) and performance (academic results) amongst military nursing students completing the four-year integrated nursing diploma in nursing science.

1.2.2 Specific objectives

The specific research objectives are to:

- conceptualise burnout, engagement and experience of work circumstances (job demands and job resources) and the relationships between these constructs from the literature;
- investigate the relationship between experience of work circumstances (job demands and job resources), burnout, engagement and academic performance;

- assess if there are any differences between nursing students on first, second, third and fourth year level with regard to burnout, engagement, experience of work circumstances and academic performance.

1.3 RESEARCH METHOD

The research method consists of a literature review and an empirical study.

1.3.1 Literature review

The literature review focuses on burnout, engagement, experience of work circumstances (job demands and job resources) and academic performance as well as the possible relationships amongst these constructs.

1.3.2 Empirical study

The empirical study consists of the research design, participants, measuring battery and statistical analysis.

1.3.2.1 Research design

A cross-sectional survey design is used to research the research objectives. According to Naudé and Rothmann (2004), this type of design is appropriate where groups of subjects (in this case nursing students at second, third and fourth year level) at various stages of development are studied simultaneously. This design can also be used to assess interrelationships among variables within a population. According to Shaughnessy and Zechmeister (1997), this design is best suited to addressing the descriptive and predictive functions associated with correlational research.

1.3.2.2 Participants

The study population consists of military nursing students completing the four-year integrated nursing diploma at the SAMHS Nursing College situated in Pretoria. The whole

military nursing student population (second, third and fourth year level) situated in Pretoria is included in the study.

1.3.2.3 Measuring battery

Two questionnaires are used in this study, namely the Wellness Survey (WS) and Clinical Environmental Characteristics Scale (CECS).

The Wellness Survey (WS) include scales from three inventories, namely the Maslach Burnout Inventory – General Survey (MBI-GS – Maslach, Jackson & Leiter, 1996), Cognitive Weariness Scale (CWS – Van Horn, Taris, Schaufeli & Schreurs, in press) and Utrecht Work Engagement Scale (UWES - Schaufeli, Salanova, González-Romá, & Bakker, 2002). The WS statements are rated on a 6-point scale ranging from 1 (*never*) to 6 (*everyday*). Only two sub-scales of the MBI-GS are used in the WS namely Exhaustion and Mental Distance (Depersonalisation/Cynicism). Storm and Rothmann (2003), Rothmann and Malan (2003), Rothmann, Jackson, and Kruger (2003) all reported acceptable Cronbach alpha coefficients (see Nunnally & Bernstein, 1994) for Exhaustion (between 0,86 and 0,89) and Mental Distance (between 0,70 and 0,75). The CWS consisted out of six items and refers to the capacity to which workers are able to take up new information and to concentrate on their work. An acceptable Cronbach alpha coefficient of 0,92 was reported for the scale (Coetzee & Rothmann, 2004). An alpha coefficient of 0,76 was obtained for cognitive weariness by Coetzee and Rothmann (2004). Two scales of the UWES are used, namely vigour and dedication. Vigour is measured by six items, while dedication is measured by five items. Schaufeli, Salanova, et al., (2002) found that alpha coefficients for the three subscales of engagement varied between 0,68 and 0,91. A confirmatory factor analysis in recent studies demonstrated the factorial validity of the UWES (Jackson et al., in press). Rothmann and Storm (2003) obtained adequate alpha coefficients for the two engagement subscales namely vigour (0,78) and dedication (0,89).

Based on the Job Characteristic Scale (JCS) developed by Barkhuizen, et al. (2004), the CECS was developed to measure job demands and job resources for nursing students. The CECS includes 55 items and the questions are rated on a 4-point scale ranging from 1 (*never*) to 4 (*always*). The dimensions of the CECS include Organisational Support, growth and

advancement, overload, social support, contact with others, organisational influences and work-life balance.

1.3.2.4 Statistical analysis

The AMOS (Arbuckle, 2003) and SPSS programmes (SPSS, 2001) are used in this research. Firstly, with the help of the AMOS programme, structural equation modelling (SEM) methods are used to test the factorial models for the MBI and UWES. SEM is a confirmatory technique in contrast to the exploratory factor analysis, it is most often used to test a theory. The chi-square (χ^2) and other goodness-of-fit indices are used to summarise the degree of correspondence between the implied and observed covariance matrices.

Secondly, the reliability and validity of the CECS (developed by the authors) is explored. In order to test the validity and reliability of the measuring instruments, Cronbach alpha coefficients and a simple principal component analysis are used. Descriptive statistics (e.g., means, and standard deviations) are used to explore the data.

Thirdly, multivariate analysis of variance (MANOVA) is used to determine the significant differences between burnout (exhaustion, mental distance and cognitive weariness), engagement (vigour and dedication) and job demands and resources of the different year-groups. In using MANOVA, it is possible to determine whether the mean difference between groups on a combination of dependent variables is likely to have occurred by chance (Tabachnick & Fidell, 2001). Significant effects in MANOVA will be tested with ANOVA in order to determine which dependent variable is affected. Tukey tests are done to indicate which groups differ significantly when ANOVAS are done.

Lastly, Pearson's correlation coefficients are used to specify the relationships between the variables. Since a relationship is expected but its direction not predicted, a two-tail test will be used (Field, 2003). A cut-off point for practical significance ($r > 0,30$ medium effect) is set for the correlation coefficients (Cohen, 1988).

1.5 RESEARCH PROCEDURE

The study will take approximately nine months to complete, from 1 February 2005 to 1 November 2006. A copy of the research proposal will be sent to the SAMHS Ethical committee and Defence Intelligence for approval. Ethical aspects regarding the research will be discussed with the participants, and their informed consent to take part in the study will be obtained. The participants will be given the assurance that their test results will be kept confidential. The primary researcher will administer the test battery at the SAMHS Nursing College and 1 Military Hospital on specific dates to be negotiated with the college and the hospital. No direct or subtle coercion by superiors or health care professionals will occur in the recruitment process. Participants in the study will need approximately 45 minutes to complete the test battery, after which their involvement with the study will cease. Participants will not receive any benefits or compensation for taking part in the study. The results will be analysed by the primary researcher and feedback will be given to all approved clients. The results of the study will be the property of the SANDF.

1.6 DIVISION OF CHAPTERS

The chapters in this mini-dissertation are presented as follows:

Chapter 1: Introduction
Chapter 2: Research article
Chapter 3: Conclusion, limitations and recommendations.

1.7 CHAPTER SUMMARY

In this chapter, the problem statement and research objectives for this study were discussed. The research design, study population and the methods used in this study were outlined briefly. A brief layout of the rest of the chapters was given.

In Chapter 2 the concepts of, and the relationships between burnout, work engagement, experience of work life (job demands and job resources) and academic performance are explored in existing subject literature.

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CHAPTER 2

RESEARCH ARTICLE

EXPERIENCES OF WORK AND LIFE CIRCUMSTANCES, BURNOUT, WORK ENGAGEMENT AND PERFORMANCE AMONG MILITARY NURSING STUDENTS IN GAUTENG

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ABSTRACT

The objective of this study was to investigate the relationship between experiences of work and life circumstances (job demands and job resources), burnout, work engagement and academic performance among military nursing students. A cross-sectional survey design was used. A sample consisting of nursing students enrolled in the four-year integrated nursing diploma (N = 167) was used. The Clinical Environment Characteristics Scale, Wellness Survey and a biographical questionnaire were administered. A structural model of academic performance was constructed. The results indicated that job demands had a strong relationship with burnout. Burnout had a negative relationship with academic performance. Job resources had a strong relationship with engagement and a negative relationship with burnout. A negative relationship existed between engagement and academic performance.

OPSOMMING

Die doel van hierdie studie was om die verband tussen werk-en lewensomstandighede (werkseise en- hulpbronne), uitbranding, werksbegeestering en akademiese prestasie onder militêre verpleegstudente te ondersoek. 'n Dwarsdeursnee opname-ontwerp is gebruik. 'n Steekproef bestaande uit verpleegstudente besig met die vier-jaar geïntegreerde verpleegdiploma (N = 167) is gebruik. Die Kliniese Omgewingkenmerke-skaal, Welstandsvraelys en 'n biografiese vraelys is geadministreer. 'n Strukturele model van akademiese prestasie is ontwikkel. Die resultate het getoon dat werkseise 'n sterk verhouding het met uitbranding. Uitbranding het 'n negatiewe verhouding met akademiese prestasie getoon. Werkhulpbronne het 'n sterk verhouding met begeestering getoon en 'n negatiewe verhouding met uitbranding. 'n Negatiewe verhouding is tussen begeestering en akademiese prestasie gevind.

The shortage of nursing practitioners is a worldwide problem. Surveys in the United States reported that shortages in nursing personnel have negatively affected nurses' ability to provide nursing care (Buerhaus, Donelan, Norman, & Dittus, 2005). Studies showed that there is a relationship between low hospital nurse staffing and an increased risk of adverse patient outcomes. The cause of the shortage, according to Buerhaus, et al. (2005), is that there is a sharp reduction in the growth-rate of the supply of registered nurses. The decline in the growth of the supply of registered nurses can be attributed to a decline in interest in nursing as a career, low salaries and a decline in enrolments and graduation from nursing education programmes. In the United States, according to Buerhaus, et al. (2005), enrolments in associate degree, diploma, and baccalaureate programmes dropped by 24%, 65% and 17% respectively, while graduation decreased by 32%, 67% and 3% respectively. In total this amounts to a decline of 24% in enrolment and 25% in graduation. A similar problem recently reached a crisis in the United Kingdom (UK) National Health Service (NHS) with a fall of 15% in the number of nursing students in training (Deary, Watson, & Hogston, 2003). It is apparent that large decreases in enrolments and graduation from nursing education programs have an effect on the flow of new nursing graduates into the workforce. Campaigns for the recruitment of nursing students (as was used in the UK) may address the problem, but after recruitment the challenge is to retain them (Deary et al., 2003).

In South Africa (SA) the situation is not much different; although statistics regarding enrolment and graduation were unavailable, the nursing shortage and the reasons behind it seem to be similar to those experienced abroad. The causes for the shortages such as the closure of several nursing colleges in the past, salaries, the condition of SA hospitals and better opportunities abroad are just some of the topics recently debated in the SA media. According to Deary et al. (2003), many nurses leave the profession within one year of entering it and, in addition, students are lost from nursing education programmes for various reasons (e.g. poor performance, failing clinical assessments and other personal reasons).

Nurses are confronted with increasing job demands while their job resources are often inadequate for coping effectively with these demands. Such working conditions may contribute to high stress levels and perhaps even burnout amongst nurses and nursing students (Demerouti, Bakker, Nachreiner, & Schaufeli, 2000). The role that job demands, job resources and burnout play in the performance of nursing students might explain why they are failing or leaving the profession.

Erasmus, Poggenpoel and Gameiner (1998) noted that up to 85% of professional workers within the health services experience a certain amount of burnout at one time or another during their careers. Since nurses are confronted on a daily basis with people's needs, problems and suffering, their work is considered to be inherently stressful and they are therefore considered to be particularly susceptible to burnout. According to Cilliers (2002) and Demerouti et al. (2000), burnout affects between 20% and 25% of all nurses internationally.

The South African Military Health Services (SAMHS) Nursing College plays an important role in providing qualified registered nurses to the South African National Defence Force (SANDF). This college is unique in the sense that it is a military institution offering professional training to students qualifying themselves simultaneously for a military and a professional occupation. Students are offered a four-year Nursing Diploma which entitles them to officer's appointment after qualifying, and registration with the South African Nursing Council (SANC) as registered nurses (Wentzel, 1996).

The SAMHS is experiencing a shortage of registered nurses. The SANDF's increasing role in peacekeeping missions increases this shortage, since nurses are taken from their work environments for lengthy periods. In turn, this results in a shift of workload to members left behind. Many registered nurses are leaving the SANDF to practise in the private sector or abroad. Some nursing students do not complete their studies and never enter the nursing profession as registered nurses.

The clinical environment is where nursing students learn the practical side of nursing, where they are practically assessed and utilised as workforce. As mentioned, most nursing students experience this environment as most stressful. Prolonged stress in this environment may lead to burnout and have an impact on quality patient care, productivity, personnel turnover, pass rates, supply of military nurses to the SANDF, cost to company, motivation, and organisational commitment. It is therefore imperative that the physical and psychological needs of student nurses are met while they are active in the clinical environment.

The study of burnout, engagement, the experience of work circumstances (job demands and job resources) may provide answers not only to why students perform as they do, but also why they (and registered nurses) leave the SANDF. It may also provide answers regarding

costs to company issues such as: absenteeism, high accident rates, negligence, decline in service provision, decreased productivity, low morale, tardiness and low organisational commitment.

Identifying the military nursing student's perceptions of potential environmental or situational stressors (or antecedents of burnout) inherent to the clinical environment has the advantage that stress management programmes can be developed and tailored to the manipulation of the clinical environment and not be aimed only at the individual level. Preventative steps taken early in the student nurses' military careers may help them develop coping skills that will prevent burnout in their later careers. It may also improve the pass rate and performance of nursing students, ensuring that the integrated nursing diploma is completed within the prescribed time.

The objective of this study was to investigate the relationship between burnout, engagement, experience of work and life circumstances (job demands and job resources) and performance (academic results) among military nursing students completing the four-year integrated nursing diploma in nursing science.

Burnout and work engagement

Burnout is described by Demerouti et al. (2000) as a specific kind of occupational stress reaction among human service professionals caused by, demanding and emotionally charged relationships between caregivers and their recipients. Cilliers (2002) mentions burnout as the highest among people in so-called "people careers" such as social workers, police workers, managers and *nurses*. McConnell (1982) states that although the work of these professionals differs, they have one thing in common: "close contact with people that is often emotionally demanding". Except for their emotionally taxing work, they share certain personality characteristics (e.g., a high degree of empathy, understanding and commitment) and a client-centred orientation. It is argued that it is precisely these characteristics that make them vulnerable to burnout.

Schaufeli and Enzmann (1998, p. 36) define burnout as "a persistent, negative, work-related state of mind (or syndrome) developing over time in a so called normal individual, characterised by an array of physical, psychological and attitudinal symptoms, primarily

exhaustion, accompanied by distress, a sense of reduced effectiveness, decreased motivation and the development of dysfunctional personal and societal attitudes and behaviours at work. This psychological condition develops gradually, but may remain unnoticed for a long time. It results from a misfit between intentions and reality in the job."

Recently the concept of burnout has been expanded to encompass all types of professions and occupation groups, whereas it was originally restricted to the human services domain (e.g., health care, education and social work). The initial assumption that burnout exclusively occurs among employees who do people work of some kind appears to be invalid (Schaufeli, Martínez, Pinto, Salanova, & Bakker, 2002). Depending on the nature of one's job, the dimensions of burnout are conceptualised differently. In the human services (helping professions) the three burnout dimensions are called emotional exhaustion, depersonalisation and low personal accomplishment. However, in other jobs the three dimensions are called exhaustion, cynicism and low professional efficacy (Rothmann, 2003). The research focus therefore shifted from a crisis in one's relationship with people at work (depersonalisation) to indifferent or distant attitudes (mental distance) towards one's relationship with work in general (cynicism) (Barkhuizen, Rothmann, & Tytherleigh, 2004).

Reviews of the literature found that research is more likely to be done on negative phenomena (weaknesses and malfunctioning) than on positive phenomena (well-being) (Schaufeli & Bakker, 2004). According to Montgomery, Peeters, Schaufeli and Den Ouden (2003), there is nevertheless a movement towards positive psychology, focusing on strengths and optimal functioning. In burnout research this movement towards positive psychology is represented by the study of engagement, which is seen as the positive opposite of burnout (Fourie & Rothmann, 2004).

Buitendach and Van Zyl (2004) state that some employees do not develop burnout despite high job demands; they seem to take pleasure in hard work and dealing with job demands. This could be explained by Schutte, Toppinen, Kalimo and Schaufeli (2000) who define engagement as an energetic state in which practitioners (e.g. nurses) are dedicated to excellent performance and confident of their effectiveness in dealing with high job demands. Schaufeli, Martínez, et al. (2002) explain work engagement as a concept that includes three dimensions: vigour, dedication and absorption. Vigour involves high levels of energy and mental resilience while working, and includes the willingness and ability to exert effort in

one's work even through difficult times. Dedication involves a sense of significance, enthusiasm, inspiration, pride, and challenge. Absorption involves being fully concentrated and immersed in one's work, such that time passes quickly and one feels carried away by one's job. Vigour and dedication are the direct opposites of emotional exhaustion and mental distance (depersonalisation).

Causes of burnout and work engagement

The job demand-resources (JD-R) model developed by Demerouti, Bakker, Nachreiner and Schaufeli (2001) specifies how health impairment and motivation or involvement in any organisation may be produced by two sets of working conditions, called job demands and job resources. Firstly, job demands are things that have to be done and include the physical, social or organisational aspects of the job that require sustained physiological and psychological effort. These may include high workload or emotionally demanding relationships with clients (Demerouti, et al., 2001).

Demands in human services (nursing) can be interpreted as quantitative (pace and amount of work) and qualitative (emotional overload) job demands. Quantitative job demands refer to the amount of work required and the available time frame, while qualitative job demands involve employees' affective reactions to their jobs. Quantitative and emotional job demands along with organisational job demands are significantly related to burnout, especially to the components of exhaustion and cynicism. Burnout research has focused extensively on quantitative job demands and has revealed that burnout is a response to work overload (Barkhuizen et al., 2004).

Secondly, job resources refer to physical, psychological, social or organisational job aspects that are necessary, firstly to achieve work goals, secondly to reduce job demands (with the associated physiological and psychological costs), and thirdly to stimulate growth and development. Job characteristics such as variety, independence, learning opportunities, role clarity, effective communication, advancement, remuneration and good relationships with supervisors and colleagues are all examples of job resources (Demerouti, et al., 2001).

According to the JD-R model, several (demanding) characteristics of the (nurses') working environment might lead to the experience of burnout. The model proposes that burnout

follows two processes. The first is the energetic process of wearing out, where high job demands exhaust the employee's energy. The energetic process entails energy depletion (a state of exhaustion is reached) and health problems occur when jobs are badly designed or when high job demands (e.g. work overload, emotional demands) exhaust employee's mental and physical resources. The second is a motivational process in which a lack of resources precludes dealing effectively with job demands and fosters mental withdrawal (disengagement) (Demerouti et al., 2001). In the motivational process, the presence of adequate job resources reduces job demands, fosters goal accomplishment and stimulates personal growth and development. The latter is very important to the organisation, since it may lead to an attitude of organisational commitment and dedication to one's work, which in turn leads to a lower intention to leave the organisation (Bakker, Demerouti, & Schaufeli, 2003).

Schaufeli and Enzmann (1998) have identified certain job characteristics that may lead to burnout. These characteristics include workload (time pressure, role conflict or ambiguity and hours worked); direct client contact (number of clients and severity of client problems); social support from colleagues or superiors, and lack of feedback (participation in decision making and autonomy). The availability of adequate job resources can create psychological meaningfulness and safety for employees, which is precisely what is needed in order to be engaged in one's job. Since meaningful work leads to eustress (the extent to which cognitive appraisal of a stressful situation is seen to benefit or enhance an individual's well-being) it would promote engagement even if the situation were demanding (Jackson, Rothman and Van de Vijver, in press). The focus on engagement may lead to new perspectives with regard to interventions to promote healthy perceptions, beliefs, and physical well-being, and to alleviate burnout.

The dual-process model, developed by Schaufeli and Bakker (2004), is an extension of the JD-R model and includes work engagement and additional indicators for health impairment and organisational withdrawal. The model is helpful in explaining the relationships between job demands, job resources, burnout, engagement and performance. Two psychological processes are assumed in this model, namely an energetic and a motivational process. In the energetic process, job demands are linked with health problems via burnout, while the motivational process links job resources via engagement with organisational outcomes. These two processes, as well as the JD-R model's energetic process (where high job demands

exhaust the employee's energy) and motivational process (where a lack of resources precludes dealing effectively with job demands and fosters mental withdrawal), are indicated in Figure 1.

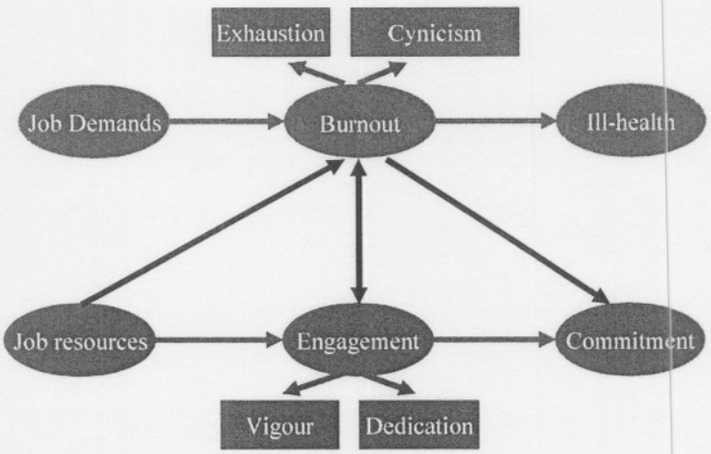

Figure 1. The dual-process model (Schaufeli & Bakker, 2004)

Nixon (1995) and especially Govender (1995) have produced a summary of specific physical, psychological and social system stressors that exist within the working environment of nurses. These stressors include: workload (including physically arduous work such as the lifting of patients); death and dying; inadequacy of preparation to meet the emotional needs of patients and their families; shift work; relationships with other professional groups, doctors and other nurses; uncertainty concerning treatment due to the unpredictability of the work situation and patient condition, especially if doctors are not available; staff support; role conflict; responsibility; home-work conflict; career status; poor prospects of promotion; low status and change (i.e. professional developments and new technology).

Due to their inherent organisational characteristics, including multiple levels of authority, specialisation and work interdependence, hospitals are described as stressful environments to work in. As they work closely with others in helping relationships, nurses in all types of positions are at risk of burnout, however, not all nurses are equally at risk. It was found that the area in which they work (e.g., oncology, and surgery) and (or) inadequate coping

strategies may increase the nurses' susceptibility to burnout (McConnell, 1982). If this is true, nursing students should be even more susceptible to burnout, since they are rotated between wards. Rotation causes uncertainty and exposure to stressors different from those that of previous wards. Since nursing students spend shorter periods in the clinical environment, and therefore have less responsibility than the registered nurses, it could be argued that they do not experience the same amount of stress as the registered nurses. However, in addition to the stress caused by rotation and the stressors mentioned by Govender (1995), student nurses also experience other additional stressors.

Intense anxiety and stress associated with nursing education are familiar topics in the literature. Stressors like the fear of assessment, the fact that what is taught in theory is not always applied in practice, dual roles as student and staff member (Strachan, 1999), the phenomenon that students have no status so no one listens to them (Swain, Pufahl, & Williamson, 2003), non-nursing tasks, unapproachability of registered nurses and reality shock (Van Velden, Van Wyk, & Van Niekerk, 1998) are found amongst nursing students. Problems arise from both adjusting to tertiary education and the clinical environment, but the latter is identified as the major source of stress (Lo, 2002). Du Rand and Viljoen (1999) states that students from disadvantaged backgrounds may encounter additional stressors such as educational deficit, culture shock and language problems. Military nursing students have some unique stressors such as fitting into the military culture, military bureaucracy and dual roles as nurse and military practitioner. High stress levels may lead to disruptions in physiological and psychological health, and may adversely affect the quality of nursing care provided by student nurses.

Carelse (2003) and Trotskie, Guwa and Booyens (1998) mention that the clinical learning experience is regarded as the heart of professional education, since it provides students with the opportunity to consolidate their knowledge, to socialise in the profession and to learn the necessary professional values. Care must be taken that students' clinical experience is directed to satisfying their educational needs and not only for them to be extra 'hands' in the clinical units. No learning can be facilitated when students are stressed, burned out or feeling unhappy about the space and extent of the clinical learning experience (Van Velden, et al., 1998).

The increased number of patients currently visiting health services requires civilian and military nurses constantly to do more than they are supposed to (Levert, Lucas, & Ortlepp, 2000). They often have to stand in for other occupational groups when they experience personnel shortages. Furthermore, they have to execute more and more specialised tasks since there are no other health workers available (Anon, 1994). They are kept busy with non-nursing tasks, which keeps them from doing their primary task, 'nursing' (Fischer & Muller, 2000).

The hypotheses of this study are as follows:

Hypothesis 1: Burnout and engagement levels of students are predicted by job demands and job resources.
Hypothesis 2: Burnout is negatively related to the academic performance of nursing students.
Hypothesis 3: Engagement has a positive effect on the performance (academic results) of nursing students.
Hypothesis 4: Year-group is a determinant of burnout and/or engagement.

METHOD

Research design

A cross-sectional survey design was used to research the research objectives. According to Shaughnessy and Zechmeister (1997) this design is best suited to addressing the descriptive and predictive functions associated with correlational research.

Participants

The study population consisted of military nursing students completing the four-year integrated nursing diploma. First-year students were excluded from the study since they were in the system for only three months during data collection, and did not have much exposure to the clinical environment. A sample of 167 was therefore taken and included two second-year groups (January 2004 and July 2004 intakes), a third-year group (January 2003 intake) and a fourth-year group (January 2002 intake).

Table 1 contains the biographical information of the total sample and the different year-groups. All year-groups consisted mainly of Black (ranging between 46,7% and 59,5% per group) and Coloured students (ranging between 22,2% and 31,8% per group). The 20 to 30 year age group represented between 77,8% and 100% of the four year-groups. Women comprised between 52,8% and 90,9% of all four year-groups, while the home language of the different groups was mainly Afrikaans (ranging between 27,8% and 35,6% per group), English (ranging between 7,1% and 24,4% per group) and Zulu (ranging between 8,9% and 21,4%). Women comprised 79% of the total sample. African languages dominated the language of the total sample (other languages 34,1% and Zulu 16,2%).

Table 1

Characteristics of Participants (N = 167)

Item & Category	2nd Jan (*n* = 44)	%	2nd Jul (*n* = 45)	%	3rd Jan (*n* = 42)	%	4th Jan (*n* = 36)	%	Group (*n* = 167)	% of Sample
Sex										
Male	4	9,1	6	13,3	8	19	17	47,2	35	21
Female	40	90,9	39	86,7	34	81	19	52,8	132	79
Race										
African	21	47,7	21	46,7	25	59,5	22	61,1	89	53,3
Coloured	14	31,8	10	22,2	11	26,2	8	22,2	43	25,7
White	7	15,9	9	20	4	9,5	4	11,1	24	14,4
Indian	2	4,5	5	11,1	2	4,8	2	5,6	11	6,6
Age										
20 - 30	41	93,2	35	77,8	42	100	36	100	154	92,2
31 - 40	3	6,8	10	22,2	-	-	-	-	13	7,8
Language										
Afrikaans	15	34,1	16	35,6	14	33,3	10	27,8	55	32,9
English	9	20,5	11	24,4	3	7,1	5	13,9	28	16,8
Zulu	9	20,5	4	8,9	9	21,4	5	13,9	27	16,2
Other	11	25,0	14	31,1	16	38,1	16	44,4	57	34,1

Other languages include: Venda, Tsonga, Xhosa, Portuguese, Tswana, North and South Sotho and Sepedi.

Approval for the study was obtained from the South African Military Health Services (SAMHS) Ethical Committee. As students are active at the nursing college and in the clinical environment, permission was obtained from both the Acting Officer Commanding of 1 Military Hospital and the Nursing College to collect data at these institutions.

Students were informed (verbally) regarding the study before they participated. They also received an informed consent form describing all aspects of the study. Students were also given the opportunity to ask questions regarding the study, the surveys and other uncertainties they experienced. After they had been informed, the students were required to sign the informed consent form, and a friend or a colleague was asked to sign as witness. Instructions were then given on the completion of the surveys, and the researcher was available to answer any questions that might arise. After receiving consent from the participants, their results were obtained from the nursing college. Because different subjects are presented at different levels, and not all results were available at the time of data collection, first and second semester results for each year-group had to be calculated separately. Averages were calculated for the available results of each year-group.

Measuring instruments

Two questionnaires were used in the research, namely the Wellness Survey (WS) and Clinical Environmental Characteristics Scale (CECS).

The Wellness Survey (WS) include scales from three inventories, namely the Maslach Burnout Inventory – General Survey (MBI-GS – Maslach, Jackson, & Leiter, 1996), Cognitive Weariness Scale (CWS - Van Horn, Taris, Schaufeli, & Schreurs, in press) and Utrecht Work Engagement Scale (UWES - Schaufeli, Salanova, González-Romá, & Bakker, 2002). The WS statements were rated on a 6-point scale ranging from 1 (*never*) to 6 (*every day*). Only two sub-scales of the MBI-GS were used in the WS, namely Exhaustion and Mental Distance (Depersonalisation/Cynicism). Storm and Rothmann (2003), Rothmann and Malan (2003), Rothmann, Jackson, and Kruger (2003) all report acceptable Cronbach alpha coefficients (see Nunnally & Bernstein, 1994) for Exhaustion (between 0,86 and 0,89) and Mental Distance (between 0,70 and 0,75). The CWS consists of six items and refers to the capacity to which workers are able to absorb new information and to concentrate on their work (e.g. "I have trouble concentrating"). An acceptable Cronbach alpha coefficient of 0,92 was reported for the scale (Coetzee & Rothmann, 2004). An alpha coefficient of 0,76 was obtained for cognitive weariness by Coetzee and Rothmann (2004). Two scales of the UWES were used, namely vigour and dedication. Vigour was measured by six items (e.g., "I am bursting with energy in my work"), while dedication was measured by five items (e.g., "I find my work full of meaning and purpose"). Schaufeli, et al. (2002) found that alpha coefficients

for the three sub-scales of engagement varied between 0,68 and 0,91. A confirmatory factor analysis in recent studies demonstrated the factorial validity of the UWES (Jackson, et al., in press). Rothmann and Storm (2003) obtained adequate alpha coefficients for the two engagement sub-scales, namely vigour (0,78) and dedication (0,89).

Based on the Job Characteristic Scale (JCS) developed by Barkhuizen, et al. (2004), the CECS was developed by the authors to measure job demands and job resources for nursing students. The CECS includes 55 items and the questions are rated on a 4-point scale ranging from 1 (*never*) to 4 (*always*). The dimensions of the CECS include organisational support, growth and advancement, overload, social support, contact with others, organisational influences and work-life balance.

Statistical analysis

The AMOS programme (Arbuckle, 2003) and the SPSS programme (SPSS, 2001) were used in this study.

Structural equation modelling (SEM) methods with the help of the AMOS programme was used to test the factorial models for the MBI and UWES. The χ^2 and other goodness-of-fit indices were used to summarise the degree of correspondence between the implied and observed covariance matrices. Secondly, the reliability and validity of the CECS were computed. Cronbach alpha coefficients and a simple principal component analysis were done to assess the reliability and validity of the measuring instruments. Descriptive statistics (e.g. means, and standard deviations) were used to explore the data. Pearson correlation coefficients were used to specify the relationships between the variables. Since a relationship was expected, but its direction was not predicted, a two-tail test was used (Field, 2003). A cut-off point for practical significance ($r > 0,30$ medium effect) was set for the correlation coefficients (Cohen, 1988).

Multivariate analysis of variance MANOVA was used to determine the significant differences between the burnout (exhaustion, mental distance and cognitive weariness), engagement (vigour and dedication) and job demands and resources of the different year-groups. Using the MANOVA, it was possible to determine whether the mean difference

between groups on a combination of dependent variables was likely to have occurred by chance (Tabachnick & Fidell, 2001). Significant effects in MANOVA were tested with ANOVA in order to determine which dependent variable was affected. Tukey tests were done to indicate which groups differed significantly when ANOVAS was applied.

Hypothesised relationships were tested empirically for goodness of fit with the sample data. Among the fit indices produced by the AMOS Programme is the Chi-square statistic (χ^2), which is the test of absolute fit of the model. However, the χ^2 value is sensitive to sample size. Therefore, additional goodness-of-fit indices, such as the Goodness-of-Fit Index (GFI), the Adjusted Goodness-of-Fit Index (AGFI), the Normed Fit Index (NFI), the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI) and the Root Means Square Error of Approximation (RMSEA), were used in this study.

RESULTS

Construct validity of the measuring instruments

Structural Equation Modelling (SEM) methods, as implemented by AMOS (Arbuckle, 2003), were used to test the factorial models for the MBI-GS and UWES. Numerous modifications of the model were tested in order to find the best fit model. The results are shown in Table 2.

Table 2

Goodness-of-fit Statistics for the Hypothesised MBI and UWES Models

Model	χ^2	χ^2/df	NFI	CFI	RMSEA
MBI					
Model 1	343,54	2,89	0,71	0,78	0,11
Model 2	323,47	2,72	0,73	0,80	0,10
Model 2.2	210,83	1,82	0,82	0,91	0,07
Model 3	210,83	1,82	0,82	0,91	0,07
Model 3.3	169,97	1,70	0,85	0,93	0,07
UWES					
Model 1	66,64	1,90	0,89	0,94	0,07
Model 1.1	63,84	2,36	0,89	0,94	0,09
Model 2	63,36	1,86	0,90	0,95	0,07
Model 2.2	60,64	2,33	0,90	0,94	0,09

A quick overview of model fit was done by looking at the overall χ^2 value, together with its degrees of freedom. The assessment of model fit was based on several goodness-of-fit statistics (NFI, CFI and RMSEA). Since an ill-fitting model was found at first, analysis proceeded in an exploratory mode until a revised model was fitted to the data.

The chi square (χ^2 = 343,54) of the initial MBI model (model 1) revealed a relatively poor overall fit. Poor fit was further confirmed by NFI and CFI values lower than 0,95 and a RMSEA value higher than 0,05. The chi square (χ^2 = 323,47) of MBI model two also revealed a relatively poor fit. The NFI and CFI values were still lower than 0,95 and the RMSEA higher than 0,05. The three-factor MBI model (model 3.3) included the factors Exhaustion, Cynicism and Cognitive Weariness, and fitted better than either model one or two. The χ^2/df was smaller than two; although smaller (0,85) than 0,90 the NFI was close enough to the cut-off score; the CFI score (0,93) was acceptable compared to the guideline of 0,90, and lastly the RMSEA value was lower than 0,08 (Tabachnick & Fidell, 2001).

With regard to the UWES, a two-factor model (model 2.2) was accepted, consisting of the factors, namely Vigour and Dedication. The χ^2/df ratio (2,33) was close to two; although smaller (0,90) than 0,9 the NFI was close enough to the cut-off score; the CFI score (0,94) came very close to 0,95, and lastly although the RMSEA score (0,09) was larger than the cut-off score of 0,08, it was still acceptable (Tabachnick & Fidell, 2001).

A principal component analysis (PCA) was carried out on the 55 items of the Clinical Environment Characteristic Scale (CECS). The analysis of eigenvalues (larger than 1) and the scree plot showed that seven factors, which account for 45,67% of the total variance, could be extracted. The seven extracted factors and their underlying CECS items are shown in Table 3. Also indicated in Table 3 are the loadings of each identified factor, zeros represent loadings under 0,32 (10% of variance). Communality (h^2), which is a measure of the proportion of common variance explained by each item in the questionnaire, is also shown. The closer h^2 gets to one, the more variance it explains. Communalities were relatively high, ranging between 0,61 and 0,78. Furthermore Table 3 indicates the eigenvalues, the percentage of variance within each factor and the covariance. Labels for the different factors are indicated at the bottom of the table in a footnote.

The first factor was labelled *Organisational Support.* The items on this factor relate to the support that is provided by direct supervisors, feedback regarding performance, up to date information regarding the department, clear decision-making processes, clarity on the purpose of tasks and activities, participation in the decision-making of the department, good relationships with supervisors, clarity, being appreciated, and autonomy. The second factor was labelled *Growth and Advancement.* Items that loaded on this factor relate to financial well-being, the study environment, variety of tasks in the clinical environment, independent thought and action, and challenging work. The third factor was labelled *Overload* and includes items such as workload, mental load and time pressure to complete tasks. The fourth factor was labelled *Social Support.* The items that loaded on this factor relate to support from colleagues and supervisors in the clinical environment. The fifth factor was labelled *Contact with Others,* and measured whether sufficient contact opportunities with colleagues existed in the clinical environment. The sixth factor was labelled *Organisational Influences.* The items that loaded on this factor relate to the effect that military activities and bureaucracy have on students. The last factor was called *Work/Life Balance,* and relates to the relationship between the work environment and family or social life.

Table 3

Factor Loadings and Communalities (h^2) for the CECS

Item	Description	F1	F2	F3	F4	F5	F6	F7	h^2
27	Do you know exactly what your direct supervisor thinks of your performance?	0,69	0,00	0,00	0,00	0,00	0,00	0,00	0,68
30	Does your direct supervisor inform you about how well you are executing your tasks?	0,66	0,00	0,00	0,00	0,00	0,00	0,00	0,65
31	Are you kept adequately up-to-date about important issues within your department/organisation?	0,64	0,00	0,00	0,00	0,00	0,00	0,00	0,69
32	Is the decision-making process of your department/organisation clear to you?	0,62	0,00	0,00	0,00	0,00	0,00	0,00	0,70
28	Do you receive sufficient information on the purpose of your tasks/activities in the clinical environment?	0,59	0,00	0,00	0,00	0,00	0,00	0,00	0,67
24	In the clinical environment, do you feel appreciated by your supervisor?	0,59	0,00	0,00	0,00	0,00	0,00	0,00	0,69
29	Do you receive sufficient information on the results of your tasks/activities in the clinical environment?	0,58	0,00	0,00	0,00	0,00	0,00	0,00	0,70
35	Can you participate in decisions about the nature of your tasks/activities?	0,58	0,00	0,00	0,00	0,00	0,00	0,00	0,61
36	Do you have a direct influence on your department/organisation's decisions?	0,56	0,00	0,00	0,00	0,00	0,00	0,00	0,61
23	Do you get on well with your supervisor?	0,51	0,00	0,00	0,00	0,00	0,00	0,00	0,77
26	Do you know exactly for what you are responsible and which areas are not your responsibility?	0,50	0,00	0,00	0,00	0,00	0,00	0,00	0,67
18	Can you participate in the decision about when a task must be completed?	0,48	0,00	0,00	0,00	0,00	0,00	0,00	0,61
17	Do you have influence in the planning of your tasks in the clinical environment?	0,46	0,00	0,00	0,00	0,00	0,00	0,00	0,68
16	Do you have freedom in executing your tasks in the clinical environment?	0,44	0,00	0,00	0,00	0,00	0,00	0,00	0,66
25	Do you know exactly what other people expect of you in the clinical environment?	0,41	0,00	0,00	0,00	0,00	0,00	0,00	0,73
41	Can you live comfortably on your pay?	0,00	0,68	0,00	0,00	0,00	0,00	0,00	0,71
40	Do you think that your organisation pays good salaries?	0,00	0,63	0,00	0,00	0,00	0,00	0,00	0,64
42	Do you think you are paid enough for the tasks that you execute in the clinical environment?	0,00	0,63	0,00	0,00	0,00	0,00	0,00	0,69
43	Does your organisation offer you the possibility to progress financially?	0,00	0,56	0,00	0,00	0,00	0,00	0,00	0,62
13	Does your study environment offer you opportunities for personal growth and development?	0,00	0,44	0,00	0,00	0,00	0,00	0,00	0,68
12	Do you have enough variety in the clinical environment?	0,00	0,43	0,00	0,00	0,00	0,00	0,00	0,63
15	Does the clinical environment offer you the possibility of independent thought and action?	0,00	0,42	0,00	0,00	0,00	0,00	0,00	0,63
11	Does the clinical environment make sufficient demands on all your skills and capacities?	0,00	0,33	0,00	0,00	0,00	0,00	0,00	0,70
3	Do you have to put in extra effort to complete your tasks in the clinical environment?	0,00	0,00	0,72	0,00	0,00	0,00	0,00	0,68
6	Do you have to remember many things while executing your tasks in the clinical environment?	0,00	0,00	0,67	0,00	0,00	0,00	0,00	0,66
4	Do you have to be attentive to many things at the same time in the clinical environment?	0,00	0,00	0,66	0,00	0,00	0,00	0,00	0,64
2	Do you execute tasks in the clinical environment under time pressure?	0,00	0,00	0,62	0,00	0,00	0,00	0,00	0,61
1	Do you have too many tasks to execute in the clinical environment?	0,00	0,00	0,60	0,00	0,00	0,00	0,00	0,63
5	Do you have to give continuous attention while executing your tasks in the clinical environment?	0,00	0,00	0,57	0,00	0,00	0,00	0,00	0,68
19	Can you count on your colleagues when you come across difficulties in the clinical environment?	0,00	0,00	0,00	0,71	0,00	0,00	0,00	0,76

Table 3

Factor Loadings and Communalities (h^2) for the CECS

20	If necessary, can you ask your colleagues for help?	0,00	0,00	0,00	0,70	0,00	0,00	0,00	0,78
21	Do you get on well with your colleagues?	0,00	0,00	0,00	0,60	0,00	0,00	0,00	0,74
22	Can you count on your supervisor when you come across difficulties in the clinical environment?	0,00	0,00	0,00	0,53	0,00	0,00	0,00	0,70
38	Can you have a chat with colleagues during working hours?	0,00	0,00	0,00	0,00	0,78	0,00	0,00	0,77
39	Do you find that you have enough contact with colleagues during working hours?	0,00	0,00	0,00	0,00	0,67	0,00	0,00	0,66
37	Do you have contact with colleagues as part of your tasks/activities in the clinical environment?	0,00	0,00	0,00	0,00	0,60	0,00	0,00	0,65
34	Can you discuss problems with regard to your tasks/activities in the clinical environment with your direct supervisor?	0,00	0,00	0,00	0,00	0,47	0,00	0,00	0,66
33	Is it clear to you whom you should address within the department/organisation for specific problems?	0,00	0,00	0,00	0,00	0,46	0,00	0,00	0,73
47	Does the military bureaucracy interfere with your training in the clinical environment?	0,00	0,00	0,00	0,00	0,00	0,80	0,00	0,76
46	Do military activities interfere with your training in the clinical environment?	0,00	0,00	0,00	0,00	0,00	0,78	0,00	0,72
48	Do non-nursing tasks interfere with your daily tasks in the clinical environment?	0,00	0,00	0,00	0,00	0,00	0,66	0,00	0,68
49	Do family crises have an adverse effect on your daily life?	0,00	0,00	0,00	0,00	0,00	0,00	0,62	0,77
52	Does your status amongst friends and family sometimes cause you embarrassment?	0,00	0,00	0,00	0,00	0,00	0,00	0,60	0,70
50	Do you find social situations with friends and / or family difficult to handle?	0,00	0,00	0,00	0,00	0,00	0,00	0,50	0,55
51	Do you think that your home life is affected adversely owing to the fact that you do shifts in the clinical environment?	0,00	0,00	0,00	0,00	0,00	0,00	0,50	0,65
55	Does the country's economic situation (e.g. inflation) make life exceptionally difficult for you?	0,00	0,00	0,00	0,00	0,00	0,00	0,43	0,57
53	Does your background (e.g. your past life, or where you come from) cause you embarrassment?	0,00	0,00	0,00	0,00	0,00	0,00	0,36	0,73
	Eigenvalues	9,88	3,74	2,71	2,46	2,39	2,09	1,85	
	Percentage variance	17,96	6,80	4,93	4,48	4,34	3,80	3,37	

Factor labels: F1: Organisational Support; F2: Growth and Advancement; F3: Overload; F4: Social Support; F5: Contact with Others; F6: Organisational Influences; F7: Work-Life Balance

Descriptive statistics

The descriptive statistics and alpha coefficients of the measuring instruments, namely the MBI-GS, UWES and CECS, are indicated in Table 4. According to Nunnally and Bernstein (1994), Cronbach alpha coefficients should be higher than 0,70. Acceptable Cronbach alpha coefficients varying between 0,63 and 0,84 were obtained for most of the scales (which indicate acceptable levels of reliability for further analyses. Table 4 also indicates that the measuring instruments (except for one factor in the CECS instrument) have relatively normal distributions, with acceptable levels of skewness and kurtosis.

The results in Table 4 show that Exhaustion is positively related to Mental Distance (large effect), Cognitive Weariness (medium effect), Overload (medium effect), and Work/Life Balance (medium effect). Exhaustion is negatively related to Vigour (medium effect), Dedication (medium effect), Organisational Support (medium effect) as well as Growth and Advancement (medium effect). Mental Distance is positively related to Cognitive Weariness (large effect), Overload and Work/Life Balance (medium effect). It is negatively related to Vigour (large effect), Dedication (large effect), Organisational Support (medium effect), as well as Growth and Advancement (medium effect).

Cognitive Weariness is positively related to Work/Life Balance (medium effect); it is negatively related to Vigour (medium effect) and Organisational Support (medium effect). Vigour is positively related to Dedication (large effect), Organisational Support (medium effect) as well as Growth and Advancement (medium effect). Vigour was only negatively related to Work/Life Balance (medium effect).

Dedication is positively related to Organisational Support (medium effect) as well as Growth and Advancement (medium effect). Dedication is only negatively related to Work/Life Balance (medium effect).

Table 4

Descriptive Statistics, Alpha Coefficients and Product-Moment Correlation Coefficients between the Scales

Item		Mean	SD	α	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Exhaustion	19,52	6,75	0,84	-	-	-	-	-	-	-	-	-	-	-	-	-
2	Mental Distance	13,45	7,89	0,78	0,67*++	-	-	-	-	-	-	-	-	-	-	-	-
3	Cognitive Weariness	13,59	7,55	0,80	0,49*+	0,57*++	-	-	-	-	-	-	-	-	-	-	-
4	Vigour	12,20	5,26	0,70	-0,50*+	-0,53*++	-0,33*+	-	-	-	-	-	-	-	-	-	-
5	Dedication	19,38	7,01	0,81	-0,43*+	-0,61*++	-0,28*	0,68*++	-	-	-	-	-	-	-	-	-
6	Organisational Support	31,01	8,67	0,78	-0,39*+	-0,45*+	-0,36*+	0,48*+	0,40*+	-	-	-	-	-	-	-	-
7	Growth and Advancement	13,95	3,12	0,71	-0,38*+	-0,41*+	-0,19*	0,37*+	0,43*+	0,46*+	-	-	-	-	-	-	-
8	Overload	18,27	3,34	0,78	0,31*+	0,32*+	0,30*	-0,10	-0,12	-0,12	-,13	-	-	-	-	-	-
9	Social Support	11,10	2,63	0,77	-0,30*	-0,25*	-0,12	0,25*	0,19*	0,45*+	,28*	,00	-	-	-	-	-
10	Contact with others	12,47	3,02	0,72	-0,19*	-0,18*	-0,17*	0,20*	0,16*	0,36*+	,30*	-,07	,30*	-	-	-	-
11	Organisational Influences	7,99	2,57	0,76	0,09	0,09	-0,07	-0,11	-0,13	-0,12	-,26*	,20*	-,12	-,17*	-	-	-
12	Work-Life Balance	13,41	3,35	0,63	0,36*+	0,45*+	0,38*+	-0,39*+	-0,37*+	-0,28*	-,24*	,19*	-,19*	-,11	,25*	-	-
13	Mean 1st Semester Results	63,95	9,19	-	-0,06	-0,02	-0,11	-0,08	-0,16*	-0,07	-,02	-,11	-,01	,01	-,05	-,01	-
14	Mean 2nd Semester Results	68,22	8,11	-	-0,30*+	-0,30*	-0,26*	0,15	0,05	0,13	-,17	-,13	,14	-,03	,08	-,06	,79*++

* $p < 0,05$ Statistically significant
\+ $r > 0,30$ Correlation is practically significant (medium effect)
++ $r > 0,50$ Correlation is practically significant (large effect)

Differences between groups

MANOVA was performed to determine whether there was a difference between year-groups with regard to burnout, engagement, job demands and resources. Year-group was used as the independent variable, and the burnout, engagement, job demands and job resources dimensions as dependent variables. Wilks' Lambda was utilised to determine whether groups differed significantly. There was a significant effect of year-group on the dependent variables ($F = 4{,}033$, $p < 0{,}01$; Wilks' Lambda = 0,44; $\eta^2 = 0{,}24$). This effect was relatively large and explained 24,10% of the variance in the dependent variables. Statistically significant differences ($p < 0{,}01$) between the year-groups were obtained for exhaustion, mental distance, cognitive weariness, vigour, dedication, organisational support, growth and advancement, overload, and social support. The results of the F-tests are given in Table 5.

Table 5

MANOVA with Year-group as Independent Variable and Burnout, Engagement, Job Demands- and Resources as Dependent Variables

	Tests of between subjects effects					
Dependent variable	Ss	*df*	ms	*F*	*p*	Partial eta squared (η^2)
Burnout						
Exhaustion	771,84	3	257,28	6,18	0,001*	0,102
Mental Distance	1704,20	3	568,07	10,73	0,000*	0,165
Cognitive Weariness	1041,87	3	347,29	6,73	0,000*	0,110
Engagement						
Vigour	599,18	3	199,73	8,17	0,000*	0,131
Dedication	1572,02	3	524,01	12,966	0,000*	0,193
Job Demands and Resources						
Organisational Support	1941,22	3	647,07	10,01	0,000*	0,156
Growth and Advancement	210,18	3	70,06	8,120	0,000*	0,130
Overload	163,83	3	54,61	5,28	0,002	0,089
Social Support	80,28	3	26,76	4,073	0,008	0,070
Contact with Others	21,47	3	7,167	0,78	0,506	0,014
Organisational Influences	37,55	3	12,52	1,93	0,127	0,034
Work-Life Balance	39,16	3	13,05	1,16	0,326	0,021

* Statistically significant difference $p < 0{,}01$

Significant differences were found between the year-groups with regard to job demands, job resources, burnout and engagement. With regard to job demands the July and January

second-year groups as well as the third-year group differed significantly from the fourth-year group on the overload dimension. This might indicate that the fourth-year group is experiencing higher levels of job overload than the second and the third-year groups. A significant difference was found between the second-year groups with regard to organisational support. It was shown that the year-groups differ with regard to organisational support, growth and advancement and social support as they progress from the second to the fourth year. The same phenomenon was found with regard to the burnout (exhaustion, mental distance and cognitive weariness) and engagement (vigour and dedication) dimensions, where the second-years differed from the third-years and the third-years from the fourth-years. The January second-year group, however, differed from the July group as well as the third- and fourth-years on the mental distance dimension of burnout.

Table 6

Differences between Groups regarding Burnout, Engagement, Job Demands- and Resources

	Factors	**Year-group**	**2nd year Jul**	**3rd year Jan**	**4th year Jan**
Burnout	Exhaustion	2nd year Jan	1,28	1,43	4,64*
		3rd year Jan	-	-	6,07*
	Mental distance	2nd year Jan	4,60*	3,13*	4,26*
		2nd year Jul	-	7,73*	0,33
		3rd year Jan	-	-	7,40*
	Cognitive Weariness	2nd year Jan	2,88	0,78	5,77*
		3rd year Jan	-	-	6,55*
Engagement	Vigour	2nd year Jul	-	4,52*	0,25
		3rd year Jan	-	-	4,77*
	Dedication	2nd year Jan	2,86	5,48*	1,62
		2nd year Jul	-	8,34*	4,48*
		3rd year Jan	-	-	3,87*
Job Demands and Resources	Organisational Support	2nd year Jan	4,46*	4,21	3,48
		2nd year Jul	-	8,67*	0,99
		3rd year Jan	-	-	7,68*
	Growth and Advancement	2nd year Jan	0,60	2,84*	0,30
		2nd year Jul	-	2,24*	0,29
		3rd year Jan	-	-	2,54*
	Overload	2nd year Jan	0,70	0,38	1,97*
		2nd year Jul	-	0,33	2,67*
		3rd year Jan	-	-	2,34*
	Social support	2nd year Jan	0,14	1,55*	0,25
		3rd year Jan	-	-	1,79*

* $p < 0,01$

Structural model

To prepare the data for the purpose of testing a structural model of the academic performance of nursing students, exploratory factor analyses were carried out on the scales of the WS, as well as the CECS using SPSS (SPSS, 2003). First, a simple principal component analysis was carried out, using exhaustion, cynicism, cognitive weariness, vigour and dedication as input variables. Two factors, which explained 78,32% of the total variance, were extracted using a principal component analysis with a direct oblimin rotation. The first factor was labelled *Engagement* and included Vigour (loading = 0,86) and Dedication (loading = 0,93). The second factor was labelled *Burnout* and included Cognitive Weariness (loading = 0,97), Exhaustion (loading = 0,68) and Cynicism (loading = 0,63).

Furthermore, a simple principal component analysis was carried out on the factors of the CECS. Two factors, which explained 51,21% of the total variance, were extracted using a varimax rotation. The first factor was labelled *Job Demands,* and consisted of Overload (loading = 0,76), Organisational Influences (loading = 0,68), and Work/Life Balance (loading = 0,57). The second factor was labelled *Job Resources,* and consisted of Organisational Support (loading = 0,79), Social Support (loading = 0,77), Contact with Others (loading = 0,66), and Growth and Advancement (loading = 0,60).

A structural model for job demands, job resources, burnout, engagement and performance were constructed. The model, including the hypothesised relationships, was tested with SEM analysis. The goodness-of-fit statistics are indicated in Table 7.

Table 7

Goodness-of-fit Statistics for the Structural Model

Model	χ^2	χ^2/df	GFI	IFI	TLI	CFI	RMSEA
Final Model	94,48	1,60	0,92	0,94	0,92	0,94	0,06

A good fitting model is indicated by χ^2/df (1,60), since it is smaller than two. The other fit statistics also indicated acceptable fit of the data to the model (GFI = 0,92; TLI = 0,92; IFI = 0,94; CFI = 0,94, and RMSEA = 0,06).

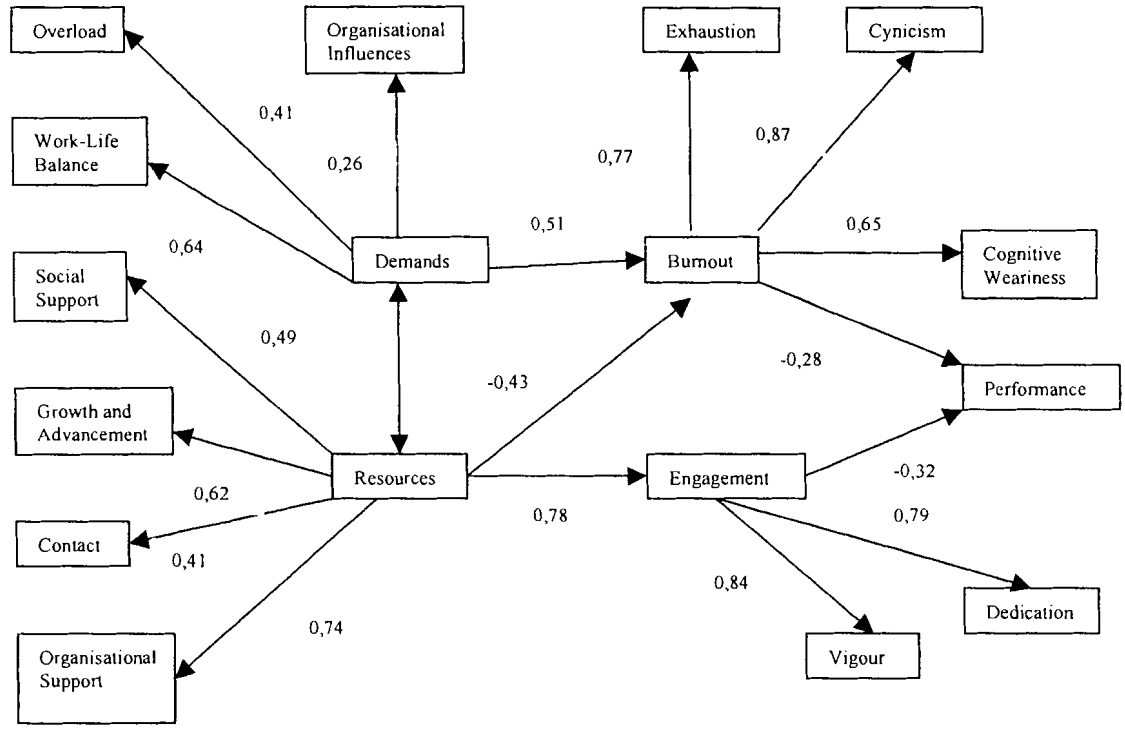

Figure 2. Structural model of academic performance

Work-life balance (β = 0,64) loaded strongly on *job demands*, while overload (β = 0,41) had a moderate loading. Organisational influences (β = 0,26) had a somewhat weaker loading on job demands. Job demands (β = 0,51) showed a strong relationship with burnout. The loadings of cynicism (β = 0,87), exhaustion (β = 0,77), and cognitive weariness (βt = 0,65) were about equally strong. Furthermore, the standardised regression weights of the components of job resources varied from 0,41 (contact with others) to 0,74 (organisational support). Also, the path coefficient between job resources and burnout was moderate and negative (β = -0,43). A total of 71,9% of the variance in burnout was predicted by job demands and job resources.

The path coefficient between burnout and performance was moderate and negative (β = -0,28). Job resources showed a strong relationship with engagement, as is evident from the path coefficient (β = 0,78). The loading of dedication (β = 0,79) and vigour (β = 0,84) on engagement was about equally strong. Lastly, the path coefficient between engagement and performance was moderate and negative (β = -0,32). A total of 60,2% of the variance in engagement was predicted by job resources.

DISCUSSION

The purpose of this study was to determine the relationships between job demands and resources, burnout, engagement and performance (academic results).

SEM methods were used to determine the construct validity and internal consistency of the MBI-GS and UWES. Results supported a three-factor structure for the MBI-GS, consisting of exhaustion, cynicism and cognitive weariness, and a two-factor structure for the UWES, consisting of dedication and vigour. A principal component analysis on the CECS confirmed the extraction of seven factors, including organisational support, growth and advancement, overload, social support, contact with others, organisational influences, and work-life balance. All the scales showed acceptable reliabilities.

In order to develop a model for the inclusion of burnout (exhaustion, cognitive weariness and mental distance), engagement (vigour and dedication), job demands (overload, organisational influences and work-life balance) and job resources (organisational influences, growth and advancement, social support and contact with others) a second order factor analysis was done to confirm that the influences on the variables were not caused by other external variables. The principal component analysis was conducted and the analysis of eigenvalues and the scree plot confirmed the use of the abovementioned dimensions in a structural model.

The structural model for job demands, job resources, burnout, engagement and performance was constructed, and the hypothesised relationships were tested with SEM analysis. As was expected, job demands (consisting of organisational influences, overload and work-life balance) strongly predicted burnout. Exhaustion, cynicism, and cognitive weariness loaded strongly on burnout. This finding is in line with the energetic and motivational processes of the JD-R model developed by Demerouti, et al. (2001). High job demands (depleting energy) exhaust the nurses' mental or physical resources to deal with them. Burnout also leads nursing students to become cynical towards the work they do and towards their studies, making them more inclined to leave the organisation or end their studies. Cognitive weariness may influence the nursing students' concentration levels, leading to problems with their studies and the work at hand. Cognitive weariness may lead to mistakes and injuries on the job.

The structural model also showed that job resources (consisting of social support, growth and advancement, contact with others and organisational support) strongly predicted engagement. Vigour and dedication both loaded strongly on engagement. It can therefore be concluded that when adequate job-related resources are available, military student nurses tend to become more engaged (dedicated and vigorous) in their work and studies. It is important that ample resources be provided in order for these students to become engaged in their studies and jobs.

Also indicated by the structural model is the negative relationship between job resources and burnout. This relationship shows that a lack of resources in the face of high job demands may lead to burnout. Adequate job resources reduce job demands, foster goal accomplishment and personal growth and development. Strong negative correlations found between the job resources (organisational support, growth and advancement, social support and contact with others) with burnout (exhaustion, mental distance and cognitive weariness) confirmed the JD-R model's notion that a shortage of resources might also lead to burnout. From the above discussion it is clear that burnout is influenced either by high demands or lack of resources, while engagement levels are determined by adequate resources to handle high job demands. The first hypothesis of this study can therefore be accepted.

A moderate negative relationship existed between burnout and performance (-0,28). This is in line with the findings of Schaufeli, Martínez, et al. (2002) that burnout is negatively related to academic achievement. This relationship indicates that when burnout increases performance decreases and *vice versa.* Since various studies indicated that the relationship between burnout and academic results is rather weak (Schaufeli, Martinez, et al., 2002), the finding in this study is rather important. Hypothesis 2 of this study is therefore accepted.

In contrast to the study of Schaufeli, Martínez, et al. (2002), who found a positive relationship between engagement and academic results, this study found a negative relationship between the two. Engagement (in the light of high dedication and vigour) was negatively related to performance (-0,32). This relationship indicates that when military nursing students are engaged (although vigour and dedication are high) their performance tends to decrease and *vice versa.* Possible explanations for this finding are as follows: First, the criterion (academic performance) might have been unreliable or invalid. It was not possible to assess the reliability and validity of the criterion in this study. Secondly, it is

possible that students are very dedicated but that they used inappropriate study techniques, causing poor academic performance. Third, it might be that the students' dedication to their work motivated them to be very involved with their nursing jobs, reducing time and energy that should have been invested in their studies. Fourth, we did not control for the effect of cognitive ability in this study. The possibility that nursing students who scored high on engagement, measured lower on cognitive abilities, cannot be excluded. Fifth, problems might exist in the way education is provided; this may include aspects like the motivation and dedication of lecturers towards providing proper education, outcomes-based education being applied incorrectly, and even internal politics that might have an impact on the provision of training. A study done by Williams and Klopper (2003) on the academic success of first-year nursing students mentioned that the way classes are presented might contribute to poor performance. They mentioned that students get the idea that lecturers are not interested in what they are doing; some read the whole lecture from the book and others just can't present a class. Although students might be dedicated, these aspects might influence their performance. Since there are no definite answers to why this relationship exists, further research is needed to determine the cause. Hypothesis 3 of this study was therefore rejected.

MANOVA was conducted to assess whether there were any significant differences between the different year-groups with regard to job demands (overload), job resources (organisational support, growth and advancement and social support), burnout (exhaustion, mental distance and cognitive weariness), and engagement (vigour and dedication). Most of the significant differences were observed from one year-group to the next year-group (second-year students differed significantly from the third-year students and third-year students differed significantly from fourth-year students). A possible explanation for this is that the workload and responsibility increases from year to year. This explanation is in line with the explanation of Deary, et al. (2003) who mentioned that stress among nursing students increases throughout nursing programmes. With regard to overload, the fourth-year group differed significantly from all the other year-groups, indicating that as one gets to the fourth-year, one is more likely to be overloaded. This finding can possibly be attributed to the fact that the fourth-year (final year) students assume more responsibility than the other year-groups, or that the pressure to complete the final year successfully is higher. Because of the differences found between the groups, year-group may be regarded as a determinant of burnout or engagement. Hypothesis 4 of the study can therefore be accepted.

LIMITATIONS AND RECOMMENDATIONS

Although the findings that burnout and engagement had a negative relationship with academic results contributed to the subject literature, the study had several limitations. These limitations have to be addressed in future research to confirm the relationships found in this study. Some academic results were unavailable during data collection. Semester results were computed in the absence of these results, and differed slightly from the actual final results obtained by candidates at the end of the year. It is therefore recommended that the actual final examination results for both the first and second semesters be used in similar studies.

Since only military nursing students in Gauteng were included in the study, the results cannot be representative of military and/or civilian nursing students in other provinces. In order to confirm the findings of this study, it must also be repeated in the private sector. Another limitation involving representation was that most of the participants were black Africans. The results of the study are therefore not necessarily representative of other racial groups. It is recommended that further studies be conducted to determine if different racial groups of nursing students differ with regard to job demands and resources, burnout, engagement and performance. Only 16% of the candidates in this study had English as first language; this might have had an influence on the interpretation of the items in the different surveys that were used. In this study, we did not control for the effect of cognitive ability on academic performance. Future studies should include cognitive ability as a possible moderator of the effect of burnout and work engagement on academic performance.

With regard to the differences between year-groups it is recommended that the organisation examines the issue of why fourth-year students are overloaded in comparison to all the other year-groups. The organisation must then take steps to reduce overload by providing students with the necessary resources. It is also important for the organisation to look at the differences between year-groups to determine why they differ with regard to the job resources available to them and the job demands imposed on them. Addressing this issue could equalise the engagement and burnout levels between groups.

The negative relationship between burnout and performance needs to be investigated further. Very little research found any relationships between burnout and academic results, and the topic therefore needs further investigation. Further research is also needed with regard to the

finding that high engagement, consisting of high dedication and vigour, leads to low performance. The possible explanations mentioned in this research are only speculative and further research is needed to confirm this finding.

Lastly, it is recommended that the organisation especially considers addressing the job resources (organisational support, contact with others, growth and development opportunities and social support) of students as indicated in this study. Providing more of these resources may assist them in dealing more effectively with the job demands (organisational influences, overload and work-life balance). In turn this may lead to a decrease in burnout levels, resulting in higher performance. Addressing the job demands with adequate resources may therefore lead to better performance and a constant supply of registered nurses to the SANDF.

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CHAPTER 3

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

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CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

In this chapter conclusions are drawn concerning the results of the empirical study; limitations of the study are discussed and recommendations for future research are proposed.

3.1 Conclusions

The conclusions regarding the specific objectives of this study are given below:

Specific objective 1: The conceptualisation of burnout, engagement, job demands and job resources and the relationship amongst these terms according to the literature. It was deduced from the literature that job demands are tasks that have to be performed, and include the physical, social or organisational aspects of the job that require sustained physiological and psychological effort (Schaufeli & Bakker, 2004). Work situations that impose high levels of job demands on employees (e.g. overload or shift work) may cause employees to burn out.

Burnout according to Schaufeli and Enzmann (1998, p. 36) is a persistent, negative, work-related state of mind (or syndrome) developing over time in a so called normal individual, characterised by an array of physical, psychological and attitudinal symptoms, primarily exhaustion, accompanied by distress, a sense of reduced effectiveness, decreased motivation and the development of dysfunctional personal and societal attitudes and behaviours at work. This psychological condition develops gradually, but may remain unnoticed for a long time. It results from a misfit between intentions and reality in the job."

Although some employees burn out, some individuals, instead of burning out in the face of high job demands, take pleasure in dealing with these job demands. These individuals are seen as being engaged (positive antipode of burnout). Schaufeli, Martínez, Pinto, Salanova and Bakker (2002) explain work engagement as a concept that includes three dimensions: vigour, dedication and absorption. Vigour involves high levels of energy and mental resilience while working, and includes the willingness and ability to exert effort in one's work even through difficult times. Dedication involves a sense of significance, enthusiasm,

inspiration, pride, and challenge. Absorption involves being fully concentrated and immersed in one's work, such that time passes quickly and one feels carried away by one's job. It could therefore be said that individuals who are engaged have adequate resources available to cope with high job demands in their work.

Job resources refer to physical, psychological, social or organisational job aspects that are necessary, firstly to achieve work goals; secondly to reduce job demands, and thirdly to stimulate growth and development (Schaufeli & Bakker, 2004). It is therefore clear that adequate resources (e.g. organisational support or social support) may lead to engagement, but that inadequate resources in the face of high job demands could lead to burnout.

Specific objective 2: The relationship between job demands, job resources, burnout, engagement and performance (academic results) among military nursing students. With the help of the structural model, the relationship between the abovementioned variables was explained. Job demands consisting of organisational influences, overload and work-life balance have an influence on burnout, leading to high levels of exhaustion, cynicism and cognitive weariness. Burnout also has a negative relationship with performance, meaning that if the levels of exhaustion, cynicism and cognitive weariness are high, the likelihood exists that performance will decrease. The opposite of this relationship is also suggested.

The other relevant relationship exists between job resources (social support, growth and advancement, contact with others and organisational support) and engagement. Job resources lead to engagement, which results in high dedication and vigour. A negative relationship between engagement and performance was found. This means that high engagement (high dedication and vigour) lead to lower performance.

Possible explanations for the abovementioned phenomenon included that the criterion (academic performance) might have been unreliable or invalid. It was not possible to assess the reliability and validity of the criterion in the study. Students might have been very dedicated but used inappropriate study techniques, causing poor academic performance. Students' dedication to their work might have motivated them to be very involved with their nursing jobs, reducing time and energy spent on studying. Furthermore, the effect of cognitive ability was not controlled in the study and the possibility that nursing students who scored high on engagement, measured lower on cognitive abilities, cannot be excluded.

Problems might have existed in the way education was provided; this may have include aspects like the motivation and dedication of lecturers towards providing proper education, outcomes-based education being applied incorrectly, and even internal politics that might have an impact on the provision of training.

Lastly, a negative relationship exists between engagement and burnout. This relationship indicates that when there is an absence of job resources while high job demands are imposed on the individual, burnout might occur.

The above findings therefore are in line with the JD-R model developed by Demerouti, Bakker, Nachreiner and Schaufeli (2001). High job demands lead to higher levels of burnout, while the absence of adequate resources in the face of high job demands may also increase the chances of burnout.

Specific objective 3: Differences between year-groups with regard to job demands, job resources, burnout, engagement and performance. MANOVA identified statistically significant differences ($p < 0,01$) between the year-groups with regard to the dimensions of burnout (exhaustion, mental distance and cognitive weariness), engagement (vigour and dedication), job resources (organisational support, growth and advancement and social support) and job demands (overload).

With regard to the abovementioned dimensions (excluding overload), ANOVA showed that significant differences occurred from the second to the third year and from the third to the fourth year of study. This could be an indication that progression from second to fourth year goes hand in hand with differences in burnout, engagement and job resources. ANOVA also confirmed that both second-year groups as well as the third-year groups differed significantly from the fourth-year group with regard to overload. This finding confirmed that demands increases as one progresses through the year-groups, to the point where the fourth-year student has the highest amount of overload. These findings are in line with previous research which indicated that stress in nursing students increases throughout nursing programmes (Deary, Watson, & Hogston, 2003).

3.2 Limitations

The following limitations regarding this research have been mentioned:

- Cross-sectional studies are limited in terms of the number of variables that can be studied. Various other unknown variables may have an influence on the results of cross-sectional studies.
- Since only military nursing students in Gauteng were included in the study, the results cannot really be representative of other provinces or the private sector.
- Participants in the study were mainly black Africans; results of the study could therefore not be representative of other racial groups.
- Only 16% of the whole sample had English as first language, which might have had an influence on the interpretation of the items in the different surveys that were used in the study.
- Only first semester results were used as indication of academic results. Using both semesters' results might have produced a clearer portrayal of the negative relationship between engagement and performance.
- Semester marks calculated for this study differed from the final semester marks obtained by students. This was because not all results were available during data collection, and semester marks had to be calculated from available results.

3.3 Recommendations

Following the findings of this research, the following recommendations can be made for future research:

- The negative relationship between burnout and academic results needs to be researched further, since most other studies found no such relationship.
- The negative relationship found between engagement and academic results was very surprising. This study only speculated on the possible explanations for this finding. Further research is needed to confirm this finding and establish why this happens.

- With regard to the differences found between year-groups, more research is needed to determine the reasons for this finding and to find ways to support students as they progress through the years.

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