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DEPRESSION IN NURSES: A SECONDARY DATA ANALYSIS OF THE NATIONAL SURVEY OF THE WORK AND HEALTH OF NURSES

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Abstract

Quality patient outcomes are reliant on the calibre of nursing, which in turn is a result of healthy work environments and practice settings. It is imperative during the current shortage of nurses that healthcare organizations retain these valued knowledge workers. The National Survey of the Work and Health of Nurses (NSWHN) 2005 examined a broad spectrum of nurses' work and their health status, with one finding of particular concern. A higher rate of depression (1 in 10) exists in nurses compared to their counterparts in other national surveys. This secondary analysis of the NSWHN data focused therefore, on the outcome of depression in a subsample of nurses and examined associations between depression and work related variables such as job strain, role overload, respect, social and employer supports and nurses perception of the quality of care they gave. A multivariate logistic regression found that the risk of depression is increased for nurses who are experiencing job strain and role overload and for nurses who experience a lack of respect. One surprising finding in the preliminary analysis was that nurses who met the case definition of depression may not recognize they are suffering from depression and may not be receiving treatment.

Key Words: Depression in Nurses, NSWHN, Respect, Role Overload, Job Strain, Workplace Health

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My children are for the most part, unaware of the large role they played in completion of this thesis, however there were many times that my studies took me away from them and for that Emily and Evan deserve my gratitude and I dedicate this to them and my extended family, including my much missed Dad, who was always so supportive.

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Chapter One

Introduction

Nursing is emotionally, mentally and physically demanding work that is both rewarding and challenging in view of the profound changes that have occurred in health care provision over the past several decades. Organizational downsizing, staffing cutbacks, work redesign and advances in medical treatment have left the community and hospital sectors dealing with a higher needs population at a time when there are fewer nurses available. As healthcare provision continues to move into the community, those clients who do need hospitalization require highly skilled nurses able to cope with higher patient acuity and heavier workloads (Birch, Thomson, Li, & Wu, 2004). Although Birch et al point out that health human resourcing (HHR) for systems is not a static formula based on population needs or nurse demographics, nursing is not attracting enough new recruits to replace aging nurses set to retire in the next few years (Canadian Institute for Health Information, 2008).

Buchan and Aiken (2008) argued this international concern about a global nursing shortage "...is not necessarily a shortage of individuals with nursing qualifications, it is a shortage of nurses willing to work in the present conditions" (p. 3265) and cautioned that it is critical to focus on retention rather than recruitment of nurses from other nations which further affects their HHR shortage. Maintaining the health and well-being of the current nursing workforce becomes paramount, a daunting prospect when one considers the majority of Canadian nurses are in their mid-forties and older, having already worked through two or more decades of upheaval in their workplaces.

Current workload and staffing pressures can result in high levels of stress and burnout, affecting absenteeism, rate of injury and the risk of leaving nurses with chronic physical and mental health issues (Shamian, Kerr, Laschinger, & Thomson, 2002). Two of the major theoretical occupational health models suggest that nurse efforts to maintain a high standard of care and provide good patient care outcomes in less than ideal circumstances could place their physical, mental and emotional health at risk. According to the demand/control (DC) model of work stress (Karasek & Theorell, 1990) if nurses' demands exceed their control in the workplace, their health may suffer. Johnson and Hall (1988) reviewed the evidence on social support, its moderating or buffering effects on perceived stress/strain known to influence mental and physical health and proposed the DC model excluded social support and other equally important psychosocial work characteristics such as co-worker support that may be associated with workers' health. They studied the model with the addition of work related social support and offered a redefinition of it as the demand/control/support (DCS) model (Johnson & Hall, 1988, Figure 1, p. 1336.) Similarly, the effort/reward model posits that nurse perceptions of poor quality patient outcomes and lack of workplace respect may be perceived as low reward in the face of high efforts provided and could conceivably negatively affect their wellbeing (Jonge, Bosma, Peter, & Siegrist, 2000).

The link between the work environment and nurses' health is evident in a large body of research on magnet hospitals in the United States (Upenieks, 2002). In Canada, the connections between nursing, magnet hospital characteristics and patient care outcomes including safety have also been well documented (Armstrong & Laschinger,

2006; Laschinger, Almost, & Tuer-Hodes, 2003; Tourangeau, Doran, McGillis Hall, O'Brien Pallas, Pringle, & Cranley, 2007) .

Evidence exists that maintaining a healthy nursing workforce is crucial for the healthcare of Canadians (Doran, 2003). The health of an individual is a connection of mind and body, temporally experienced through living fully to one's capability, with work an integral part of this holistic view. The National Survey of the Work and Health of Nurses (NSWHN) was undertaken to discover more about the health of nurses and possible relationships between their health and their work (Shields & Wilkins, 2006). The NSWHN survey data have been examined to compare the nurses in relation to other participants in large Canadian surveys such as the Canadian Community Health Survey, The Canadian Labour Force Survey and the Workplace and Employee Survey (Shields & Wilkins, 2006). What this revealed was a higher rate of depression in nurses, in comparison with those employed adults aged 24-64 who participated in the 2002 Canadian community Health Survey (CCHS; Gilmour & Patten,2007).
Why is depression more common in nurses? What does this mean for healthcare administrators, patient outcomes and the nurses themselves?

A productive workforce requires policy makers to recognize the relationship between work stress and mental health, as well as the importance of primary prevention and adequate treatment (Blackmore, Stansfeld, Weller, Munce, Zagorski, & Stewart, 2007). Mental disorders, such as depression, classified using the International Classification of Diseases (ICD) are among the leading causes of disability worldwide (World Health Organization, 2004) and result in a high cost to society because of short

and long term work impairment, absenteeism and chronic illness (Gilmour & Patten, 2007).

Stress is a major contributor to problems in mental health in Canada (The Public Health Agency of Canada,2006). The demand /control/support model accounted for the most variance associated with depression and anxiety symptoms in a study by Griffin, Greiner, Stansfeld and Marmot(2007). Wang (2005) found a high level of work stress is associated with a high risk of a Major Depressive Episode (MDE). Adler et al (2006) in a longitudinal study of healthy workers compared to a control group suffering rheumatoid arthritis and a group experiencing depression, found "the depression group had persistent, multidimensional deficits" and that these continued even after symptoms improved (p. 1575). Lerner and Henke (2008) in their review of the literature report that those with depression have more unemployment, absences and at work performance deficits than non-depressed individuals with a multi-billion dollar cost in the United States. Depression ranks third worldwide, ahead of ischaemic heart disease, as a contributor to global disease burden from non communicable sources; in middle to high income countries, like Canada, it ranks first (WHO, 2008).

An examination of the literature reveals a gap in evidence about nurses' depression; however a large literature exists about burnout in nurses. Is it more acceptable for health professionals to admit to burnout rather than depression? Cox, Kuk and Leiter (1993) wrote that burnout does not have the same stigma that being diagnosed with a mental illness carries and contended that burnout examines the interaction of occupational stressors with the characteristics of the burned out worker, while with a diagnosis of mental illness, the worker becomes the focus and may be blamed for the condition.

Burisch (1993) wrote however, that defining burnout is like "defining the boundaries of a large cloud" and once compiled 130 symptoms that various writers attributed to it, further cautioning that "none of these symptoms was unique to burnout i.e. *not* to be found in other nosological entities such as depression" (p.77).

What are the work life variables that affect workers' stress levels and their mental health? Intuitively, one would think that organizational efforts to reduce the stress or workload of nurses would encourage retention, feelings of security and reduce strain. A systematic review of the effects of workplace and individual efforts to prevent or improve workplace stress found limited evidence in support of such efforts (Marine, Ruotsalainen, Serra, & Verbeek, 2006) perhaps suggesting more work needs to be done to understand its causes. According to Wallace and Pierson (2008) reducing mandatory overtime, attention to scheduling and providing adequate notice of work are methods employers could use to support nursing staff and at the same time have organizational benefits. Supportive management is linked with an increased ability to cope with role overload (Higgins, Duxbury, & Lyons, 2007). Self scheduling which increases staff autonomy by giving control over the work schedule to nurses is thought to promote staff retention, decrease absenteeism, and support team development (Dechant, 2006).

The ability of nurses to influence positive outcomes (Doran, 2003) for their patients is rewarding and demonstrates a mastery of the skills and art of nursing (Benner, 1984). Providing high quality care may give nurses the sense of accomplishment needed for their emotional and mental well being. The quality of care provided by their workplace could be interpreted by nurses as a measure of their professional efficacy, their core self evaluation. Perceived occupational inefficacy is a central mediator of burnout

(Bandura, 1997). Maslach and Leiter (1997) described mismatches between work and worker that affect worker energy, involvement and efficacy and went on to associate burnout with work overload, lack of control, insufficient reward, injustice, breakdown of community and value conflict. Perhaps such associations however, are also to be found with depression.

Depression is a disorder (American Psychiatric Association, 1994) that can be diagnosed and treated and should be acknowledged as a work place health issue (Shields, 2006). The NSWHN assessed depression in the nurses surveyed, which is the focus of the present study. Secondary analysis of Statistics Canada data is a valid research methodology (Kiecolt & Nathan, 1985), used to examine relationships between outcomes, certain variables and subgroups in surveyed populations. Statistics Canada maintains strict protocols about using the data in national surveys and closely monitors release of information under explicit guidelines (Statistics Canada, 2009). Having access therefore, to a large survey that used a valid and reliable method (Kessler, et al., 1994) of assessing Major Depressive Episode (MDE) using a subset of questions from the Composite International Diagnostic Interview (CIDI), as well as valid tools for work stress, presented an ideal opportunity to examine associations between work related variables and depression in nurses.

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Chapter Two

Manuscript

All levels of government, healthcare leaders and educators are concerned about the deepening shortage of health human resources (HHR) as our aging population's need for access to safe, quality healthcare is increasing. Healthcare outcomes are inexorably linked to knowledge workers such as nurses who balance provision of care for their clients' needs with many competing demands. Nurses have a professional requirement to update their education and skills throughout their working career in response to changes in healthcare provision. Nurses also have a responsibility to their significant others, family and home, a life outside of employment. Nurses' health however, may be suffering as workloads increase and working conditions worsen as a result of the shortage of nurses in all sectors resulting in a vicious cycle that is threatening our entire healthcare system.

Nursing is emotionally, mentally and physically demanding work that is both rewarding and challenging in view of the profound changes that have occurred in health care provision over the past several decades. Organizational downsizing, staffing cutbacks, work redesign and advances in medical treatment have left the community and hospital sectors dealing with higher needs populations at a time when there are fewer nurses available. As healthcare provision continues to move into the community, those clients who do need hospitalization require highly skilled nurses able to cope with higher patient acuity and heavier workloads (Birch, Thomson, Li, & Wu, 2004). Although Birch et al underscored adequate HHR is not a static formula based on population needs or nurse demographics, nursing is not attracting enough new recruits to replace aging nurses set to retire in the next few years (Canadian Institute for Health Information, 2008).

Buchan and Aiken (2008) argue this international shortage of nurses "... is not necessarily a shortage of individuals with nursing qualifications, it is a shortage of nurses willing to work in the present conditions" (p. 3265) further warning that it is critical to focus on retention rather than recruitment of nurses from other nations which can create a domino exacerbation of nurse shortages. Maintaining the health and well-being of the current nursing workforce becomes paramount; a daunting prospect when one considers that the majority of Canadian nurses are in their mid-forties or older, having already worked through at least two decades of upheaval in their workplaces.

Current workload and staffing pressures can result in high levels of stress and burnout, affecting absenteeism, increasing rates of injury in nurses and resulting in chronic physical and mental health issues (Shamian, Kerr, Laschinger, & Thomson, 2002). The link between the work environment and nurses' health is evident in a large body of research on magnet hospitals in the United States (Upenieks, 2002). Similarly in Canada, the connections between nursing, magnet hospital characteristics and patient care outcomes including safety has been well documented (Armstrong & Laschinger, 2006; Tourangeau, Doran, McGillis Hall, O'Brien Pallas, Pringle, & Cranley, 2007). Working conditions in these magnet hospitals are those that encourage collaboration, empowerment of nurses and satisfaction with employment (Laschinger, Almost, & Tuer-Hodes, 2003). However well intentioned nursing leaders are, the worsening HHR shortage is leading to overuse of overworked nurses (O'Brien-Pallas, et al., 2005). Since the working conditions of nurses in healthcare organizations and patient outcomes have been closely linked, the health of nurses is considered crucial and workplace conditions that affect nurses and their health are being closely monitored. The National Survey of

the Work and Health of Nurses (NSWHN) was commissioned to understand more about the health of nurses and possible relationships between their health and their work (Shields & Wilkins, 2006). From October 2005 to January 2006 selected nurses who had been previously mailed an introductory letter, were contacted by telephone. The survey was administered using a computer assisted telephone interview (CATI). Interviewers were extensively trained and subjected to quality control and support to ensure the highest calibre of data quality that would meet Statistics Canada exacting standards (Statistics Canada, 2009) . The NSWHN surveyed nearly 20,000 nurses from all regions and types of workplaces about a variety of organizational, demographic and personal health issues, utilizing well known and validated tools and indicators from workplace health research. In addition, nurses were surveyed about work life balance, social support and employer support. The NSWHN further surveyed the physical health of these nurses, with a battery of questions concerning chronic disease, injury, emotional and physical safety and their workplace conditions.

According to one analysis done with this survey, nurses work more overtime, paid and unpaid, than other Canadian workers and had higher prevalence of chronic pain, back problems and depression. "Nearly 1 in 10 nurses reported experiencing depression in the last year... one-fifth reported that mental health problems in the last month had interfered with their ability to do their job (Shields & Wilkins, 2006, p. xix)". The fact that a higher rate of mental health issues are affecting nurses compared to their counterparts working outside of healthcare was one of the most disconcerting outcomes of the NSWHN for healthcare leaders, researchers, educators and healthcare consumers alike. According to Gilmour and Patten (2007) the prevalence of depression was 5.1% in the

female, employed Canadian population aged 25-64, during the 2002 Canadian Community Health Survey (CCHS). What places nurses at a higher prevalence for mental health problems?

It is incumbent at this time of a severe shortage of nurses that employers support nurses and endeavour to make their working environment as conducive to good health as possible. Calhoun and Calhoun (1983) ranked hospital and health care operations among the top 27 of 130 major occupational categories in studies of the relative incidence of mental health disorders and suggested that problems may not be dealt with appropriately for those nearest professional help. Efforts to identify stressors and improve the mental, physical and emotional health of nurses may also improve organizational health, leading to better recruitment and retention of these valued employees. The end result will hopefully be better patient outcomes. Therefore, this study was conducted with the aim of increasing our knowledge about nurses' depression and its possible connections to their workplaces.

Theoretical Framework

Hans Selye (1980) formulated a definition of stress (strain) in 1936 based on objective indicators such as bodily and chemical changes that appeared and could be recognized regardless of how the research subjects were induced to respond, namely "mobilization of the anterior pituitary-adrenal axis, the readily observable involution of the thymico-lymphatic system and the appearance of peptic ulcers" (p. viii). However, Selye emphasized, "stress was never seen in isolation...stressors make demands not common to anything but the condition under consideration" and further that a demand is seen as such entirely through the eyes of the beholder "not upon what actually happens to

us but how we appreciate the events" (p. xi). There may be internal and external, predisposing or modifying factors that affect response to stress. Stress diseases can also be a matter of degree.

Levi (2005) contended that researchers have examined the relationship of exposure to stressors and the outcomes in terms of morbidity and mortality, integrating concepts and methods of psychophysiology and epidemiology when looking for associations between our social environment and health. Work is central in the life of human beings and has as a result, been studied extensively. Kompier (2005) wrote that "stress research has provided us with good general models on the relations between work factors, personal characteristics and short- and long- term consequences for the health and performance of individuals and organizations" (p. 351) and followed with a synopsis of seven theoretical models in the field of work design, health and well being. Two such models are central to the present study.

These major occupational health models theorize that nurse efforts to maintain a high standard of care and provide good patient care outcomes in less than ideal circumstances could place their physical, mental and emotional health at risk. According to the demand/control model of work stress (Karasek & Theorell, 1990) if nurses' demands exceed their control in the workplace, their health may suffer. High levels of demand and low levels of control result in high strain, whereas jobs with high control are considered healthier especially in low strain work environments. Storr et al (1999) wrote that Karasek's model is interactive "linking work activity to both personality and organizational activity" (p. 46) and further, that nursing is an active job with high demands and high control. They surmised that nurses in high strain environments might

have more non-medicinal drug use and found this was 50-60% more likely than those nurses in low strain jobs.

Johnson and Hall (1988) wrote that the demand/control model did not go far enough in addressing other equally important psychosocial work characteristics such as co-worker support. For example, Johnson (1991) found the highest cardiovascular disease prevalence ratio was in a group with both low control and low work social support, that whenever either support or control was low, risk was elevated "raising an interesting possibility that workplace stress might occur without specific reference to job demands …that the lack of collective control resources, or the combination of social isolation and low control , was itself a risk condition (p. 125)". Johnson and Hall thus reviewed the evidence on social support, its moderating or buffering effects on perceived stress/strain known to influence mental and physical health and proposed the DC model be modified to include the addition of work related social support and be redefined as the demand/control/support (DCS) model (1988, Figure 1, p. 1336.) It is important to note that the definition of support is not just to meet individual emotional needs but these authors also suggest it is the collective control exercised by social work groups who share norms, rituals and socialization (such as in an apprenticeship model), which then is a structural resource for coping with the work environment. Nursing education historically operated as such an apprenticeship model when education was primarily provided through hospitals. Even now, mentorship and support are identified as an important requirement by funding bodies as exemplified in the new graduate guarantee (The Ministry of Health and Longterm Care, 2009) and in recent collective agreements that outline and seek compensation for mentorship (Ontario Nurses Association, 2009).

Stansfeld et al (1997) found high job demands a risk factor for psychiatric disorder though social support at work was thought to be protective (p.78). Wang and Patten (2007) found those people with high stress in decision authority, job insecurity and lack of social support from coworkers and supervisors were more likely to experience a major depression compared to those with low stress and sufficient support.

The second theoretical model of interest is the effort/reward model in which high cost / low gain conditions "are likely to elicit recurrent feelings of threat, anger, and depression or demoralization", which evoke sustained autonomic arousal, and can affect cardiovascular health (Siegrist,1996, p. 30). One could construe that nurse perceptions of poor quality patient outcomes and lack of workplace respect or support may be perceived as low reward in the face of high efforts provided and conceivably negatively affect their wellbeing (Jonge, Bosma, Peter, & Siegrist, 2000).

In a comparison of these two theoretical models, Griffin, Greiner, Stansfeld and Marmot (2007) found " the DCS model accounted for the most variance associated with depression and anxiety symptoms…Neither the main effects of effort, rewards, or overcommitment, nor the imbalance ratio of effort to rewards were significantly associated with depression or anxiety caseness" (pp. 343-4). Laschinger (2004) however, examined the concept of respect using Siegrist's esteem scale "…designed to measure nurses' perceptions of respect they receive from their managers and peers" (p. 558). Presuming this to be a key element of the rewards construct, Laschinger found that respect was negatively related to mental health outcomes such as emotional exhaustion, depressive state of mind and intention to leave. In addition respect was also significantly related to the perception of the quality of nursing care and of adequate staffing and thus

acted as a mediator between working conditions and outcomes. DeCicco, Laschinger and Kerr (2006) also found respect was a mediator between work conditions, organizational and nurse outcomes. In a study of nurses working in long term care the authors found 42% of the variance observed for respect was explained by structural and psychological empowerment and that empowerment and respect were significant predictors of affective commitment. A conclusion could be made that working conditions that foster disrespect may be harmful to nurses' mental health. Mandatory overtime and lack of control over their working schedule for example, with the perception that nurses are not being provided with adequate resources, could be viewed by the nurses as disrespectful, perceived as a lack of understanding of their commitment and willingness to work overtime and through breaks on behalf of their patients. Geiger-Brown, Muntaner, Lipscomb and Trinkoff (2004) in their study of working conditions in long-term care, found that nursing assistants with demanding work schedules and little control over them, had four times the risk of depression.

Related Literature

Intuitively, one would think that organizational efforts to reduce the stress or workload of nurses would encourage retention, feelings of security and reduce strain. Supportive management is linked with an increased ability to cope with role overload (Higgins, Duxbury, & Lyons, 2007). Consideration of daycare or elder care requirements, the need to have adequate nutrition at work and protection from risk of injury are also supports employers could provide. Employee Assistance Program (EAP) when effectively implemented according to Robbins (2008), " is not merely the referral service of the past, but rather a start-to-finish case management and return-to-work

program for employees suffering from critical issues like depression and disability"(n.p.) and further, effective EAP provides quickly accessible service when access to psychiatrists may take months.

Reducing mandatory overtime, attention to scheduling and providing adequate notice of work are methods employers could use to support nursing staff and at the same time have organizational benefits (Wallace & Pierson, 2008). Self scheduling, which increases staff autonomy by giving control over the work schedule to nurses, is thought to promote staff retention, decrease absenteeism, and support team development (Dechant, 2006). A systematic review of the effects of workplace and individual efforts to prevent or improve workplace stress found limited evidence in support of such efforts which suggests the need for further research into risk factors (Marine, Ruotsalainen, Serra, & Verbeek, 2006). Employers who value their employees and support a more holistic view of employment as only one part of a person's life, should see better synergy between work and family demands (Gordon, Whelan-Berry, & Hamilton, 2007; Kanter, 1977) as well as healthier, more committed and engaged nurses.

A productive workforce requires policy makers to recognize the relationship between work stress and mental health, as well as the importance of primary prevention and adequate treatment (Blackmore, Stansfeld, Weller, Munce, Zagorski, & Stewart, 2007). Stress is a major contributor to problems in mental health in Canada (The Public Health Agency of Canada, 2006). Wang (2005) found a high level of work stress is associated with a high risk of a Major Depressive Episode (MDE). Mental disorders, such as depression, classified using the International Classification of Diseases (ICD) , are among the leading causes of disability worldwide and result in a high cost to society

because of short and long term work impairment, absenteeism and chronic illness (Gilmour & Patten, 2007; Stansfeld, Feeney, Head, Canner, North, & Marmot, 1995; Stephens & Joubert, 2001). Adler et al (2006) found that multiple dimensions of job performance are impaired by depression in comparison to other chronic illnesses or a control group without either physical or mental illness. In their longitudinal study of healthy workers compared to a control group suffering rheumatoid arthritis and a group experiencing depression, they found "the depression group had persistent, multidimensional deficits" and these continued even after symptoms improved (p.1575). Lerner and Henke (2008) in their review of the research on depression and work outcomes reported that those with depression have more unemployment, work absence and at work performance deficits than non-depressed individuals with the results being a multi-billion dollar annual productivity cost in the United States. Depression ranks third worldwide, ahead of ischaemic heart disease, as a contributor to global disease burden from non communicable sources; in middle to high income countries, like Canada, it ranks first (WHO, 2008).

An examination of the literature reveals a gap in evidence about factors contributing to nurses' depression; however a large literature exists about burnout in nurses. Burnout is not listed in recognized diagnoses in the current version of the Diagnostic and Statistical Manual (DSM-IV) (American Psychiatric Association, 1994). Hallsten (1993) wrote that "burning out is one route to depression", that depression can exist without burnout. Burisch (1993) suggested that defining burnout is like "defining the boundaries of a large cloud" and once compiled 130 symptoms that various writers

attributed to it cautioning however, that "none of these symptoms was unique to burnout i.e. *not* to be found in other nosological entities such as depression" (p.77).

Cox, Kuk and Leiter (1993) wrote that burnout does not have the same stigma that being diagnosed with a mental illness carries and further, that burnout examines the interaction of occupational stressors, such as organizational culture and role strain in addition to the characteristics of the burned out worker, while with a diagnosis of mental illness, the worker becomes the focus and may be blamed for the condition. Indeed the College of Nurses in Ontario (CNO) as part of their mandate to protect the public and ensure quality care, has recently adopted standards for reporting and removing from practice nurses who are deemed incapacitated (The College of Nurses of Ontario, 2009). While the protection of the public is paramount, one wonders if this process will prevent nurses from seeking help for or admitting to a mental health diagnosis and thus not receiving treatment for depression or addiction, already so stigmatized in our society. Although seeking assistance is self-care and indicative of health promotion, it could have severe repercussions for nurses and organizations already operating under staffing shortages. Physicians are reported to face increased risk of suicide related to mental health issues, in addition to risking their patients' safety, but surely healthcare providers need advocacy not vilification if suicide is considered an extreme form of withdrawal from an overwhelmingly stressful or painful situation (Rosen, et al., 2009).
It may thus be a protective mechanism for health professionals such as nurses to admit to burnout rather than depression but does it meet their needs for adequate treatment?

The ability of nurses to influence positive outcomes for their patients (Doran, 2003) is rewarding and demonstrates a mastery of the skills and art of nursing (Benner,

1984). High quality care may provide nurses the sense of accomplishment that is needed for their emotional and mental well being. Zellars, Perrewe, Hochwarter, and Anderson (2006) found that high positive affect and high levels of conscientiousness were associated with lower levels of all strain variables. The quality of care provided by their workplace could be interpreted by nurses as a measure of their professional efficacy, their core self evaluation, which is often correlated with self esteem and other affective traits related to job performance and satisfaction (Judge & Bono, 2001).

Maslach and Leiter (1997) concluded mismatches between work and the worker affect worker energy, involvement and efficacy and further described associations with burnout such as work overload, lack of control, insufficient reward and injustice, breakdown of community and value conflict. Perhaps such associations might also be found with depression? Bandura (1997) considered perceived occupational inefficacy a central mediator of burnout and stated that "efficacy beliefs operate as shapers and mediators of the cognitive, behavioural and environmental contributors to depression" (p. 154).

Depression is a disorder that should be diagnosed, treated and acknowledged as a work place health issue ((Shields, 2006). Having access therefore, to a large survey that used a valid and reliable method of assessing MDE using a subset of questions from the Composite International Diagnostic Interview (CIDI), as well as valid tools for work stress, presented an ideal opportunity to examine associations between depression in nurses and work related variables.

Research Questions

What is the association between nurses' workplace stress, role overload and their experience of depression?

What is the association between the perception of quality of care in nurses' workplaces and the risk for depression in nurses?

Do nurses who are depressed have less support and respect from employers and fellow workers in their workplaces compared to nurses who are not depressed?

Hypothesis

Depression in nurses is positively associated with role overload and job stress and negatively associated with nurses' perception of the quality of care provided and the respect and support of employers and co-workers.

Major Study Variables and Concepts

Depression

Kessler et al (1994) adapted the diagnostic interview for MDE that has been used reliably in research on depression for two decades. "For a diagnosis of an MDE, at least 5 of 9 depressive symptoms must be present in the same two week period, must reach as certain level or severity for the diagnosis to be made and one of those symptoms must be that of depressed mood or lack of interest" (Wang & Patten, 2001, p. 284). Depressive symptoms include depressed mood, loss of interest, significant weight gain or loss, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue or loss of energy, feelings of worthlessness or hopelessness, diminished ability to think or concentrate, and recurrent thoughts of death or suicidal ideation or attempt. In the NSWHN, an MDE was established "using the methodology of Kessler et al (1994)", with the nurses interviewed

using a subset of questions from the CIDI. The NSWHN questions, (DP_C01 to DP_Q28) (see Appendix C), were used to screen for depression and to obtain scores that were then transformed into probability estimates (Statistics Canada, 2009). A score of 5 or more out of 8 criteria (see Appendix H) was needed "for a 90% probability that the nurse would have been diagnosed with an MDE if they had completed the long form CIDI (Statistics Canada, 2009, p. 45)". Those employed Registered Nurses and Registered Psychiatric Nurses in direct care who were assessed as having a MDE based on their CIDI scores (i.e. a MDE probability of 0.9 or greater) met the definition of a depression case, which could then be used as a categorical dependent variable in this analysis.

Job Strain

Work stress was assessed using a modified version of the Karasek's Job Content Questionnaire (JCQ), the original having 12 questions relating to job strain, supervisor and co worker respect, job insecurity and physical demands (Karasek, Brisson, Kawakami, Houtman, Bongers, & Amick, 1998). The modified version has been utilized by other large complex surveys such as the Canadian National Population Health Survey (NPHS) 1994-95 as noted by Wang (2005) and in Wang and Patten (2001). In addition it was also used in the Canadian Community Health Survey- Mental Health and Well-being survey (CCHA-1.2; Wang 2006). The modified version of the JCQ contained statements that were used to score responses on a 5 point scale from strongly agree to strongly disagree (See Appendix F and H). The statements corresponded to each of the three components of job strain, psychological demands, and decision authority and skill discretion. Decision authority and skill discretion scores were then summed to calculate

decision latitude. A job strain ratio then was calculated by dividing psychological demands by decision latitude with a ratio of 1.2 or higher indicating high job strain (Statistics Canada, 2009).

Role Overload

Role overload is an imbalance between the resources one has to do the work and the demands on the employee. While role overload can be taken also to mean the multiple roles that persons have in their life, in the NSWHN survey the questions related directly to the nurses' main job. Role overload score, a derived variable, was assessed in the NSWHN using five statements based on a subscale of the Occupational Stress Inventory (OSI) as described in Decker and Borgen (1993). The statements had possible responses on a five point scale ranging from strongly agree to strongly disagree. The derived variable (See Appendix H) then was calculated by summing the scores of the five items, a higher score indicating more role overload (Statistics Canada, 2009).

Respect

The NSWHN survey module Respect and Support (RS) was based on Siegrist's effort-reward imbalance scale (Statistics Canada, 2009). Three statements corresponding to respect were used to score nurses responses about their perceived respect from their superiors, from colleagues and in general, the level of respect considering their efforts and achievements. A derived variable (see Appendix E and H) with a possible range of 0-9 (higher scores indicating a higher level of respect at work) was computed from these three statements (Statistics Canada, 2008, pp. 87-88).

Employer support

Employer support was assessed with 13 questions (ES_C01 to ES_C13) using questions derived from other Statistics Canada surveys. For the present analysis, a mean

employer support score was obtained by first summing the scores of the questions relating to whether the employer offered support such as child care, excercise facility, adequate nutrition, EAP and whether the employer offered flexibility in scheduling such as days or shifts worked.

Perception of the Quality of Care

Nurses' perception of the quality of care in their workplace was assessed in the NSWHN using 14 questions (PQ_C01 to PQ_Q14) (see Appendix G) which were based on previous research measuring nurse performance and staffing (O'Brien-Pallas, et al., 2004). Of these questions, two were chosen that might influence or mediate nurses' psychological health, namely the nurses' perception of staffing on their last shift worked and their perception of the quality of care they provided on that shift. These variables were recoded and entered into the present analysis.

Methods

This secondary data analysis was a non-experimental descriptive correlational study and the database of interest, the NSWHN (2005), a large cross sectional survey available through the Research Data Center (RDC) located at the University of Western Ontario. The target population of the NSWHN was all registered nurses in Canada. Using a stratified design, 24,223 nurses were selected at random from membership organizations and regulating bodies. "Nearly 19,000 regulated nurses, such as licensed practical nurses (LPN), registered psychiatric nurses (RPN) and registered nurses (RN), from across Canada responded and were followed up by telephone, between October 2005 and January 2006. The final responding sample was comprised of 9794 RNs, 7265 LPNs and 1707 RPNs" (Shields & Wilkins, 2006, p. 85). In light of the current challenges engaging often already overworked nurses in research studies, the response

rate of 80% is an indicator of the importance these nurses placed on having their voices and opinions about their health and their work heard.

In the original report (Shields & Wilkins, 2006) there were differences between Registered Nurses and other regulated nurses, thought to relate to the fact that a large proportion of Licensed Practical Nurses are employed in the long term sector, therefore, for the present analysis, only a subsample of Registered Nurses and Registered Psychiatric Nurses, employed in Canada and in direct care, were used to form a more homogenous sample. Large complex Statistics Canada surveys utilize a weighting formula to adjust for provincial and territorial differences in the sampled population. To make estimates of a subsample representative of the covered population, and not just the subsample, a normalized weight was produced by dividing each individual subsample weight by the mean weight of the entire sample.

The required sample size for the analysis was calculated as Tosteson, Buzas, Demidenko and Karangas (2003) suggest for logistic regression, with the assumption of measurement error and alternate odds ratio of one SD increase in exposure, i.e. stress. If the expected Odds Ratio (OR) for the 1 SD increase is 2.0, the correlation between true and observed exposure is 0.50, the OR for a one SD increase in covariate is 1.5, prevalence of subjects with no exposure is 0.5 and correlation of exposure and covariate is 0.20, then for a power of 0.95 and significance of 0.05, the required sample would be 591 nurses. The present study had excellent statistical power therefore, because the NSWHN sub sample of almost 10,000 RNs provided more than enough subjects for this analysis.

In the present study, all preliminary analyses were conducted using the software SPSS © version 17.01, with logistic regression used to analyze associations between depression and work-related factors. Statistics Canada provides survey weights developed for the NSWHN and other complex study designs. STATA/SE© version 10.0 was used to apply a bootstrap weight procedure in the final multivariate logistic regression analysis, as suggested for use in large complex national surveys (Piérard, Buckley, & Chowhan, 2004 ; Rao, 2006). Using the bootstrap procedure accounts for design effects, calculates coefficients of variation and 95% confidence intervals. Without bootstrap weights, one could obtain artificially inflated odds ratios due to under estimation of variance by the design effects of the survey used.

Descriptive statistics on demographic variables such as age, gender, marital status, place of employment and full time or part time status were generated from the subsample. Chi square crosstabulation and t- tests for independent groups were done to assess statistically significant relationships between descriptive variables and the dependent variable, depression caseness, prior to entering the independent variables in a logistic regression model.

The independent variables for the regression were nurses' work related stress, role overload, respect and support and nurses' perception of the quality of care and staffing in their workplace. Collinarity of independent variables can be an issue when assessing relationships of one independent variable from another and a dependent outcomes. A Pearson correlation of the independent variables was done prior to entering them in the logistic regression model.

The scores from the employer support were summed and a mean score obtained for the analysis. Nurses' perception of the quality of care in their workplace as represented by the nurse perception of staffing on their last shift worked and the nurses' perception of the care they provided on their last shift worked were also independent variables in the analysis. Lastly, variables representing nurses' chronic disease status, smoking and drinking history were recoded as binary indicators for analysis in the regression model as control variables given their known association with depression.

For the analysis, data were weighted to adjust for differences in survey coverage by type of nurse and by province/territory, to represent the total population of nurses in Canada in 2005, using the sampling weights provided by Statistics Canada. Dividing the subject's weight variable by the sample mean weight normalized the weight of the selected sample to that of the original weighted sample, thus allowing table frequencies to be more directly relevant to the sample used.

Sample Description

The sample of nurses from the NSWHN for this study (table 1) included registered nurses and registered psychiatric nurses working in Canada in direct care (n = 9322). The majority of nurses in this sample worked in hospitals (67.1%) followed by community care (13.2%) and long term care (10.2%), full time (59.3%) and part time (40.7%). Most nurses were diploma prepared (71.3%) compared to those with a degree (28.7%).

Table 1

Frequencies of sample demographic and recoded variables with significant relationships. Total percentage may not be 100 % because missing or not stated were removed from the total.

Variable	Frequency	Percent	Cumulative Percent
Age			
< 35	1981	21.3	21.3
35-44	2674	28.7	49.9
45-54	3108	33.3	83.3
≥ 55	1559	16.7	100
Sex			
M	510	5.5	5.5
F	8812	94.5	100
Marital Status			
M/CL	6991	75	75
Single	1228	13.2	88.4
W	143	1.5	89.9
Sep/Div	940	10.1	98
Case Definition Depression			
No	8383	89.9	91
Yes	832	8.9	98.9
Depression Hx			
Yes	881	9.4	9.5
No	8430	90.4	99.9
Ante-depressant			
Yes	836	9	9
No	8466	90.8	99.8
Chronic Conditions			
≥ One	6735	72.2	72.4
None	2567	27.5	99.8

Crosstabulation was done to assess the relationship between the dependent variable depression "caseness" and demographic or other characteristics of the sample. Those variables with statistically significant relationships were entered into the logistic regression and are discussed below.

Crosstabulation of depression caseness and marital status revealed a significant difference between nurses' marital status and nurses' depression. Those who were depressed were more likely to be never married, divorced or separated than those who did not meet the case definition of depression,(17.1 % to 12.8% &15.4% to 9.6%, df 3, p=.000) respectively and more married nurses (76.2%) were not depressed (df 3, p= . 000).

Crosstabulation analysis of those who met the case definition of depression and nurses' use of anti-depressants also revealed a significant difference in that 39.3% of depressed nurses used anti-depressants, compared to 5.9% of nurses who were not depressed according to the depression case definition used in this study. The majority (90%) of nurses who were not depressed did not use anti-depressants. Interestingly however, fully 60.7% of those nurses who were identified as depressed according to the definition used in this study did not use anti-depressants either (df 1, p=.000).

The NSWHN assessed depression caseness with a proven diagnostic interview (see Appendix C) used to ascertain the probability of having an MDE in the previous year. In addition, nurses in the section on chronic disease were asked if they had/suffered from depression. Crosstabulation of these nurses' reported mental health status with the case definition and probability of having had an MDE, revealed that 5.8% of nurses who did not meet the case definition, answered yes when asked if they had/suffered from depression. More than half of those who met the case definition of having a MDE in the previous 12 months (54.7%) denied they were depressed or suffering from depression, df 1, p=.000. Crosstabulation of nurses' chronic disease and depression caseness revealed only 10.5 % of those without a chronic condition met the case definition of depression while the majority (89.5 %) of those who were

depressed according to the case definition had at least one chronic condition, df 1, p=.000. There was no significant association, in a crosstabulation of nurses' depression and their full time or part time status in their main jobs, neither was there any significant association between their education level and whether they met the case definition of depression. The percentage of nurses who thought the staffing on their last shift was inadequate was 35.9 %, however 95 % of this subsample thought that the care they gave on their last shift worked, was good to excellent.

T-Test for independent samples to assess differences in nurses with depression compared to those without depression, revealed there was no significant difference related to age (t = 1.768, p=.077, df 1057.005). The mean age of those who met the definition of depression was 43.38 and the mean age of those who did not was 43.99.

Results

A multivariate logistic regression analysis (table 2) revealed that those nurses who were experiencing higher job strain were 80 % more likely to have suffered a MDE in the previous 12 months, (OR 1.79, p= 0.009), while the odds were slightly greater that those nurses experiencing role overload (OR 1.05, p=0.001) also experienced a MDE in the previous year; this increase (.05), however, may not be clinically important. Neither nurse perception of the care they gave, employer support, social support nor nurses perception of staffing were significantly related to the odds of having an MDE in this analysis. However, nurses who experienced respect of their co workers, supervisors and for their efforts in general, were 20 % less likely to have experienced a MDE in the previous year (OR.88, p=0.003).

Table 2. Multivariate Logistic Regression with Bootstrapped Replication

Depressed Case	Odds Ratio	Std Error	t	P>t	[95% Conf	Interval]
Independent Variables						
Role Overload*	1.058	0.017	3.49	0.001	1.025	1.091
Respect*	0.889	0.035	-3.02	0.003	0.823	0.960
Social Support	1.066	0.036	1.87	0.062	0.997	1.139
Job Strain*	1.792	0.397	2.63	0.009	1.159	2.769
Perception of Staffing	1.106	0.145	0.77	0.441	0.855	1.431
Perception of Care given	1.097	0.287	0.35	0.723	0.656	1.835
Employer Support	1.120	0.336	0.38	0.705	0.622	2.018
Control Variables						
Age*	0.984	0.006	-2.65	0.008	0.972	0.996
Married*	1.409	0.190	2.54	0.011	1.081	1.836
Depression Question*	4.796	0.957	7.86	0.000	3.241	7.097
Chronic Disease*	1.712	0.344	2.68	0.008	1.154	2.540
Anti-Depressant use*	3.199	0.726	5.13	0.000	2.049	4.995
Smoking history*	2.118	0.365	4.36	0.000	1.511	2.970
Drinking history	1.221	0.167	1.46	0.145	0.933	1.599
* significant p<.05						

Age was protective for this sample of nurses, in that there was a statistically significant negative relationship to odds of nurses' depression (OR .98, p = 0.008). As age was a continuous variable in this analysis with a negative t-score, the younger the nurse the higher the rate of depression. If one compares a nurse of 65 years of age with someone 40 years younger, the 25 year old nurse has nearly double the odds of depression.

Those nurses that answered yes to a question about whether they were suffering from depression were 5 times as likely to have experienced a MDE in the previous year

(OR 4.79, p = 0.000). Having a smoking history doubled the odds of having an MDE (OR 2.12, p = 0.00), while having a history of drinking was not statistically significant in relation to the odds of having depression. Those nurses with a chronic disease diagnosis were nearly twice as likely to have suffered a MDE in the previous year than those without chronic disease (OR 1.71, p = 0.008)

Discussion

First, in answer to the question about the association between nurses' workplace stress, role overload and their experience of depression, a multivariate logistic regression revealed that the independent variables of role overload and job strain were significantly related to the dependent outcome variable, the case definition of depression. The job strain and role overload variables were scaled in the original survey so that higher scores indicated more job stress and overload. In the present analysis, the results reflected this positive direction in the regression positive t- scores. Those nurses who were depressed were nearly twice as likely to be experiencing higher job strain although the odds were even that nurses who were experiencing role overload might be suffering from depression.

Respect was scaled so that higher scores reflected nurses feeling more respected by colleagues, their supervisors and in general, valued for their contribution to the workplace. Therefore, one would surmise that more respect should be negatively related to experiencing depression. The present analysis indeed supported this, as the odds of being depressed were less likely in those nurses who were experiencing a higher level of respect, as evidenced by lower odds ratio < 1 and a negative direction in t-score. This could be interpreted as nurses who were depressed feeling less respected by their co

workers and their supervisors and feeling in general that their contributions to their workplace were not appreciated.

The remaining questions about support and quality of care and the relationship to nurses' depression were not satisfactorily answered by the present analysis. The independent variables for social support and employer support were not significantly related to depression in this sample of nurses. Neither was nurses' perception of the quality of care they gave in the last shift they worked, nor their perception of staffing adequacy significantly related to their risk of experiencing depression in the previous 12 months.

There is partial support for the hypothesis of a positive and significant association with role overload, job stress and the risk of depression in nurses. In addition, respect is negatively and significantly associated with depression in nurses. However, the hypothesis that employer and social support and the perception of quality of care provided would lessen risk of depression was not supported by this analysis.

Implications

The results of this study lend support to findings from other research (Gilmour & Patten, 2007), notably associations between depression, workplace stress, role overload and respect. This study provided some partial support and answers to the research questions posed about this sample of nurses who participated in the NSWHN 2005 survey. The present analysis also demonstrated relationships between depression and chronic conditions and depression and smoking behaviour. Nurses with chronic conditions were more likely to be depressed. The strong association of chronic disease and depression and the fact that 75% of this sample had at least one chronic condition is a

worrisome finding indicating that nurses are at risk of major health issues in addition to depression.

Concurrent disorders, which are those that involve addictions and mental health disorders did not seem to be obvious in this sample. While drinking behaviour did not seem to be associated with the prevalence of depression cases in the selected sample of nurses, smoking history was associated with nurses' depression. According to Wang and Patten (2001) this relationship may be more a coping mechanism of dealing with a stressful workplace but noted others (Balfour & Ridley, 2000; Breslau, Peterson, Schultz, Chilcoat, & Andreski, 1998; Patton et al., 1998; Wu & Anthony, 1999) have surmised a direct "pathophysiological" association with depression (p. 288).

Having companionship or marital support outside of the workplace and being older seemed to protect nurses in this sample against depression, according to the results in this analysis. The suspected positive relationships between social or employer support that was surmised to be protective of nurses' health was not supported however. Social and employer support for nurses did not have a significant association with nurses' depression. Nurses in this study however, did not perceive the care they gave as suffering even though nurses with high strain were at higher risk of depression and those who experienced role overload had slightly greater odds of meeting the case definition of depression in this study.

The regression analysis revealed an expected positive association between ante - depressant use and the case definition of depression. Those who were taking ante-depressants were three times as likely to be depressed. However, half of the nurses who met the case definition of depression in this analysis, denied having or suffering from

depression, which is an interesting finding with implications for the workplace. It was even more surprising to find however, during the crosstabulation of case definition of depression with antidepressant use, that in this sample of nurses, of the 832 who met the definition of depression, more than half, 505 or 60.7 %, were not receiving antidepressant treatment for their depression.

This finding has implications for diagnosis and treatment of depression in nurses in health organizations, in that these nurses were continuing to work, perhaps never having been diagnosed, or treated for their depression. Further, this indicates that more proactive occupational health programs should be designed to improve the mental health of those providers who are central to patient safety and good quality outcomes in health care organizations. Indeed, one such initiative "Beyond Bootstraps" in a medium sized healthcare organization in the American Midwest successfully instituted a program to educate and also intervene to improve the mental health of their employees by using a program modelled on holistic "whole" health promotion (Putnam, McKibbin, Lancaster, & Schwade, 2003). Putnam et al contended that most employers fail to recognize the connection between depression and productivity in terms of both absenteeism and "presenteeism" (defined as continuing to show up for work but not performing at the expected level of productivity). They further surmised that underutilization of EAP (thought to be related to the stigma of and barriers to accessing EAP in a traditional format) might be addressed by a multilevel implementation focussed on reaching out to depressed employees in a non-threatening holistic manner. By using education, diagnostic tools and surveys that took in to consideration busy work schedules of the employee and a need for their privacy, the researchers were able to demonstrate to the

employer how supportive this program could be for the mental health of their employees and families and how they could realize savings in lost productivity and absenteeism.

Limitations

This study has several limitations. This is a secondary data analysis so one is limited by the scope of the original survey; however the NSWHN design was broad, meticulous and well thought out using instruments with known reliability and dependability in a large representative national sample. The original survey was a cross-sectional study and while normally any conclusions drawn from such surveys are only really applicable to the responding sample, a bootstrap procedure offset this limitation.

In addition, although certain associations between variables were apparent, in a cross-sectional study the direction or temporal association cannot be determined. For example, although there was a significant association between depression, strain and overload in this sample of nurses, it is not clear whether depressed nurses experienced more strain and overload or whether the strain and overload preceded and increased their risk of depression.

The sample of nurses was primarily female (94%). Gilmour and Patten (2007) reported depression in women was twice that of men in their analysis using data from the CCHS and NPHS surveys. It could be that nursing, a gendered profession, may have a higher rate of depression than the general public, even before taking in to consideration the stress and known heavy workload of their profession.

Conclusion

Depression in the workplace is a costly issue for all but is particularly concerning during the present HHR shortage being experienced by all health care organizations. The

cost of failure to recognize workers' depression is enormous to society, organizations and to the worker suffering from depression. Stephens and Joubert (2001) contend their estimation of the cost of mental health issues in Canada is conservative at $6 billion and estimate that the cost is likely more than double this amount.

Healthcare leaders are now expected to connect nurse and patient outcomes and monitor the workplace environment, as a reflection of the health of the entire organization (Nicklin & Barton, 2007). Changes to the processes of healthcare organization accreditation reflect the culmination of decades of research evidence that safe, quality care has a relationship to organizational working conditions (Maslove & Fooks, 2005). By embedding required organizational practices (ROP) and indicators of healthy workplaces in voluntary accreditation of healthcare organizations, the public and healthcare providers alike are supported by organizational accountability (The Quality Worklife Quality Healthcare Collaborative, 2007).

There is a need for education in the workplace about mental health, depression, how to recognize it and how and where to seek help. Although a nurse will share feelings of being burned out, the stigma of mental illness is difficult to overcome. Nurses who are suffering from depression need to be supported by early and accurate diagnosis, so that they can receive appropriate treatment and minimize the impact on their ability to deliver safe quality care. Never has this been more imperative than now, during a nursing shortage that is likely to worsen with imminent retirement of aging nurses. "Healthy work environments for nurses are defined as practice settings that maximize the health and well-being of the nurse, quality patient/client outcomes, organizational performance and societal outcomes" (Registered Nurses of Ontario (RNAO), 2008, p. 14) .

Healthcare organizations should strive to provide less stressful workplaces, and to encourage the physical, emotional and mental health of their employees in a proactive and responsive manner.

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Chapter Three

Discussion

Canada is in the midst of a severe nursing shortage that is being experienced globally and has been predicted for more than a decade. The majority of Canadian nurses are in their mid-forties and will conceivably retire within the next decade or so. The mental, physical and emotional health of nurses in the current workforce is paramount for quality patient care outcomes that are dependent on a continued supply of nurses able to cope with the increasing demands expected by an aging population.

The National Survey of the Work and Health of Nurses (NSWHN) was undertaken to discover more about the health of nurses and possible relationships between their health and their work (Shields & Wilkins, 2006). While Gilmour and Patten (2007) reported the prevalence of depression at 5.1% in the employed Canadian female population aged 25-64 during the 2002 Canadian Community Health Survey (CCHS), the rate of depression in nurses according to the NSWHN data is nearly double this rate. This is a concerning outcome for healthcare leaders, researchers, educators and healthcare consumers and led to the current study which examined associations between workplace variables known to affect mental health in a subsample of nurses surveyed for the NSWHN.

The purpose of this study was to look for relationships between job strain, role overload, respect, support and other work related variables that might be associated with nurses' depression. The NSWHN, a large cross- sectional survey was available through the Research Data Center (RDC) located at the University of Western Ontario for this secondary analysis.

A non-experimental, descriptive, correlational study was undertaken, using a sample of nurses restricted to Registered Nurses (RN) and Registered Psychiatric Nurses (RPN) that were employed in direct care nursing across Canada. The outcome of interest was depression in the surveyed sample of nurses, using methodology established by Kessler et al (1994). In the selected sample for this study, respondents either met the definition or they did not, enabling its use as a categorical dependant variable in a logistic regression analysis of nurses' depression and any associations with work related factors. Descriptive statistics of demographic variables such as age, gender, marital status, place of employment and full time or part time status were also generated from the subsample. Crosstabulation was done to assess for significance of the descriptive variables with the dependent variable, depression caseness, to assess for significant relationships, prior to entering the independent variables in the logistic regression model.

Preliminary analyses were conducted using the software SPSS © version 17.01 and in addition, a bootstrap procedure suggested for use in large complex national surveys (Piérard, Buckley, & Chowhan, 2004; Rao, 2006) was applied using STATA/SE © version 10.1, with Statistics Canada survey weights developed for the NSWHN. Without this procedure, the odds ratios may be inflated due to underestimation of variance related to the survey design effects.

The independent variables for the regression were nurses' work related stress, role overload, respect, employer and co-worker support and nurses' perception of the quality of care in their workplace. Variables representing nurses' chronic disease status, smoking

and drinking history were recoded for analysis in the regression model as control variables given their known association with depression.

A multivariate logistic regression revealed that the independent variables of role overload and job strain were significantly related to the dependent outcome variable, the case definition of depression. The job strain and role overload variables were scaled in the original survey so that higher scores indicated more job stress and overload. In the present analysis, the results reflected this positive direction in the regression t-test scores. This analysis revealed that those nurses who were experiencing higher job strain were 80 % more likely to have suffered a MDE in the previous 12 months, (OR 1.79, p= 0.009), while the odds were slightly greater that those nurses experiencing role overload (OR 1.05, p=0.001) also experienced a MDE in the previous year.

Respect was scaled so that higher scores reflected nurses feeling more respected by colleagues, their supervisors and in general, feeling valued for their contribution to the workplace. Therefore, one would surmise that more respect should be negatively related to experiencing depression. The present analysis also supported this, as the odds of being depressed were less likely in those nurses who were experiencing a higher level of respect, as evidenced by an odds ratio <1 and a negative direction in t-test score. Nurses who experienced respect of their co workers, supervisors and for their efforts in general, were 20 % less likely to have experienced a MDE in the previous year (OR.88, p=0.003). The interpretation is that nurses who felt less respected by their co workers, supervisors and in general, were at a greater risk of experiencing depression.

Questions about support and quality of care and the relationship to nurses' depression were not satisfactorily answered by the present analysis. The independent

variables for social support and employer support were not statistically significant in relation to depression in this sample of nurses. Neither was nurses' perception of the quality of care they gave in the last shift they worked, nor their perception of staffing adequacy significantly related to their risk of experiencing depression in the previous 12 months. Having a smoking history doubled the odds of having an MDE (OR 2.12, p = 0.00), while having a history of drinking was not statistically significant in relation to the odds of having depression. Those nurses with a chronic disease diagnosis were nearly twice as likely to have suffered a MDE in the previous year as those without chronic disease (OR 1.71, p = 0.008). However age was significantly and negatively related to the odds of a nurse having a MDE in the previous 12 months (OR .98, p = 0.008) indicating that younger nurses are more at risk to experiencing depression. For example, every 10 years younger in age, the probability of depression increased 1.17 times, so that a nurse 25 years of age had nearly double the probability of depression compared to a nurse 65 years of age.

Implications

The results of this study lend support to findings from other research (Gilmour & Patten, 2007) , notably associations between depression, workplace stress and role overload. This study provided some partial support and answers to the research questions posed about this sample of nurses who participated in the NSWHN 2005 survey. Although neither nurses perception of the care they gave, adequacy of staffing, employer support or social support was significantly related to the odds of having an MDE in this analysis, respect was significantly and negatively related to their risk of experiencing depression, therefore the implication is that healthcare organizations would

be wise to consider nurses as value added investment in quality outcomes instead of viewing nurses as another cost to the organization's bottom line.

The present analysis also demonstrated relationships between depression and chronic conditions and depression and smoking behaviour. Nurses with chronic conditions were more likely to be depressed. The strong association of chronic disease and depression and the fact that 75% of this sample had at least one chronic condition is a worrisome finding indicating that nurses are at risk of major health issues in addition to depression. Healthcare leaders must direct their attention to the effect chronic disease will play in retention and recruitment of nurses in the future.

Concurrent disorders, which are those that involve addictions and mental health disorders did not seem to be obvious in this sample. While drinking behaviour did not seem to be associated with the prevalence of depression cases, in the selected sample of nurses, smoking history was associated with nurses' depression. Having companionship or marital support outside of the workplace and being older seemed to protect nurses in this sample against depression.

The regression analysis revealed an expected positive association between ante - depressant use and the case definition of depression. Those who were taking ante-depressants were three times as likely to be depressed. However, of the nurses who met the case definition of depression, more than half (60.7 %), were not receiving antidepressant treatment for depression! The NSWHN used a diagnostic interview to ascertain the probability of a nurse having an MDE in the previous year. In addition, nurses in the section on chronic disease were asked if they had/suffered from depression. A crosstabulation of this question with the case definition of depression, revealed that more than half of those with a MDE in the previous 12 months (54.7%) denied they were depressed or suffering from

depression (df 1, p=.000). Did they successfully receive treatment for depression and therefore considered they were not suffering from it? More worrisome, were they just not getting adequately diagnosed or treated for this health issue of such concern?

There are serious implications about patient and nurse safety if nurses who are suffering from unrecognized or untreated depression continue to work without mental health support. There are also implications for these employee's families and loved ones. More proactive occupational health programs should be designed to improve the mental health of those providers who are central to patient safety and good quality outcomes in health care organizations. Examples of such programs exist in the literature (Putnam, McKibbin, Lancaster, & Schwade, 2003).

This study has several limitations. This is a secondary analysis of survey data collected by others; however the original survey design was meticulous and well thought out using instruments with known reliability and dependability in a large representative national sample, whose use is strictly monitored by Statistics Canada.

Although certain associations between variables were apparent, in a cross-sectional study the direction or temporal association cannot be determined. For example, although there was a significant association between depression, strain and overload in this sample of nurses, it is not clear whether depressed nurses experienced more strain and overload or whether the strain and overload preceded and increased their risk of depression.

The sample of nurses was primarily female. Gilmour and Patten (2007) reported depression in women was twice that of men in their analysis using data from the CCHS and NPHS surveys. It could be that nursing as a gendered profession may have a higher

rate of depression than the general public before taking in to consideration the role of stress in their workload and the acknowledges heavy workload of nurses experiencing resource shortages.

Conclusion

Changes to the processes of healthcare organization accreditation reflect the culmination of decades of research evidence that safe, quality care has a relationship to organizational working conditions; however more research is needed to ascertain and further explain the relationship between nurses' working conditions and their high risk for experiencing depression. As we focus on retention during diminishing supplies of knowledge workers in the future, it is imperative during present and future nursing shortages, that health organizations provide nurses with workplaces that are resourced well enough to better support, educate, and promote health of these valued workers who will be needed by an aging demographic.

Depression in the workplace is a costly issue for all but is particularly concerning during the present HHR shortage that will deepen in the coming decade. The cost of failure to recognize workers' depression is enormous to society, organizations and to the depressed worker. Stephens and Joubert (2001) contend their estimation of the cost of mental health issues in Canada is conservative at $6 billion. A recent requirement of the College of Nurses to report those nurses who are deemed incapacitated while protective of patient safety may further inhibit nurses' seeking help for mental health issues; issues that are already stigmatized by society. Nurses suffering from depression need to be supported by early and accurate diagnosis, so that they can receive appropriate treatment and minimize the impact on their ability to deliver safe quality care. Healthcare

workplaces should face a higher accountability in provision of healthy working conditions for nurses, after all **health is their business**.

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Appendices

Appendix A

Depression in Nurses
A Proposal for a Secondary Data Analysis of
The 2005 National Survey of the Work and Health of Nurses

Title of the Project

Depression in Nurses: An exploration of associations with work related factors and nurses' health.

Rationale and objectives of the study

Nursing is emotionally, mentally and physically demanding work that is both rewarding and challenging in view of the profound changes that have occurred in health care provision over the past several decades. Organizational downsizing, staffing cutbacks, work redesign and advances in medical treatment have left the community and hospital sectors dealing with a higher needs population at a time when there are fewer nurses available.

Current workload and staffing pressures may result in high levels of stress and burnout, with resulting absenteeism, injuries and chronic physical and mental health issues (Shamian, Kerr, Laschinger, & Thomson, 2002). The link between the work environment and nurses' health is evident in a large body of research on magnet hospitals in the United States (Upenieks, 2002).

Two of the major theoretical occupational health models suggest that nurse efforts to maintain a high standard of care and provide good patient care outcomes in less than ideal circumstances could place their physical, mental and emotional health at risk. According to the demand/control/strain model of work stress (Karasek & Theorell, 1990) if nurses' demands exceed their control and support in the workplace, their health may suffer. Similarly, the effort/reward model posits that nurse perceptions of poor quality patient outcomes and lack of workplace respect may be perceived as low reward in the face of high efforts provided and could conceivably negatively affect their wellbeing (Jonge, Bosma, Peter, & Siegrist, 2000).

A systematic review of the effects of workplace and individual efforts to prevent or improve workplace stress revealed there was limited evidence in support of such efforts (Marine, Ruotsalainen, Serra, & Verbeek, 2006). Reducing mandatory overtime, attention to scheduling and providing adequate notice of work are methods employers could use to support nursing staff and at the same time have organizational benefits (Wallace & Pierson, 2008). Self scheduling , which increases staff autonomy by giving control over the work schedule to nurses, is thought to promote staff retention, decrease absenteeism, and support team development (Dechant, 2006). Supportive management is linked with an increased ability to cope with role overload (Higgins, Duxbury, & Lyons, 2007).

Mental disorders, such as depression, classified using the ICD-10 (World health Organization, 2004) are among the leading causes of disability worldwide and result in a high cost to society because of short and long term work impairment, absenteeism and chronic illness (Gilmour & Patten, 2007). Stress is a major contributor to problems in mental health in Canada (The Public Health Agency of Canada, 2006). Wang (2005) found a high level of work stress is associated with a high risk of a Major Depressive Episode (MDE). A productive workforce requires policy makers to recognize the

relationship between work stress and mental health, as well as the importance of primary prevention and adequate treatment (Blackmore, Stansfeld, Weller, Munce, Zagorski, & Stewart, 2007). Depression comes in third worldwide, ahead of ischaemic heart disease, as a contributor to global disease burden from non communicable sources; in middle to high income countries, like Canada, it ranks first (WHO, 2008).

An examination of the literature reveals a gap in evidence about nurses' depression; however a large literature exists about burnout in nurses. Cox, Kuk and Leiter (1993) write that burnout does not have the same stigma that being diagnosed with a mental illness carries. The authors go on to explain that burnout examines the interaction of occupational stressors, such as organizational culture and role strain in addition to the characteristics of the burned out worker, while with a diagnosis of mental illness, the worker becomes the focus and may be blamed for the condition. Burisch (1993) writes that defining burnout however, is like "defining the boundaries of a large cloud" and once compiled 130 symptoms that various writers attributed to it. The author cautioned "none of these symptoms was unique to burnout i.e. *not* to be found in other nosological entities such as depression" (p.77). Therefore, having access to a large survey that used a valid and reliable method of assessing MDE using a subset of questions from the Composite International Diagnostic Interview(CIDI), as well as valid tools for work stress, presents an ideal opportunity to examine associations between depression in nurses and work related variables.

Research Questions

Is there an association between nurses' workplace stress, role overload and their experience of depression?

What association is there between the perception of quality of care in nurses' workplaces and the risk for depression in nurses?

Do nurses who are depressed have less support in their workplaces?

Hypothesis

Depression in nurses is positively associated with role overload and job stress and negatively associated with nurses' perception of the quality of care provided and their employer's efforts to support work life balance. Role overload and job stress will increase risk of depression while quality of care and support will decrease risk.

Data Analysis

The database of interest is the National Survey of the Work and Health of Nurses (NSWHN) 2005, a large cross sectional survey available through the Research Data Center (RDC) located at the University of Western Ontario. In a Statistics Canada report about the NSWHN, "multivariate logistic regression models were used to test associations between nurses' self reported mental and physical health, tangible work factors and psychological aspects of nurses' work" (Shields, 2006, p. 86). Tangible work factors are described as including shift worked, number of shift changes, multiple job holding, work setting and union membership.

In the proposed study, all analyses will be conducted using the software SPSS © version 17.0, with logistic regression used to analyze associations between depression and work-related factors. Depression will be the categorical dependent variable. In this survey, an MDE case was established "using the methodology of Kessler et al (1994),

with the nurses interviewed using a subset of questions from the CIDI. Cases will be defined as RNs who were assessed as having a MDE based on their CIDI scores (i.e. an MDE probability of 0.9 or greater). The independent variables for the regression will be RN work related stress, role overload, employer and co-worker support and RN perception of the quality of care in their workplace. The NSWHN questions (DP_C01 to DP_Q28) were used to screen for depression and to obtain scores that were then transformed into probability estimates (Canadian Institute for Health Information, 2005). A score of 5 or more out of 8 criteria was needed for a 90% probability that the nurse had had a major depressive episode in the previous 12 months. One question in the study specifically addresses medication use in nurses and this data will be useful in determining whether nurses received treatment for their depression while working.

A descriptive analysis, including an assessment of the distributions and correlations of the key study variables will also be conducted. Descriptive statistics about nurse demographics such as age, gender and place of employment will also be generated. The final scores for the derived variables used in this study (i.e. depression, work stress, role overload and the quality of care provided) are already available in the data provided to the RDC from Statistics Canada. Variable distributions will be checked prior to use in the logistic regression analysis as some may not be normally distributed and might require transformations (e.g. see Wang, 2005 in relation to the job stress scores).

Independent variables will be entered into a logistic regression analysis using a hierarchical (i.e. block) approach. Work stress was assessed using a modified version of the Karasek Job Content Questionnaire (JCQ), with 12 questions (WS_C01 to WS_C12) relating to job strain, supervisor and co worker respect, job insecurity and physical demands (Karasek, Brisson, Kawakami, Houtman, Bongers, & Amick, 1998). Role overload score, a derived variable, was assessed using five questions (RO _C01 to RO_Q05) and was based on a subscale of the Occupational Stress Inventory (OSI) as described in Decker and Borgen (1993). In addition, employer support was assessed with 13 questions (ES_C01 to ES_C13) using questions derived from other Statistics Canada surveys (Statistics Canada, 2009). Lastly, nurses' perception of the quality of care in their workplace was assessed using 14 questions (PQ_C01 to PQ_Q14) based on the study for the report on measuring nurse performance and staffing (O'Brien-Pallas et al,2004). Prior to entering the independent variables in the model, age and type of nursing, will be controlled for, as there may be differences related to risk of depression and stress levels between community and hospital nurses.

For the analysis, data will be weighted to adjust for differences in survey coverage by type of nurse and by province/territory, to represent the total population of nurses in Canada in 2005 using the sampling weights provided by Statistics Canada. To compensate for the design effects of this survey, a bootstrap technique will be used to estimate variance, coefficients of variation and to calculate 95% confidence intervals. It is important to note that given the cross-sectional nature of the data being used, odds ratios and discussions about variable associations are possible but not an analysis of causation.

Sample

The target population of the NSWHN (Shields, 2006) was a stratified design, with 24,223 nurses selected at random from membership organizations and regulating bodies. Nearly 19,000 regulated nurses, such as licensed practical nurses (LPN), registered

psychiatric nurses (RPN) and registered nurses (RN), from across Canada responded and were followed up by telephone, between October 2005 and January 2006. The final responding sample was comprised of 9794 RNs, 7265 LPNs and 1707 RPNs (Shields, 2006, p. 85) but only the RNs will be used for the proposed analysis for a more homogenous sample. In the original report there were differences between RNs and other regulated nurses, such as the fact that a large proportion of LPN are employed in the long term sector. According to one analysis done with this survey, nurses work more overtime, paid and unpaid, than other Canadian workers and had higher prevalence of chronic pain, back problems and depression. "Nearly 1 in 10 nurses reported experiencing depression in the last year... one-fifth reported that mental health problems in the last month had interfered with their ability to do their job (Shields, 2006, p. xix)".

Sample size was calculated as Tosteson, Buzas, Demidenko and Karangas (2003) suggest for logistic regression, with the assumption of measurement error and alternate odds ratio of one SD increase in exposure. If the expected OR for the 1 SD increase is 2.0, the correlation between true and observed exposure is 0.50, the OR for a one SD increase in covariate is 1.5, prevalence of subjects with no exposure is 0.5 and correlation of exposure and covariate is 0.20, then for a power of 0.95 and significance of 0.05, the required sample would be 591 nurses, thus the proposed study should have excellent adequate statistical power. As can be seen from the attached figure, the NSWHN sample of almost 10,000 RNs will provide more than enough subjects for this analysis even if the assumptions vary considerably from those mentioned above.

Expected Project Start and End Date

Expected start date is April, 2009. Expected end date is December, 2009.

Expected Products

This study will provide a detailed analysis of work related factors and associations with depression in nurses and will complete the thesis requirements for my degree of Masters of Science in Nursing at the University of Western Ontario. Submission to peer reviewed journals for possible publication of associated papers with presentation at the Quality of Nursing Work-life conference is also a possibility.

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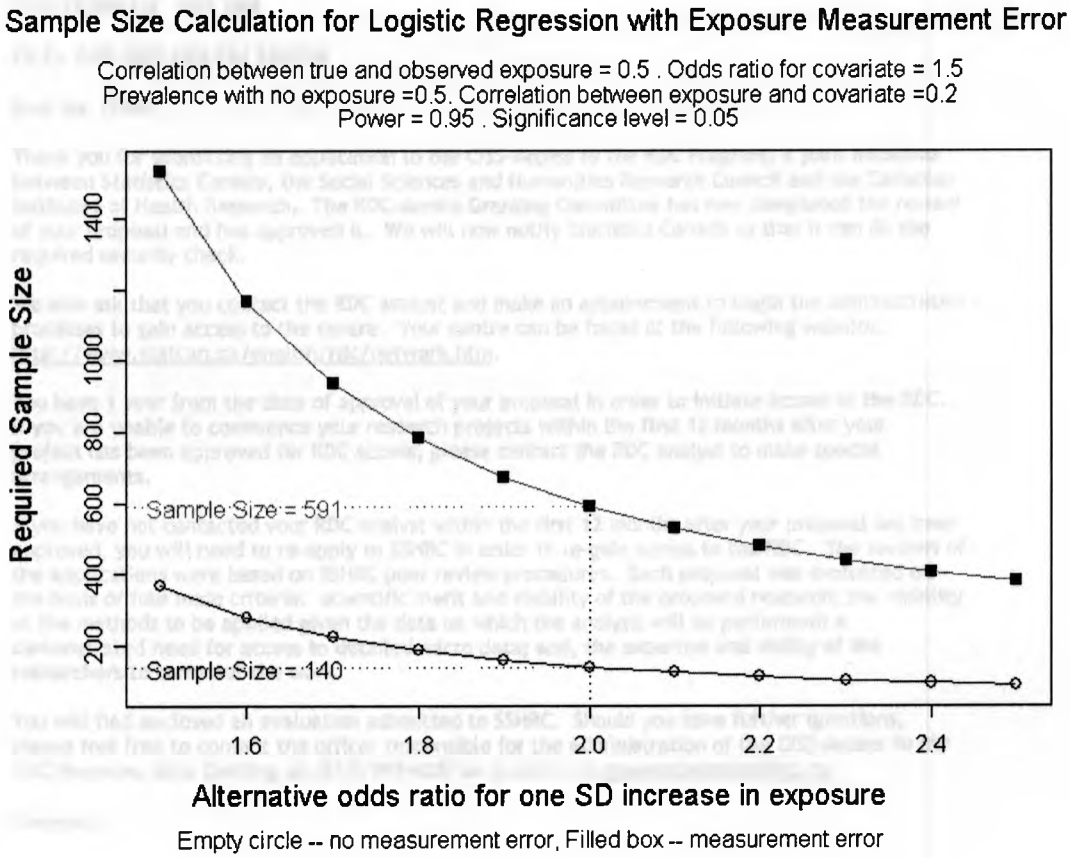

Appendix B

SSHRC ▪ CRSH

350 Albert Street, P.O Box 1610
Ottawa ON K1P 6G4
www.sshrc.ca

350, rue Albert, C.P. 1610
Ottawa ON K1P 6G4
www.crsh.ca

April 8, 2009

Ms. Marilyn Ohler
260 Erie Street
STRATFORD ON N5A 2M8

FILE: CISS-RDC-OHLER/ 388936

Dear Ms. Ohler:

Thank you for submitting an application to the *CISS-Access to the RDC Program*, a joint initiative between Statistics Canada, the Social Sciences and Humanities Research Council and the Canadian Institutes of Health Research. The RDC-Access Granting Committee has now completed the review of your proposal and has approved it. We will now notify Statistics Canada so that it can do the required security check.

We also ask that you contact the RDC analyst and make an appointment to begin the administrative processes to gain access to the centre. Your centre can be found at the following website: http://www.statcan.ca/english/rdc/network.htm.

You have 1 year from the date of approval of your proposal in order to initiate access to the RDC. If you are unable to commence your research projects within the first 12 months after your project has been approved for RDC access, please contact the RDC analyst to make special arrangements.

If you have not contacted your RDC analyst within the first 12 months after your proposal has been approved, you will need to re-apply to SSHRC in order to re-gain access to the RDC. The reviews of the applications were based on SSHRC peer review procedures. Each proposal was evaluated on the basis of four main criteria: scientific merit and viability of the proposed research; the viability of the methods to be applied given the data on which the analysis will be performed; a demonstrated need for access to detailed micro data; and, the expertise and ability of the researchers to carry out the work.

You will find enclosed an evaluation submitted to SSHRC. Should you have further questions, please feel free to contact the officer responsible for the administration of the *CISS-Access to the RDC Program*, Mika Oehling, at (613) 992-4227 or by email at zresearchdata@sshrc.ca.

Sincerely,

Murielle Gagnon
Director
Strategic Programs and Joint Initiatives

cc: Beverley Hunt, Research Data Centres Headquarters Operations

Encl.

Applicant: Ohler, Marilyn
Project title:: Depression in nurses: A secondary data analysis

Data Access

Can the information required for the project be obtained from public sources such as public use micro data files or existing publications? ○ Yes ◉ No ○ Unable to assess

Data Requirements

Does the researcher provide sufficient information and an adequate justification for access to confidential data file(s) requested?	◉ Yes ○ No
Is there sufficient sample size to support the research?	◉ Yes ○ No
Is the population of interest described adequately in the proposal?	◉ Yes ○ No
Can the population of interest specified in the proposal be adequately identified in the data requested?	◉ Yes ○ No
Are the variables to be used clearly described?	◉ Yes ○ No
Are the variables available in the data file requested?	◉ Yes ○ No

Overall Assessment

Based on the above data criteria, should the applicant and team members (if applicable) be granted access to a RDC ◉ Yes ○ No

If No, please summarise reasons for rejection, your concerns and recommendations (i.e. alternate dataset).

General Comments

Include any general comments you wish to pass along to the researcher.

Appendix C

Section: Depression (DP)

DP_BEG Beginning of module
DP_C01 If Emp = 1 (employed in nursing), go to DP_R01
Otherwise, go to DP_END
DP_R01 The following questions deal with feelings you may have had.
DP_Q02 During the past 12 months, was there ever a time when you felt sad, blue, or depressed for 2 weeks or more in a row?
1 Yes
2 No .....(Go to DP_Q16)
DK, RF.....(Go to DP_END)

Coverage: Employed nurses (past 12 months)

DP_Q03 For the next few questions, please think of the 2-week period during the past 12 months when these feelings were the worst. During that time, how long did these feelings usually last?
INTERVIEWER: Read categories to respondent.
1 All day long
2 Most of the day
3 About half of the day.....(Go to DP_Q16)
4 Less than half of a day .....(Go to DP_Q16)
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who felt sad, blue or depressed for a period of 2 weeks or more during the past 12 months (DP_Q02=1)

DP_Q04 How often did you feel this way during those 2 weeks?
INTERVIEWER: Read categories to respondent.
1 Every day
2 Almost every day
3 Less often .....(Go to DP_Q16)
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who felt sad, blue or depressed all day long or most of the day (DP_Q03=1 or 2) for a period of 2 weeks or more during the past 12 months (worst 2-week period)

DP_Q05 During those 2 weeks did you lose interest in most things?
1 Yes
2 No
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who felt sad, blue or depressed all day long or most of the day (DP_Q03=1 or 2) every day or almost every day (DP_Q04=1 or 2) for a period of 2 weeks or more during the past 12 months (worst 2-week period)

DP_Q06 Did you feel tired out or low on energy all of the time?
1 Yes
2 No
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who felt sad, blue or depressed all day long or most of the day (DP_Q03=1 or 2) every day or almost every day (DP_Q04=1 or 2) for a period of 2 weeks or more during the past 12 months (worst 2-week period)

DP_Q07 Did you gain weight, lose weight or stay about the same?
1 Gained weight
2 Lost weight
3 Stayed about the same.....(Go to DP_Q09)
4 Was on a diet.....(Go to DP_Q09)
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who felt sad, blue or depressed all day long or most of the day (DP_Q03=1 or 2) every day or almost every day (DP_Q04=1or 2) for a period of 2 weeks or more during the past 12 months (worst 2-week period)

DP_Q08A About how much did you (gain/lose)?
____(3 spaces) [Min: 1 Max: 99]
DK, RF.....(Go to DP_Q09)

Coverage: Employed nurses who felt sad, blue or depressed all day long or most of the day (DP_Q03=1 or 2) every day or almost every day (DP_Q04=1 or 2) for a period of two weeks or more during the past 12 months and also gained or lost weight (DP_Q07=1 or 2) (worst 2-week period)

DP_Q08B Was that in pounds or in kilograms?
1 Pounds
2 Kilograms

Coverage: Employed nurses who felt sad, blue or depressed all day long or most of the day (DP_Q03=1 or 2) every day or almost every day (DP_Q04=1 or 2) for a period of two weeks or more during the past 12 months and also gained or lost weight (DP_Q07=1 or 2) (worst 2-week period)

DP_Q09 Did you have more trouble falling asleep than you usually do?
1 Yes
2 No .....(Go to DP_Q11)
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who felt sad, blue or depressed all day long or most of the day (DP_Q03=1 or 2) every day or almost every day (DP_Q04=1or 2) for a period of 2 weeks or more during the past 12 months (worst 2-week period)

DP_Q10 How often did that happen?
INTERVIEWER: Read categories to respondent.
1 Every night
2 Nearly every night
3 Less often
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who felt sad, blue or depressed all day long or most of the day (DP_Q03=1 or 2) every day or almost every day (DP_Q04=1or 2) for a period of two weeks or more during the past 12 months and also had more trouble falling asleep than usual (DP_Q09=1) (worst 2-week period)

DP_Q11 Did you have a lot more trouble concentrating than usual?
1 Yes
2 No
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who felt sad, blue or depressed all day long or most of the day (DP_Q03=1 or 2)
every day or almost every day (DP_Q04=1or 2) for a period of 2 weeks or more during the past 12 months (worst 2-week period)

DP_Q12 At these times, people sometimes feel down on themselves, no good, or worthless. Did you feel this way?
1 Yes
2 No
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who felt sad, blue or depressed all day long or most of the day (DP_Q03=1 or 2) every day or almost every day (DP_Q04=1or 2) for a period of 2 weeks or more during the past 12 months (worst 2-week period)

DP_Q13 Did you think a lot about death - either your own, someone else's, or death in general?
1 Yes
2 No
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who felt sad, blue or depressed all day long or most of the day (DP_Q03=1 or 2) every day or almost every day (DP_Q04=1 or 2) for a period of 2 weeks or more during the past 12 months (worst 2-week period)

DP_C14 If any of DP_Q5 to DP_Q13 = 1 (yes), or DP_Q7 = 1 or 2 (gained or lost weight), go to DP_Q14C
Otherwise, go to DP_END

DP_Q14C Reviewing what you just told me, you had 2 weeks in a row during the past 12 months when you were sad, blue or depressed and also had some other things like (KEY PHRASES). Note: Key Phrases was prefilled with the first 3 symptoms reported in Questions DP_Q05 to DP_Q13 (i.e., lost interest, felt tired, gained/lost weight, had trouble falling asleep, had trouble concentrating, felt down on themselves, or thought a lot about death).

DP_Q14 About how many weeks altogether did you feel this way during the past 12 months?
____(2 spaces) [Min: 0 Max: 51]
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who felt sad, blue or depressed all day long or most of the day (DP_Q03=1 or 2) every day or almost every day (DP_Q04=1 or 2) for a period of 2 weeks or more during the past 12 months and replied "yes" to at least one of questions DP_Q05 to DP_Q13 (lost interest, felt tired, had trouble falling asleep, had trouble concentrating, felt down on themselves, thought a lot about death) or said they gained or lost weight in DP_Q07

DP_Q15 Think about the last time you felt this way for 2 weeks or more in a row. In what month was that?
01 January
02 February
03 March
04 April
05 May
06 June
07 July
08 August
09 September
10 October
11 November
12 December
DK, RF
Default: (Go to DP_END)

Coverage: Employed nurses who felt sad, blue or depressed all day long or most of the day (DP_Q03=1 or 2) every day or almost every day (DP_Q04=1or 2) for a period of two weeks or more during the past 12 months and replied "yes" to at least one of questions DP_Q05 to DP_Q13 (lost interest, felt tired, had trouble falling asleep, had trouble concentrating, felt down on themselves, thought a lot about death) or said they gained or lost weight in DP_Q07; excludes nurses who reported more than 51 weeks in DP_Q14

DP_Q16 During the past 12 months, was there ever a time lasting 2 weeks or more when you lost interest in most things like hobbies, work or activities that usually give you pleasure?
1 Yes
2 No .....(Go to DP_END)
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who reported they never felt sad, blue of depressed for a period of 2 weeks or more during the past 12 months (DP_Q02=2), or nurses who reported having these feelings for a shorter period of the day (DP_Q03=3 or 4) or on fewer days (DP_Q04=3) during the worst 2-week period

DP_Q17 For the next few questions, please think of the 2-week period during the past 12 months when you had the most complete loss of interest in things. During that 2-week period, how long did the loss of interest usually last?
INTERVIEWER: Read categories to respondent.
1 All day long
2 Most of the day
3 About half of the day.....(Go to DP_END)
4 Less than half of a day .....(Go to DP_END)
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who lost interest in most things for a period of 2 weeks or more during the past 12 months (DP_Q16=1) (worst 2-week period)

DP_Q18 How often did you feel this way during those 2 weeks?
INTERVIEWER: Read categories to respondent.
1 Every day
2 Almost every day
3 Less often .....(Go to DP_END)
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who lost interest in most things all day long or most of the day (DP_Q17=1 or 2) for a period of 2 weeks or more during the past 12 months (worst 2-week period)

DP_Q19 During those 2 weeks did you feel tired out or low on energy all the time?
1 Yes
2 No
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who lost interest in most things all day long or most of the day (DP_Q17=1 or 2) every day or almost every day (DP_Q18=1 or 2) for a period of 2 weeks or more during the past 12 months (worst 2-week period)

DP_Q20 Did you gain weight, lose weight, or stay about the same?
1 Gained weight
2 Lost weight
3 Stayed about the same.....(Go to DP_Q22)
4 Was on a diet.....(Go to DP_Q22)
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who lost interest in most things all day long or most of the day (DP_Q17=1 or 2) every day or almost every day (DP_Q18=1 or 2) for a period of 2 weeks or more during the past 12 months (worst 2-week period)

DP_Q21A About how much did you (gain/lose)?
____(3 spaces) [Min: 1 Max: 99]
DK, RF.....(Go to DP_Q22)

Coverage: Employed nurses who lost interest in most things all day long or most of the day (DP_Q17=1 or 2) every day or almost every day (DP_Q18=1 or 2) for a period of 2 weeks or more during the past 12 months and also gained or lost weight (DP_Q20=1 or 2) (worst 2-week period)

DP_Q21B Was that in pounds or in kilograms?
1 Pounds
2 Kilograms

Coverage: Employed nurses who lost interest in most things all day long or most of the day (DP_Q17=1 or 2) every day or almost every day (DP_Q18=1 or 2) for a period of 2 weeks or more during the past 12 months and also gained or lost weight (DP_Q20=1 or 2) (worst 2-week period)

DP_Q22 Did you have more trouble falling asleep than you usually do?
1 Yes
2 No .....(Go to DP_Q24)
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who lost interest in most things all day long or most of the day (DP_Q17=1 or 2) every day or almost every day (DP_Q18=1 or 2) for a period of 2 weeks or more during the past 12 months (worst 2-week period)

DP_Q23 How often did that happen?
INTERVIEWER: Read categories to respondent.
1 Every night
2 Nearly every night
3 Less often
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who lost interest in most things all day long or most of the day (DP_Q17=1 or 2) every day or almost every day (DP_Q18=1 or 2) for a period of 2 weeks or more during the past 12 months and also had more trouble falling asleep than usual (DP_Q22=1) (worst 2-week period)

DP_Q24 Did you have a lot more trouble concentrating than usual?
1 Yes
2 No
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who lost interest in most things all day long or most of the day (DP_Q17=1 or 2) every day or almost every day (DP_Q18=1 or 2) for a period of 2 weeks or more during the past 12 months (worst 2-week period)

DP_Q25 At these times, people sometimes feel down on themselves, no good, or worthless. Did you feel this way?
1 Yes
2 No
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who lost interest in most things all day long or most of the day (DP_Q17=1 or 2) every day or almost every day (DP_Q18=1 or 2) for a period of 2 weeks or more during the past 12 months (worst 2-week period)

DP_Q26 Did you think a lot about death - either your own, someone else's, or death in general?
1 Yes
2 No
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who lost interest in most things all day long or most of the day (DP_Q17=1 or 2) every day or almost every day (DP_Q18=1 or 2) for a period of 2 weeks or more during the past 12 months (worst 2-week period)

DP_C27 If any of DP_Q19 to DP_Q26 = 1 (yes), or DP_Q20 = 1 or 2 (gained or lost weight), go to DP_Q27C
Otherwise, go to DP_END
DP_Q27C Reviewing what you just told me, you had 2 weeks in a row during the past 12 months when you lost interest in most things and also had some other things like (KEY PHRASES).

Note: Key Phrases was prefilled with the first 3 symptoms reported in Questions DP_Q19 to DP_Q26 (i.e., felt tired, gained/lost weight, had trouble falling asleep, had trouble concentrating, felt down on themselves, or thought a lot about death).

DP_Q27 About how many weeks did you feel this way during the past 12 months?
____(2 spaces) [Min: 0 Max: 51]
DK, RF.....(Go to DP_END)

Coverage: Employed nurses who lost interest in most things all day long or most of the day (DP_Q17=1 or 2) every day or almost every day (DP_Q18=1 or 2) for a period of 2 weeks or more during the past 12 months and answered "yes" to at least one of questions DP_Q19 to DP_Q26 (felt tired, had trouble falling asleep, had trouble concentrating, felt down, thought a lot about death) or said they gained or lost weight in DP_Q20

DP_Q28 Think about the last time you had 2 weeks in a row when you felt this way.
In what month was that?
01 January
02 February
03 March
04 April
05 May
06 June
07 July
08 August
09 September
10 October
11 November
12 December
DK, RF

Coverage: Employed nurses who lost interest in most things all day long or most of the day (DP_Q17=1 or 2) every day or almost every day (DP_Q18=1 or 2) for a period of 2 weeks or more during the past 12 months and answered "yes" to at least one of questions DP_Q19 to DP_Q26 (felt tired, had trouble falling asleep, had trouble concentrating, felt down, thought a lot about death) or said they gained or lost weight in DP_Q20; excludes nurses who reported more than 51 weeks in DP_Q27

From National Survey of the Work and Health of Nurses, 2005 Questionnaire

Appendix D

Section: Role Overload (RO)

RO_C01 If Emp = 1 (employed in nursing), go to RO_R01
Otherwise, go to RO_END
RO_R01 I'm going to read a series of statements that might describe your main job. Please tell me the extent to which you agree or disagree with each statement.

RO_Q01 I often have to arrive early or stay late to get my work done.
INTERVIEWER: Read categories to respondent.
1 Strongly agree
2 Agree
3 Neither agree nor disagree
4 Disagree
5 Strongly disagree
DK, RF
Coverage: Employed nurses (main job)

RO_Q02 I often have to work through my breaks to complete my assigned workload.
1 Strongly agree
2 Agree
3 Neither agree nor disagree
4 Disagree
5 Strongly disagree
DK, RF
Coverage: Employed nurses (main job)

RO_Q03 It often seems like I have too much work for one person to do.
1 Strongly agree
2 Agree
3 Neither agree nor disagree
4 Disagree
5 Strongly disagree
DK, RF
Coverage: Employed nurses (main job)

RO_Q04 I am given enough time to do what is expected of me in my job.
1 Strongly agree
2 Agree
3 Neither agree nor disagree
4 Disagree
5 Strongly disagree
DK, RF
Coverage: Employed nurses (main job)

RO_Q05 I have too much to do, to do everything well.
1 Strongly agree
2 Agree
3 Neither agree nor disagree
4 Disagree
5 Strongly disagree
DK, RF
Coverage: Employed nurses (main job)

RO_END End of module

From National Survey of the Work and Health of Nurses, 2005 Questionnaire

Appendix E

Section: Respect and Support (RS)
RS_BEG Beginning of module

RS_C01 If Emp = 1 (employed in nursing) and DirectCare = 1 (provided direct care) and Self Emp = 2 (not self-employed), go to RS_Q01
Otherwise, go to RS_END

RS_Q01 I receive the respect I deserve from my superiors.
1 Strongly agree
2 Somewhat agree
3 Somewhat disagree
4 Strongly disagree
5 Not applicable
DK, RF
Coverage: Employed nurses who work for an employer and provide direct care at their (main) job (MJ_Q07 not=4 and MJ_Q12 not=2)

RS_Q02 I receive the respect I deserve from my colleagues.
1 Strongly agree
2 Somewhat agree
3 Somewhat disagree
4 Strongly disagree
5 Not applicable
DK, RF
Coverage: Employed nurses who work for an employer and provide direct care at their (main) job (MJ_Q07 not=4 and MJ_Q12 not=2)

RS_Q03 Considering all my efforts and achievements, I receive the respect and prestige I deserve.
1 Strongly agree
2 Somewhat agree
3 Somewhat disagree
4 Strongly disagree
5 Not applicable
DK, RF
Coverage: Employed nurses who work for an employer and provide direct care at their (main) job (MJ_Q07 not=4 and MJ_Q12 not=2)

RS_END End of module

From National Survey of the Work and Health of Nurses, 2005 Questionnaire

Appendix F

Section: Work Stress (WS)

WS_BEG Beginning of module

WS_C01 If Emp = 1 (employed in nursing), go to WS_R01
Otherwise, go to WS_END

WS_R01 I'm going to read you a series of statements that might describe your main job in the past 12 months. Please tell me if you strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree.

WS_Q01 Your job required that you learn new things.
1 Strongly agree
2 Agree
3 Neither agree nor disagree
4 Disagree
5 Strongly disagree
DK
RF .....(Go to WS_END)
Coverage: Employed nurses (main job; past 12 months)

WS_Q02 Your job required a high level of skill.
1 Strongly agree
2 Agree
3 Neither agree nor disagree
4 Disagree
5 Strongly disagree
DK, RF
Coverage: Employed nurses (main job; past 12 months)

WS_Q03 Your job allowed you freedom to decide how you did your job.
1 Strongly agree
2 Agree
3 Neither agree nor disagree
4 Disagree
5 Strongly disagree
DK, RF
Coverage: Employed nurses (main job; past 12 months)

WS_Q04 Your job required that you do things over and over.
1 Strongly agree
2 Agree
3 Neither agree nor disagree
4 Disagree
5 Strongly disagree
DK, RF
Coverage: Employed nurses (main job; past 12 months)

WS_Q05 Your job was very hectic.
1 Strongly agree
2 Agree
3 Neither agree nor disagree
4 Disagree
5 Strongly disagree
DK, RF
Coverage: Employed nurses (main job; past 12 months)

WS_Q06 You were free from conflicting demands that others made.
1 Strongly agree
2 Agree
3 Neither agree nor disagree
4 Disagree
5 Strongly disagree
DK, RF
Coverage: Employed nurses (main job; past 12 months)

WS_Q07 Your job security was good.
1 Strongly agree
2 Agree
3 Neither agree nor disagree
4 Disagree
5 Strongly disagree
DK, RF
Coverage: Employed nurses (main job; past 12 months)

WS_Q08 Your job required a lot of physical effort.
1 Strongly agree
2 Agree
3 Neither agree nor disagree
4 Disagree
5 Strongly disagree
DK, RF
Coverage: Employed nurses (main job; past 12 months)

WS_Q09 You had a lot to say about what happened in your job.
1 Strongly agree
2 Agree
3 Neither agree nor disagree
4 Disagree
5 Strongly disagree
DK, RF
Coverage: Employed nurses (main job; past 12 months)

WS_Q10 You were exposed to hostility or conflict from the people you worked with.
1 Strongly agree
2 Agree
3 Neither agree nor disagree
4 Disagree
5 Strongly disagree
DK, RF
Coverage: Employed nurses (main job; past 12 months)

WS_Q11 Your supervisor was helpful in getting the job done.
1 Strongly agree
2 Agree
3 Neither agree nor disagree
4 Disagree
5 Strongly disagree
DK, RF
Coverage: Employed nurses (main job; past 12 months)

WS_Q12 The people you worked with were helpful in getting the job done.
1 Strongly agree
2 Agree
3 Neither agree nor disagree
4 Disagree
5 Strongly disagree
DK, RF
Coverage: Employed nurses (main job; past 12 months)

WS_END End of module

From National Survey of the Work and Health of Nurses, 2005 Questionnaire

Appendix G

Perception of Quality of Care

PQ_R01 Now some questions about nursing activities during the last shift you worked at your main job.

PQ_Q01 Was your last shift during the day, evening or night?
1 Day
2 Evening
3 Night
DK, RF

Coverage: Employed nurses who provide direct care at their (main) job (MJ_Q12 not=2) (last shift)

PQ_Q02 Do you think the staffing level in your work setting was adequate?
1 Yes
2 No
DK, RF
Coverage: Employed nurses who provide direct care at their (main) job (MJ_Q12 not=2) (last shift)

PQ_Q03 Overall, how would you describe the quality of nursing care delivered by your nursing team during that shift?
INTERVIEWER: Read categories to respondent.
1 Excellent ..... (Go to PQ_Q05)
2 Good..... (Go to PQ_Q05)
3 Fair
4 Poor
5 I did not work on a team ..... (Go to PQ_Q05)
DK, RF..... (Go to PQ_Q05)
Coverage: Employed nurses who provide direct care at their (main) job (MJ_Q12 not=2) (last shift)

PQ_Q04 Why is that?
INTERVIEWER: Mark all that apply.
01 Not enough staff
02 Too many patients/residents/clients
03 Poor communication
04 Not enough supplies
05 Equipment not available or not working
06 Not trained adequately
07 Other
DK, RF
Coverage: Employed nurses who reported the quality of nursing care delivered by their team during the last shift

was fair or poor (PQ_Q03=3 or 4)

PQ_Q05 How would you describe the quality of nursing care you provided during that shift?
INTERVIEWER: Read categories to respondent.
1 Excellent ..... (Go to PQ_Q07)
2 Good..... (Go to PQ_Q07)
3 Fair
4 Poor
DK, RF..... (Go to PQ_Q07)
Coverage: Employed nurses who provide direct care at their (main) job (MJ_Q12 not=2) (last shift)

PQ_Q06 Why is that?
INTERVIEWER: Mark all that apply.
01 Not enough staff
02 Too many patients/residents/clients
03 Poor communication
04 Not enough supplies
05 Equipment not available or not working
06 Not trained adequately
07 Other
DK, RF
Coverage: Employed nurses who reported the quality of their nursing care during the last shift was fair or poor
(PQ_Q05=3 or 4)

PQ_Q07 Overall, in the past 12 months, would you say the quality of care in your workplace has ...?
INTERVIEWER: Read categories to respondent.
1 Improved
2 Remained the same ..... (Go to PQ_Q10)
3 Deteriorated..... (Go to PQ_Q09)
DK, RF..... (Go to PQ_Q10)
Coverage: Employed nurses who provide direct care at their (main) job (MJ_Q12 not=2) (past 12 months)

PQ_Q08 Why do you feel the care has improved?
INTERVIEWER: Mark all that apply.
01 More staff
02 Fewer patients / residents / clients
03 Improved communication
04 Adequate / more supplies
05 Equipment available and/or improved
06 More / improved training
07 Improved management / reorganisation

08 Other
DK, RF
Default: (Go to PQ_Q10)

Coverage: Employed nurses who reported the quality of care in their workplace has improved in the past 12
months (PQ_Q07=1)

PQ_Q09 Why do you feel the care has deteriorated?
INTERVIEWER: Mark all that apply.
01 Fewer staff
02 Too many patients / residents / clients
03 Poor communication
04 Less / not enough supplies
05 Equipment not available or not working
06 Less / not enough training
07 Inexperienced staff
08 Other
DK, RF

Coverage: Employed nurses who reported the quality of care in their workplace has deteriorated in the past 12
months (PQ_Q07=3)
PQ_Q10 The next questions are about possible incidents involving you or the patients you directly care for.

In the past 12 months, how often would you say: A patient received the wrong medication or dose?
INTERVIEWER: Read categories to respondent.
1 Never
2 Rarely
3 Occasionally
4 Frequently
5 Not applicable
DK, RF
Coverage: Employed nurses who provide direct care at their (main) job (MJ_Q12 not=2) (past 12 months)
PQ_Q11 In the past 12 months, how often would you say: Incidents of nosocomial infections occurred?
INTERVIEWER: This is an infection that originates or occurs in a hospital or hospital-like setting.
1 Never
2 Rarely
3 Occasionally
4 Frequently
5 Not applicable

DK, RF
Coverage: Employed nurses who provide direct care at their (main) job (MJ_Q12 not=2) (past 12 months)

PQ_Q12 In the past 12 months, how often would you say: Complaints were received from patients or their families?
1 Never
2 Rarely
3 Occasionally
4 Frequently
5 Not applicable
DK, RF
Coverage: Employed nurses who provide direct care at their (main) job (MJ_Q12 not=2) (past 12 months)

PQ_Q13 In the past 12 months, how often would you say:
A patient was injured during a fall?
1 Never
2 Rarely
3 Occasionally
4 Frequently
5 Not applicable
DK, RF
Coverage: Employed nurses who provide direct care at their (main) job (MJ_Q12 not=2) (past 12 months)

PQ_Q14 In the past 12 months, how often would you say:
You were injured while working?
1 Never
2 Rarely
3 Occasionally
4 Frequently
5 Not applicable
DK, RF
Coverage: Employed nurses who provide direct care at their (main) job (MJ_Q12 not=2) (past 12 months)

PQ_END End of module

From National Survey of the Work and Health of Nurses, 2005 Questionnaire

Appendix H

Derived Variables

DPDPP - Depression Scale (Probability of Caseness to Respondents) was derived from questions DP_Q02, DP_Q05, DP_Q06, DP_Q08A, DP_Q08B, DP_Q10 to DP_Q13, DP_Q16 to DP_Q19, DP_Q21A, DP_Q21B and DP_Q23 to DP_Q26

This variable calculates the probability (expressed as a proportion) that the nurse would have been diagnosed as having experienced a major depressive episode (MDE) in the past 12 months, if they had completed the Long-Form Composite International Diagnostic Interview (CIDI).

If the estimate is 0.9 or more, that is, a 90% or more likelihood of experiencing a MDE, the nurse is considered to have experienced a depressive episode in the previous 12 months. To obtain a probability of 0.9, nurses had to score 5 or more.

A probability of caseness of 0 was assigned to nurses who answered "No" to the stem questions.

WSDJST - Job Strain was derived from questions WS_Q01, WS_Q02, WS_Q03, WS_Q04, WS_Q05, WS_Q06 and WS_Q09

The job strain ratio was calculated by dividing the adjusted score for psychological demands by that of decision latitude. A small constant (0.1) was added to the numerator and denominator to avoid division by 0. Nurses were classified for this analysis as having high job strain if the value of the ratio was 1.2 or higher.

RSDIMBAL (Effort-Reward Imbalance Score), was calculated by summing the values of RS_Q01, RS_Q02 and RS_Q03 (with a possible range of 0 to 9). A higher score indicates a greater level of respect and support at work.

RODLOAD
To measure role overload, nurses were asked to react to five statements, each with a five-point scale ranging from "Strongly agree" (code 1) to "Strongly disagree" (code 5). The questions were rescaled from 0 to 4 (instead of 1 to 5) and then the rescaled questions RO_Q01, RO_Q02, RO_Q03, RO_Q04 and RO_Q05 were inverted.
A total Role Overload Score, RODLOAD, was then calculated by summing the scores of the five items (with a possible range of 0 to 20), with a higher score indicating more role overload.

From National Survey of the Work and Health of Nurses, 2005 – Micro Data User Guide

Appendix I

Process for access to Statistics Canada Data in Research Data Center (RDC)

- Meet Eligibility Requirements

i.e. Master's and doctoral students, registered at a Canadian postsecondary institution, who submit projects that form an integral part of their thesis or dissertation work. Applications of this type must:

- include a letter of support (PDF) from the academic supervisor confirming that the student's supervisory committee has reviewed and approved the proposed project as part of the student's research; Applications for students studying outside Canada must also be supported and signed by the responsible RDC Director.
- supply the letter of support (PDF) to the responsible SSHRC program officer in both electronic format and as a signed hard copy;
- identify the supervisor as applicant and the student as co-applicant or the student as applicant and the supervisor as co-applicant and include the full CVs of both the student and the supervisor.
- Read Researcher Guide
- Read Guidelines for RDC research papers
- Evaluation of a Proposal
- Complete the Security Screening Process
- Sign a Microdata Research Contract with Statistics Canada
- Review the Policies and Procedures of the Research Data Centre
- Attend an orientation to the RDC
- Analysis during business hours of operation Mon-Fri
- Analysis output requests must be in format as per Statistics Canada guidelines
- Requests for output are forwarded to Data Analyst
- Data Analyst reviews all output requests and sends them electronically to researcher