

## Job Stress, and Health in Nurses: the Mediating Role of Experience

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### Abstract

*The study examined whether or not the relationship between nurses' job experience and health is mediated by job stress while controlling for age. One hundred ninety daytime registered nurses from multiple hospitals participated in the study. The nurses were given a survey to assess the psychosocial nature at work. The results of this study indicate that nurses who have been working in a hospital setting for more years, experience less job stress than nurses who have been working in a hospital setting for less years. More experienced nurses report better health, as a result. Therefore, job stress appears to mediate the relationship between work experience and better health among nurses.*

**Keywords:** Job Stress, Health in Nurses, Mediating Role

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### 1.0 INTRODUCTION

#### 1.1 The Effect of the Physical Environment on Nurses and Job Stress

“Staff burnout is a critical problem for the human service professions: It is debilitating to workers, costly to agencies, and detrimental to clients” (Shinn, Rosario, Morch, & Chestnut, 1984). Nursing is one of the most stressful professions, with a great degree of job stress. Job stress is a psychological syndrome in response to chronic exposure to emotional and interpersonal stressors on the job (Maslach, Schaufeli, & Leiter, 2001). Physiological markers of stress, which can occur without conscious awareness of environment demands, include elevated cardiovascular activity (i.e. blood pressure), heightened physiological arousal, and shifts in both the sympathetic adrenal medullary system and the hypothalamic-pituitary adrenocortical axis (HPA) (i.e. cortisol) (Cohen, Kessler & Gordon, 1995). Often the healthcare environment does not adequately support staff, and in turn, may further contribute to the stressful nature of their job. Feelings of stress develop from various events, such as work overload, criticism, negligent co-workers, uncooperative patients, and lack of support from supervisors (Motowidlo, Manning, & Packard, 1986). Although turnover rate is not a reliable indicator of the stressfulness of the job, in 2005, the average registered nurse turnover rate was 13.9%. However, in 2007 the average nurse turnover rate in hospitals increased to 27.1% (AACN, 2008). The high turnover and absentee rates in the nursing profession are not simply problems in America, but other countries as well. This shortage in nurses, both in the U.S. and abroad, is causing a dilemma in the healthcare system because it is becoming increasingly difficult to attract young individuals to a career of high turnover and stress. It is also affecting the care given to patients, and the ability of nurses to adequately do their job (Aiken, Clarke, & Sloane, 2002).

Nurses play an integral role in promoting quality medical care. Diers (2004) described the nursing practice and the role that nurses play in restoring health. Nursing is the care of the sick and those who may become sick, and the maintenance of the environment in which care occurs. Nurses are also responsible for fulfilling certain aspects of the medical regimen delegated to them by physicians, such as administering medication. They have a legal and moral obligation to deliver age-appropriate medication to each patient using the proper route of administration (i.e. intravenous, and oral). Additionally, nurses' scope of practice is complementary to that of physicians and includes assessing and intervening within areas of expertise, such as with pain management and providing comfort, and teaching patients and their families how to manage their care after hospital discharge. They are liable for maintaining a safe and patient-centered care environment and routinely intervene when non-nursing support services are not available or are inadequate to maintain a clean environment. Thus, nurses ensure that patients receive adequate nourishment, enforce cleanliness to thwart the spread of infection, and prevent hazards such as improper disposal of needles and sharps that could transmit blood-borne pathogens to unsuspecting staff and visitors. Furthermore, nurses often have to deal with anxious families and sometimes with doctors who may not respect them.

One of nurses' most important functions associated with patient safety, quality of care, and patient outcomes is providing surveillance for early detection of adverse events, complications, and medical errors. Another is mobilizing institutional resources for timely intervention and rescue. A number of factors influence the effectiveness of nurse surveillance, including patient-to-registered-nurse ratios, the education of registered nurses at the bedside, and the numbers of licensed practical nurses and aides relative to registered nurses (often referred to as the skill mix of nursing personnel). Once a nurse detects potentially hazardous clinical signs, the work environment and institutional culture can either promote or impede timely and successful resolution of the problem.

Nurses' relationships with the physicians are particularly important in ensuring that patients receive the help they need. Since physicians in the United States typically combine office-based medical practice with caring for

hospitalized patients, nurses are often physicians' eyes and ears at the hospital bedside. This arrangement works best in organizations that employ enough well-qualified staff, where nurses and physicians have a degree of mutual respect and trust, and where top administrators facilitate patient-centered services throughout the institution (Aiken et al., 2002).

The organization of hospitals can both facilitate and impede the care that patients receive and create or obliterate the stressful nature of the work environment. As a result, the bureaucratic conflict within hospitals is a source of stress. According to Flood and Scott (1987) hospitals have dual bureaucratic and professional structures that represent opposing approaches to managing complex tasks. In conventional bureaucracies work is subdivided among many participants and activities are controlled through externally imposed rules and hierarchies. In contrast, organizations with professional structures support the efforts of self-regulating individuals who exercise considerable discretion in carrying out their work. Etzioni (1969) stated that this professional-bureaucratic conflict is a major concern for complex health care organizations such as hospitals, because "the authority of knowledge and the authority of administrative hierarchy are basically incompatible". Indeed, research on hospital nurse burnout is consistent with this view, demonstrating that organizational conflict far outweighs the psychological and physical stress associated with caring for ill and dying patients (Aiken & Sloane, 1997).

One of the first studies of nursing to integrate a sociological perspective with outcomes examined the performance of magnet hospitals (Aiken, Smith, & Lake, 1994). Such hospitals were originally designated in the early 1980s based on their success in attracting and retaining nurses when other local hospitals were experiencing nurse shortages (McClure & Hinshaw, 2002). Compared with other institutions, magnet hospitals had higher nurse satisfaction, and their nurses reported more autonomy, greater control over resources required for high-quality care, better relations with physicians nurse staffing is more favorable, the administration supports high-quality nursing, and nurses have career development opportunities. (Aiken et al., 2001; Aiken et al., 2002). Aiken and colleagues (1994) studied nurse practice environments in a large representative group of hospitals to determine the extent to which specific features are associated with nurse retention and patient outcomes. The study included over 700 hospitals in five countries, and found that nurses in hospitals in the United States, Canada, the United Kingdom, Germany, and New Zealand face common challenges regarding nurse understaffing and high levels of burnout and job dissatisfaction. Nurses in all of these countries associate deficiencies in quality of care with inadequate staffing workforce management policies, workloads and managerial support, and the structure of nurses' work (Aiken, L., Clarke, S., & Sloane, 2001; Aiken et al., 2002).

Apart from the stressors in the workplace environment, the added responsibility given to nurses also increase the level of stress nurses experience. A majority of U.S. and Canadian nurses report that the numbers of patients assigned to them increased in 2002, which is particularly troubling given the widely reported rise in patient acuity levels in both countries. The reports from nurses in North America also indicate that the nurse manager position has been cut and that the chief nursing officer level of management has been eliminated in a number of hospitals. These findings imply that in addition to having responsibility for more patients, staff nurses might also have to take on more responsibilities for managing services and personnel at the unit level, which take time away from direct patient care. In each country many nurses report spending time performing functions that did not call upon their professional training, while care activities requiring their skills and expertise were often left undone. For example, the percentage of nurses who report cleaning rooms or transporting food trays or patients ranged from roughly one-third to more than two-thirds. At the same time, a number of tasks that are markers of good nursing care, such as oral hygiene and skin care, teaching, and comforting patients, were frequently reported as having been left undone (Aiken et al., 2001).

The added responsibility given to nurses might also be due to a low amount of nurses working in the hospitals. Aiken and associates (2002) examined the hypothesis that a minimum level of staffing is required to retain nurses and minimize turnover. They found that for every patient added to the workload of a hospital bedside nurse, a 23 percent increase in burnout and a 15 percent rise in job dissatisfaction – both precursors to voluntary job resignation. Forty percent of nurses who were dissatisfied and burnt out intended to leave their jobs, compared with only 10 percent who were not burnt out. Similarly, Gardulf and associates investigated the extent to which and reasons why registered nurses at a university hospital intended to quit their present jobs. A total of 833 nurses at a university hospital responded to two mailed, work-environment questionnaires (Quality Work Competence and Huddinge University Hospital Model Questionnaire). It was found that 35% nurses had taken steps to quit. The main reasons that nurses wanted quit their jobs were dissatisfaction with the salary (65%), psychologically strenuous and stressful work (32%), a wish to try something new (28%) and limited opportunities to make a professional career (19%). Nurses who intended to quit (quitters) rated a higher work tempo, experienced an increased work-related exhaustion, and a lower quality of patient care. To a lesser extent, these nurses felt they were not given a chance to make use of their

professional skills, and were given fewer opportunities to further develop their competence and advance within their careers.

In addition, these nurses were less satisfied with the support from their superiors for participating in nursing research and developing projects. Finally, the quitters knew to a significantly lesser extent why they had the actual salary they had, what the salary was based on and what to do to improve. Nurses that perceived their work as strenuous and stressful stated that the contributory factors include the demanding aspects of their work, like working under time pressure, work overload, lack of social support from colleagues, lack of support from superiors, and the nurse shortage. Two other, interesting new phenomena in the Swedish health care sector are the use of rental nurses and a financial reimbursement model based on payment per diagnosis. The frequent use of short-term rental nurses may lead to an extra work strain on the permanent nursing staff, as they must repeatedly introduce, inform and supervise newcomers. This is especially true at a highly specialized, university hospital. Also the financial reimbursement model often used within the Swedish health care, sector today may lead to consequences for the nurses. The demand to perform the yearly set number of medical and care interventions as agreed between a single hospital and its county council constitutes a risk for maintaining full production capacity, in spite of the nurse shortage. For example, the production of different surgical interventions is not adapted to the actual staff numbers; instead the number of surgical procedures often remains the same despite a nurse shortage in the receiving ward (Gardulf, Soderstrom, Orton et al., 2005).

Cross-cultural also examined job stress among nurses and found that certain stressors are standard in contributing to job stress among nurses. Schaufel and Janczur (1994) examined Dutch and Polish nurses and discovered that subjective work stressors such as a perceived imbalance between investments and outcomes in relationships with patients, contributed most strongly to burnout in both of those nurses. Shinn and colleagues (1984) investigated the effects of coping on psychological strain and "burnout" produced by job stress in human service workers (psychologists, social workers, psychiatrists, pastoral counselors, nurses, etc). The researchers found that these stressors predicted job dissatisfaction, behavioral consequences as job performance and turnover in studies of human service workers, psychological symptoms, such as depression and anxiety; and somatic symptoms, such as headaches and various risk factors in coronary heart disease. Identifying the stressors that lead to psychological strain for human service professionals and identifying coping strategies that reduce stress and strain are important steps in ameliorating burnout. Because many influential stress factors are beyond an individual's control in the work place, burnout results. Job stressors cause nurses to "perform less effectively on tasks which call for tolerance for frustration, clerical accuracy, and the ability to avoid perceptual distractions...they also become less sensitive to others" with decreased altruistic tendencies (Cohen, 1980).

The nursing profession is one of great importance because nurses care for the lives of others. Nurses need to be physically and mentally able to perform their duties to ensure the safety and health of those they care for. Thus, occupational stress among nurses is potentially of great concern. It is imperative to study the association between the impact of job stress on the health and wellbeing of nurses. Over usually, investigations of the environmental demands are done in isolation and do not provide the full picture of human stress impacts. Thus, I am looking at other variables that can moderate the linkages between stressors and human responses (Cohen, Evans, Stokols, & Krantz, 1986; Evans & Cohen, 1987). The stressors that I found that are salient to nurses are low autonomy, lack of control resources and social support, demanding workload, and working under time pressure (Aiken et al., 1994; Aiken et al., 2001; Aiken et al., 2002; Gardulf et al., 2005). These stressors in the work environment can interfere with very complex cognitive tasks and are more likely to adversely affect performance if the stressors are prolonged or of high intensity (Cohen et al., 1986; Evans, 2001). The experience of one isolated stressor alone may be quite different compared with experience of the same stressor embedded in a multiplicity of other environmental stressors. The union of small, rather modest suboptimal conditions may have cumulative effects. The combination of many small hassles from the physical environment may aggregate into stress impacts that are not appreciated when each physical stress is studied singly (Evans, 2001).

The purpose of the current research is to determine whether or not the relationship between nurses' job experience and health is mediated by job stress while controlling for age. Literature on job stress and health unanimously agree that job stress has a negative impact on health. I am interested in knowing whether or not this claim is supported in the nursing practice. I hypothesize that nurses who have more hospital work experience are less stressed and have better health than nurses who have been working in a hospital for fewer years. Job stress is a major factor that nurses have to deal with often while in their work environment. Identifying the stressors in nurses' work environment is important because many nurses have dropped down to part-time status, found easier nursing jobs, or quit their jobs further aggravating the shortage of nurses. This research will give better understanding on the influence of a nurse's job experience on health and job stress. The results of this research have important implications because if nurses and other healthcare professionals are able to verify that job stress affects the health of nurses in the work

environment, they may be better able to provide support before stress levels escalate to the point where there are negative effects.

## 2.0 METHOD

### 2.1 Participants

One hundred ninety daytime registered nurses (6 males, 184 females) from Cayuga Medical Center in Ithaca, NY, Geneva General Hospital in Geneva, NY, Children's Healthcare of Atlanta, GA, and Crouse Hospital in Syracuse, NY, served as the participants for the study. Females are the predominant gender in the nursing practice, thus gathering data from males was difficult. The analyses did not compare the differences between gender because with the overwhelming amount of females to male (97% and 3%, respectively). Therefore, the analyses did not differentiate between female and male nurses. The participants ranged in aged across 4 categorical groups [1) 0-18; 2) 19-35; 3) 36-50; 4) 51-65] ( $M = 2.97$ ,  $SD = 0.74$ ) Participants were recruited in person by asking for their involvement in the study. All participants were compensated for their time with a \$10 Wegman's gift card.

### 2.2 Materials

**Psychosocial Risk Factor Scales:** The methodology used was a Healthcare Workplace Survey, which was comprised of scales to assess psychosocial risk factors (See Appendix). The psychosocial risk factor scales were mental health, job satisfaction, job stress, physical health, and the need for recovery/fatigue. These scales were measured using standardized scales using a four-point Likert scale. Karasek (1979) developed the workload scale, and the job control questions were created from both Karasek (1979) and NIOSH (1979). The job support questions in the questionnaire were derived from the University of Survey Questionnaire (Smith, McNamara, & Wellens, 2004; Moos & Insel, 1974). The other three scales, physical health, job satisfaction, and compared physical health each had one question. Comparative health, physical health, and satisfaction were scaled directly on one question from the user's questionnaire. For example, the question regarding health asked the participant, "Which step on the ladder indicates how your health has been lately?" Participants had to rank their physical health on a scale of 0 to 10 with 0 being in very poor health and 10 being excellent health. Other questions regarding stress levels and degree of job support were also based on user's own answers.

There is a magnitude of reliability and validity information on self-reported overall health measures (Center for Disease Control and Prevention, 2000). This physical health assessment has proven reliable and valid (Krout & Wethington, 2003). This type of scale was derived from NIOSH (1994) and is routinely used in life satisfaction surveys (Campbell, Converse, & Rodgers, 1976). The question was "All in all, how satisfied would you say you are with your job?" (1= very satisfied; 4= not at all satisfied). The comparative health variable was not used because it was not significantly correlated with the risk factors. The Cronbach Alphas for the scales included in the questionnaire can be seen in Table 1.

### 2.2 Procedure

Participants were told that the purpose of the study was to learn how multiple physical and social characteristics of hospital settings influence nurses' health and wellbeing. They first read over and signed a departmental consent form informing them of their rights as participants outlined the purpose of the study, and the benefits and risks associated with being involved. Participants were given standardized instructions that were printed on the top of the survey they received; verbal instruction was also given as needed. Participants were left alone to give them privacy while the survey was being completed. An experimenter waited nearby in case questions arose. Participants were assured that all answers would remain confidential and there would be no way to link their name to their responses. The questionnaire took 30-40 minutes to complete. Participants were compensated with \$10 gift cards and thanked for their time upon completion of the questionnaire.

### 2.3 Results

A stepwise linear regression model was used to analyze the dependent variable. For all comparisons  $p < .05$  was adopted as the criterion for establishing statistical significance. Pearson correlation coefficients were used to explore relationships between dependent variables. The dependent variable in the analyses was physical health, and the independent variables were age, job stress, and years of hospital experience. Job stress was a composite variable that was created by combining the responses to questions that asked about the frequency nurses felt bothered or upset, worried, relaxed, frustrated, unhappy, contented, and stressed. The other independent variables, age and years of nursing experience, were continuous variables and nurses responded directly. The first linear regression analysis investigated the relation between job stress and health while controlling for age (see Table 2). The analysis revealed that age was a positive predictor of health and job stress was a negative predictor of health,  $\beta = .144$ ,  $p < .045$  and  $\beta =$

.364,  $p < .000$ , respectively. The results of this analysis suggested that younger nurses had more job stress and sustained poor health. The converse was also supported. Older nurses experienced less job stress, and had good health. In the second and final linear regression analysis, years of hospital experience was added to the model (see Table 2 and Figure 2). The results from this model were the most interesting and demonstrated the mediational pathway that health had on the interaction. Although age was a positive indicator of health, it was no longer significant in this model,  $\beta = .111$ ,  $p < .196$ . The impact that job stress had on health remained significant,  $\beta = .359$ ,  $p < .000$ . (see Figure 1).

Lastly, supplemental statistical analyses looked at the relationship between the dependent variable, health, and the independent variables that predicted it. Pearson correlations were computed between health, age job stress and years of hospital experience. Age, and years of hospital experience were positively correlated with health. However, job stress was the only variable that had the most significant negative correlation to health. The results of these analyses can be seen in Table 3.

### 3.0 DISCUSSION

The present results indicate that job stress mediates the relationship between years of hospital experience and health. Nurses who have been working in a hospital setting for more years, experience less job stress than nurses who have been working in a hospital setting for less years. More experienced nurses face less job stress and report good health as a result. Nurses who worked in a hospital for fewer years, experience more job stress, and report worse health. These findings are insightful, and support the literature that exists on the relationship between job stress and health. In the literature, job stress is negatively correlated with perceived health status. Thus, individuals who are more stressed report having poorer health than individuals who are less stressed (Lee, 2003). There are a few explanations in the literature that might help to explain these results.

Nurses who have been working for a longer period at a hospital, might have developed better coping mechanisms, and are therefore, better equipped to deal with the stressful nature of their job and report good health as a result. On the contrary, individuals who have been working in a hospital for fewer years are more overwhelmed by the responsibilities of their jobs and report poor health. Consequently, stressed nurses with less experienced are the ones who contribute to nurse shortage by dropping down to part-time status, finding easier nursing jobs, or quit their jobs. Useful coping mechanisms that help nurses deal with stress include establishing a strong social support group, and being reminded of the importance of their job (Parkes, 1986).

Furthermore, nurses with more hospital experience might also benefit from their job because they understand the job climate, while nurses with less experience might be at a disadvantage. Having knowledge of the hospital work environment is critical because, it influences perceived social support of other nurses and hospital personnel. Abualrab and Al-Zaru (2008) investigated the relationship between recognition of nurses' performance, job performance and intention to stay among hospital nurses; and the buffering effect of recognition of staff performance on the 'stress-intention to stay at work' relationship. The results of the Jordanian staff nurses' indicated a direct and a buffering effect of recognition of nurses' performance on job stress and the level of intention to stay at work. Recognition of performance is positively associated with job satisfaction (Blegen et al. 1992, Larsen 1993, Irvine & Evans 1995, McNees-Smith 1997); and job satisfaction is associated positively with nurse retention (Mueller & Price 1990, Kim et al. 1996, Borda & Norman 1997; Al-Ma\_aitah et al. 1999; Wilson 2006). Therefore, nurses that have been working in the hospital for a longer period, are more likely to know their superiors better, and are recognized by them. Thus, also nurses with more hospital experience are less stressed, and report good health, because they are able to endure the stressful nature of their jobs by forming social alliances.

Another explanation that can help to explain the results of this present study is the healthy worker effect (HWE). By definition, the HWE is a phenomenon observed initially in studies of occupational diseases where workers usually exhibit lower overall death rates than the general population, because the severely ill and chronically disables are ordinarily excluded from employment (Arrighi & Hertz-Picciotto, 1994). This phenomenon was first observed by Ogle (1885) who found that "the more vigorous occupations had relatively lower mortality rates as compared with the death-rates in occupations of an easier character or the unemployed" (Arrighi & Hertz-Picciotto, 1994). This rationale applies to this present study because HWE is a selection bias that causes relatively healthy, less stressed nurses to remain employed (Checkoway et al 1989). Therefore, the HWE occurs because of the differential survival of nurses with high job stress compared to nurses who are unable adjust to the demand of their job and quit. Nurses who do not have a strong motivation to work because of job stress and perceived poorer health quit their jobs (self-selection). Gunnarsdottir and Rafnsson (1995) research supported that the HWE is present in nurses who works for many years in a hospital care facility. The researchers investigated the mortality pattern of female nurses in Iceland between 1920 and 1979 in a retrospective study with special focus on suicide. The mortality of nurses was compared with that of the general female population. A long-lasting healthy worker effect was found in the cohort. There was an excess of brain

cancer and suicide in the group employed less than 20 years. The deficit of ischemic heart disease and respiratory disease was more pronounced in the group employed for more than 20 years. Thus, nurses, primarily those with a long employment time, enjoyed the benefits of good health.

#### 4.0 CONCLUSION

The present findings were limited in a number of ways. One limitation was the few number of males included in the sample. Because the sample was overwhelmingly female, it is not clear if the males enter the nursing practice and then quit because they cannot handle the stressful nature of the job, or if another factor accounts for these results. Additionally, the participants in this were mainly from the Upstate New York region with the exception of one hospital in Atlanta, Georgia. It is not clear whether or not the findings from this study are generalizable to all registered nurses working in the United States. Future studies should include more males, and registered nurses throughout the United States. Registered nurses from all units within the hospital did not choose to participate in this study; thus, the results may not be generalizable to all registered nurses working in a hospital setting. Future studies should include nurses from all units within the hospital. The participants were also required to complete the questionnaire while at work, so they might have been distracted with their surroundings and not report accurately. Although this is a limitation, it is important for the nurses to complete the questionnaire at work in order to obtain information on their psychosocial responses at work.

Another limitation was that the questionnaire used in this study also did not include any questions on the present nursing shortage. Attrition and the HWE are more limitations of the study. Because of the nature of the nursing practice, individuals who are able to brave job stress will remain employed. Thus, the HWE might be a confounding variable.

Future research should examine the following issues: Is years of experience related to immigration status? Is job stress exacerbated by the nursing shortage? If hospitals were fully staffed, would nurses with more hospital experience report having more job stress? Medical doctors are also involved in caring for the sick, what are their job stress scores compared to nurses? Moreover, what might account for differences? Is there a differential outcome in the job stress levels of nurses who work with patients who has more health issues, compared to those with fewer health problems? Licensed practical nurses (LPN) differ from registered nurses (RN) in that LPNs cannot make admissions assessments or suggest a plan of care, does this difference in responsibility because LPNs to experience less job stress than RNs?

In conclusion, this study demonstrates the mediating influence of job stress between hospital work experience and health among registered nurses. Through the identification of job stress on health, it is clear that interventions that desire to improve the quality of care of patients in a health care facility should focus on ameliorating those factors that create job stress in nurses. The job stress that nurses encounter affects their health, and their ability to provide optimal care for their patients and facilitate a speedy recovery. Because nurses with less experience are more affected by the stress created by the responsibility of their job, interventions can provide extra social support to help these nurses cope. By reducing nurse job stress, the nurse shortage would also abate.

#### References

- Aiken, L., Clarke, S., & Sloane, D. (2002). Hospital staffing, organizational support, and quality of care: cross-national findings. *International Journal for Quality in Health Care*, 14(1), 5-13.
- Aiken, L., Clarke, S., & Sloane, D. (2001). Nurses' reports of hospital quality of care and working conditions in five countries. *Health Affairs*, 20(3), 43-53.
- Aiken, L., Clarke, S., & Sloane, D. (2002) Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *Journal of the American Medical Association*, 288(16), 1987-1993.
- Aiken, L.H., & Sloane, D.M. (1997). Effects of organizational innovations in AIDS care on burnout among urban hospital nurses. *Work and Occupations*, 24(4), 453-477.
- Aiken, L., Smith, H., & Lake, E. (1994). Lower medicare mortality among a set of hospitals known for good nursing care. *Medical Care*, 32(8), 771-787.
- Abualrab, R.F., & Al-Zaru, I. B. (2008). Job stress, recognition, job performance and intention to stay at work among Jordanian hospital nurses. *Journal of Nursing Manangement*, 16, 227-236.
- Al-Ma'aitah R., Cameron S., Horsburg M. & Armstrong-Satssen M. (1999) Predicting job satisfaction, turnover, and burnout in female and male Jordanian nurses. *Canadian Journal of Nursing Research*, 31, 15-30.
- Arrighi, H.M., & Hertz-Picciotto, I. (1994). The evolving concept of the healthy worker effect. *Epidemiology*, 5, 189-196.

- American Association of Colleges of Nurses. (2008). *Nurses shortage fact sheet*. Retrieved on May 6, 2008 from [www.aacn.nche.edu](http://www.aacn.nche.edu).
- Blegen M., Goode C., Johnson M., Maas M., McCloskey J. & Moorhead S. (1992). Recognizing staff nurse job performance and achievements. *Research in Nursing and Health*, 15, 57–66.
- Borda R. & Norman I. (1997) Factors influencing turnover and absence of nurses: A research review. *International Journal of Nursing Studies*, 34, 385–394.
- Center for Disease Control and Prevention (2000).
- Campbell, A., Converse, P., & Rogers, W. (1976). *The quality of American life*. New York: Russell Sage Foundation.
- Checkoway, H., Pearce, N., & Crawford-Brown D.J. (1989). *Research methods in occupational epidemiology*. New York: Oxford University Press.
- Cohen, S. (1980). Aftereffects of stress on human performance and social behavior: A review of research and theory. *Psychological Bulletin*, 88(1), 82-108.
- Cohen, S., Evans, G., Stokols, D., & Krantz, D. (1986). *Behavior, health, and environmental stress*. New York: Plenum Press.
- Cohen, S., Kessler, R. C., & Gordon, L. (1995). *Strategies for measuring stress in studies of psychiatric and physical disorders*. *Measuring stress*. New York: Oxford University Press.
- Diers, D. (2004). *Speaking of nursing...narratives of practice, research, policy, and the profession*. Sudbury, MA: Jones and Barlett.
- Etzioni, A. (1969). *The semi-professionals and their organizations: teachers, nurses, and social workers*. New York: Free Press.
- Evans, G. W. (2001). Environmental stress and health. *Handbook of environmental psychology*. Mahwah, NJ: Lawrence Erlbaum.
- Evans, G. W., & Cohen, S. (1987). Environmental stress. *Handbook of environmental psychology*. New York: Wiley.
- Flood, A., & Scott, W. (1987). *Hospital structure and performance*. Baltimore, MD: John Hopkins University Press.
- Gardulf, A., Soderstrom, I., Orton, M., Eriksson, L., Arnetz, B., & Nordstrom, G. (2005). Why do nurses at a university hospital want to quit their jobs? *Journal of Nursing Management*, 13(4), 329-337.
- Gunnarsdottir, H., & Rafnsson, V. (1995). Ways to help explain the findings mortality among Icelandic nurses. *Scandinavian Journal of Work, Environment and Health*, 21(1), 24-29.
- Irvine D. & Evans M. (1995). Job satisfaction and turnover among nurses: integrating research findings across studies. *Nursing Research*, 44 (4), 246–251.
- Karasek, R. (1979). Job demands, job decision latitude, and mental strain: Implications for job re-design. *Administrative Science Quarterly*, 24(2), 285-306.
- Kim S., Price J., Mueller C. & Watson T. (1996). The determinants of career intent among physicians at a U.S. Air Force hospital. *Human Relations*, 49(7), 947–976.
- Krout, J. & Wethington, E. (2003). *Residential choices and experiences of older people*. New York: Springer.
- Larsen A. (1993) Employee recognition: a working model to enhance job satisfaction. *AORN Journal*, 57, 909–912.
- Lee, J.K. (2003). Job stress, coping, and health perceptions of Hong Kong primary care nurses. *International Journal of Nursing Practice*, 9, 86-91.
- Maslach, C., Schaufeli, W.B., & Leiter, M.P. (2001). Job burnout. *Annual Review of Psychology*, 52, 397-422.
- McClure, M., & Hinshaw, A. (2002). *Magnet hospitals revisited*. Washington, DC: American Nurses Association.
- McNees-Smith D. (1997). The influence of manager behavior on nurses\_ job satisfaction, productivity, and commitment. *JONA*, 27, 47–55.
- Moos, R.H., & Insel, P.N. (1974). *Work environment scale manual*. California: Consulting Psychologists Press, Inc.
- Motowild, S.J., Manning, M.R., & Packard, J.S. (1986). Occupational stress: Its causes and consequences for job performance. *Journal of Applied Psychology*, 71(4), 618-629.
- Mueller C. & Price J. (1990). Economic, psychological, and sociological determinants of voluntary turnover. *The Journal of Behavioral Economics*, 19(3), 321–335.
- NIOSH – Generic Job Stress Questionnaire – National Institute for Occupational Safety and Health, Division of Behavioral and Biomedical Sciences, Motivation and Stress Research Section. Cincinnati, Ohio 45226.
- Ogle, W. (1885). *Letter to the Registrar-General on the mortality in the registration districts of England and Wales during the tell years 1871-80*. Supplement to the 45<sup>th</sup> Annual Report of the Registrar General of Births, Deaths, and Marriages, in England, p. xxiii. London: Her Majesty's Stationery Office.

Parkes, K. (1986). Coping in stressful episodes: The role of individual differences, environmental factors, and situational characteristics. *Journal of Personality and Social Psychology*, 51(6), 1277-1292.

Schaufel, W.B., & Janczur, B. (1994). Burnout among nurses: a Polish-Dutch comparison. *Journal of Cross Cultural Psychology*, 25(1), 95-113.

Shinn, M., Rosario, M., Morch, H. & Chestnut, D. (1984). Coping with job stress and burnout in the human services. *Journal of Personality and Social Psychology*, 46(4), 864-876.

Smith, A., McNamara, R., & Wellens, B. (2004). *Combined effects of occupational health hazards*. Contract Research Report 287. Norwich: HSE Books.

Wilson C. (2006) Why stay in nursing. *Nursing Management*, 12, 1–14.

