PICO Question: In regards to nurses working in acute care hospitals, how does working twelve-hour shifts versus eight-hour shifts contribute to nurse fatigue?

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Background and Rationale

Nurse fatigue is a major concern in today’s health care society, as it not only raises a threat to the health and well being of nurses, but may greatly effect patient safety as well. There has been a rising debate over the popularity of 12-hour shifts in the nursing profession, and whether or not they directly contribute towards nurse fatigue. It has been reported that about 65% of nurses work 12-hour shifts (Martin, 2015), either by choice or due to it being the only scheduling option. Various studies have found that many nurses report to be highly satisfied with 12-hour shifts, while others found that it does correlate with an increase in nurse fatigue and decreased patient satisfaction. A recognized association has been identified between 12-hour shifts and medical errors, accidents, and injuries (Geiger-brown, et al., 2012). Though studies have been done to determine the extent to which 12-hour shifts affect nurse and patient outcomes, a lack of evidence has contributed towards hospital staff disregarding the importance of recognizing this as a potential issue. Through this paper, an examination of the evidence provided was performed in order to identify and compare the extent of nurse fatigue in relation to 12-hour shifts and 8-hour shifts.

Search Methods

By using EBSCO as a search engine, research was identified regarding 12-hour shifts and 8-hour shifts within the nursing profession, and how they contribute to nurse fatigue. The databases accessed through this search engine included MEDLINE and CINAHL complete. Searches regarding this topic were conducted using key words such as “12-hour shifts”, “8-hour shifts”, “shift length”, “fatigue” and “nursing”, in various combinations. Limitations included studies published within ten years and English only.
Though there were a limited number of results meeting these requirements, three studies were found to be strong enough to provide adequate and appraisable evidence regarding this topic of discussion.

**Critical Appraisal of Evidence**

Evidence conducted by Geiger-Brown et al., (2012), infers that nurses working 12-hour shifts evidently experience sleep deprivation. This study observed 80 female registered nurses, working at least 36 hours a week, with three consecutive 12-hour shifts, either day or night shift, followed by two days off. Researchers were concerned with observing sleep patterns throughout these three days, which was measured using actigraphy. This allowed for accurate readings of the participant’s sleep/wake cycle and total sleep time (Geiger-Brown et al., 2012). The study also asked that participating nurses keep a diary of the start and end times are all sleep periods and the amount of caffeine consumed during work commutes or off time. Sleepiness throughout a shift was calculated using a KSS scale. The OFER scale was used to measure nurse fatigue, and neurobehavioral function was assessed with the Walter Reed Psychomotor Vigilance Test (PVT), by testing reaction time.

Results showed that on average, sleep time was two hours shorter between shifts than on the day prior to beginning the three consecutive shifts, and that sleep was 40 minutes longer after completing the shifts (Geiger-Brown et al., 2012). KSS scores found that sleepiness increased with each shift and with each hour throughout the shifts. The OFER scale provided evidence that 30% of nurses experienced fatigue at a high level at least once (Geiger-Brown et al., 2012). Weaknesses of this study included the short length of data collection, as it only detected information throughout the four days, versus
a whole week or more. Also, the sample size was relatively small, the male population was excluded, and the participants were of a younger population. Strengths included the ability to capture objective and valid data with the actigraph and PVT, versus a subjective survey. Other factors may have contributed to the sleep time of participants, such as working second jobs and relationship status. Overall, the lack of sleep these nurses experienced throughout three, consecutive 12-hour shifts, evidently correlated with fatigue and neurobehavioral function, which can cause harm to these nurses and the patients in their care.

According to Chen, K. Davis, Daraiseh, Pan, & L. Davis (2014), there is a strong correlation between working a 12-hour day shift and nurse fatigue, especially in regards to fatigue-recovery prior to a shift. This study used a cross-sectional survey of 130 nurses, across three different hospitals, all of which worked full time, 12-hour day shifts. In addiction to these requirements, participants could not have a second job, and could not be taking medications for insomnia, depression, or anxiety. By using the Occupational Fatigue Exhaustion/Recovery (OFER) scale, this study was able to distinguish the amount of acute fatigue, chronic fatigue, and inter-shift recovery that these nurses experienced. Individual factors of these participants were taken into consideration with a demographic questionnaire regarding age, exercise level, family responsibilities, and body fat percentage. The data collected was then analyzed using SPSS software, frequency and descriptive statistics, and a chi-square test (Chen et al., 2014).

Limits to this study included the exclusion of night-shift nurses, small sample size, a limited number of hospital sites, and the stratification of participants. Additionally,
the cross-sectional design approach produces limitations, as the evidence was self-reported. However, strengths to the design included the use of a detailed, full spectrum scale such as the OFER scale. As a result, this study found there to be a moderate to high amount of nurse fatigue for those working the 12-hour dayshift, and was considered higher compared to a study of 8-hour shift fatigue (Chen et al., 2014). A moderate level of fatigue was reported in regards to chronic fatigue and inter-shift recovery, which this study did consider unhealthy. A better fatigue-recovery outcome, and a reduction of acute fatigue were found with participants who exercised regularly. However, no findings indicated a significant correlation between body fat percentages and family responsibilities and nurse fatigue levels. Overall, this study recommends that hospitals intervene by establishing a plan to improve fatigue-recovery rates with 12-hour shifts.

A study conducted by Stimpfel, Sloane, & Aiken (2012), looked into the correlation between shift length and nurse and patient outcomes. The nurse outcomes examined included burnout, job dissatisfaction, and intention to leave the job. A 22,275 nurse sample, throughout 577 hospitals in four different states, were used for this analysis. Various surveys were used to distinguish these nurse outcomes, along with patient’s experiences in the hospitals, and hospital characteristics. These survey’s included the Mulit-State Nursing Care and Patient Safety Study, the Hospital Consumer Assessment of Healthcare Providers and Systems survey, and the American Hospital Association Annual Survey of Hospitals (Stimpfel, Sloane, & Aiken, 2012). Nurses were included in the study if their last shift was 1-24 hours in length, caring for 1-20 patients on medical, surgical, or intensive care units. Nurses working in long-term care, outpatient
services, or the operating room were excluded from this study due to the differing shift norms.

In order to analyze nurse outcomes depending on shift length, four shift categories were established: 8-9 hours, 10-11 hours, 12-13 hours, and more than 13 hours (Simpfel, 2102). Patient outcomes were compared in relation to these shift lengths. Examining these outcomes involved the use of descriptive statistics, which was analyzed using SAS software. Weaknesses to the study were due to the fact that it was cross-sectional, and that the sample only came from four states. The strengths lie in the fact that the population included was representative of about 25% of the US, as it was a large sample size from a wide variety of hospitals. Results found that the majority of these nurses worked 12-13 hour shifts. More than 80 percent of the nurses throughout all four shift categories reported to be satisfied with their hospital’s scheduling (Simpfel et al., 2012). However, it was also found that burnout and job dissatisfaction were about two and a half times higher as shift length increased, particularly corresponding with the 10-11 hour shift. In regards to patient satisfaction, this study found a notable relationship with shift length, as dissatisfaction was more common with lengthier shifts, particularly when working more than 13 hours.

**Evidence Synthesis**

The evidence provided through these studies signifis that working longer, 12-hour shifts does have an effect on nurse fatigue and patient care. Although nurses tend to be satisfied with the norm of 12-hour shifts (Stimpfel et al., 2012), there is proven to be a direct correlation to shift length and poor nurse and patient outcomes. There are many factors that may contribute towards the extent to which these factors impact patient care.
and nurse safety, such as age, activity level, and home environment, however this consistent pattern does indicates a need to intervene. Through examination of these studies, it was found that a decrease in sleep time between 12-hour shifts is evident in most cases. In regards to the accuracy of these findings, further investigation is needed to identify the true effects of longer shifts, with a more direct comparison to those working 8-hour shifts. Evidence to support this question is often subjective, therefore lacks the strength to provide significant and meaningful data. However, enough findings were present through these studies to indicate the need to recognize this as a concern to nurses, hospital staff, and patients.

Clinical and Research Recommendations

Through this research, it has become clear that interventions should be made towards preventing negative outcomes due to nurse fatigue on hospital units implementing 12-hour shift. Educating nurses on fatigue awareness and its potential consequences, along with providing an adequate work environment on units may assist in the prevention of fatigue related incidents, and also increase the health and satisfaction of these nurses. Due to the fact that the majority of nurses are happily working 12-hour shifts in today’s time, and prefer that type of scheduling from a hospital unit, it is unlikely that there will be a willingness to change this across our health field. This is why it is important that hospital staff and nurse management increase awareness of nurse fatigue, offering various resources and adequate break time throughout shifts in order to prevent negative consequences due to sleep deprivation. Ultimately, it is the nurse’s duty to recognize fatigue, and implement an adequate sleep cycle in order to provide safe, quality care to the patient’s in their hands.
References


Stimpfel, A. W., Sloane, D. M., & Aiken, L. H. (2012). The longer the shifts for hospital nurses, the higher the levels of burnout and patient dissatisfaction. Health Affairs, 31(11), 2501-2509.