Up all night? How Night Shifts Hours Affect Nurses

and Their Coping Strategies

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Introduction

Working the graveyard shift has been known to have negative effects on health (physically and mentally) and work performance. Detrimental health outcomes of night shift work are a significant public health issue worldwide. It would be safe to assume that since night shift is comprised of about half of the nursing workforce worldwide, that the problems posed by night shift work is too crucial to ignore. Therefore, methods need to be identified and taught to nurses on how to combat and prevent these negative impacts on their health. Studies have shown there are ways to curtail deleterious effects as one continues to work the overnight shift. Adequate recovery measures are essential to offset prolonged fatigue associated with demanding workload and tasks.

Related research questions to be asked about this topic are "What negative effects arise from working night shifts?", "What are short-term and long-term effects of regularly working night shifts?", "What changes in physical and mental/emotional function and habits have been noted to result from working nights?" and "How do nurses try to stay awake during the night shift and how do they cope during the daytime afterwards?". This paper seeks to explore these inquiries with support from both quantitative and qualitative studies conducted in the past decade.

A few hypotheses were developed based largely on this author's own experience as a Registered Nurse for almost 4 years and the subjective and objective observations made working

night shifts. Additionally, what colleagues also had to say *viva voce* about working nights is incorporated into the following suppositions:

1. Nurses working night shifts tend to have more subjective physical and mental complaints compared to nurses who work during the day.

2. Day shift nurses report being more alert and in better mood than nurses who work the graveyard.

3. Recovery times from fatigue are longer for night nurses, and thus they are at risk of making critical mistakes due to sleepiness.

4. As a result of working nights, education factors crucially in how nurses need to cope with changes in their natural circadian rhythm and functioning safely for their patients. Management is pivotal in ensuring their nurses are educated appropriately.

Review of the Evidence

In locating literature for this paper, the author utilized the Regis College EBSCO Discovery Service database. Search terms included *night shift, negative effects, sleep cycle, sleep disruption, circadian rhythm, melatonin, decreased performance, risks to health, coping strategies.*

Numerous studies are clear on how decreased sleep is associated with increased morbidity and mortality. Immunodeficiency manifested as viral cold, increased risk of heart disease, diabetes, dementia, and obesity can be linked to chronic sleep insufficiency. Lack of adequate sleep leads to inability to perform simple tasks by way of decreased alertness, inattentiveness, and poor concentration which all has implications for nursing care (Venneman,

2023). Moreover, shift work may lead to lifestyle changes, including sleep deficiency, and decreased physical activity during leisure time, all of which have been linked to weight gain and obesity. Therefore enhanced sleep is necessary to restore system alignment.

Yet it is not merely the amount or quality of sleep which is at stake when working nights. Staying up for night shifts impacts sleep related processes, such as the artificial lights at work which extends the body's perception of natural daylight and delays melatonin secretion that promotes the onset of sleep (Venneman, 2023). The introduction of artificial lighting in the nighttime environment can disorganize the circadian system at the level of the body's molecular clock which regulates timing of cellular activities to the level of synchronization between the solar daytime and our daily behavioral cycles (Potter et al., 2016). The consequences of circadian disruption are profound and include metabolic ramifications which are compounded by poor dietary choices.

Melatonin is an important hormone that sustains the circadian oscillation of many peripheral metabolic-related hormones, including insulin, cortisol and leptin (Potter et al., 2016). If the normal diurnal variation of one or more of these hormones is lost, this may disrupt the balance of energy metabolism and lead to weight gain.

Leung et al. (2016) examined melatonin patterns of females working night shifts in relation to shift status, arranged by chronotype (diurnal preference), number of consecutive night shifts, and cumulative lifetime exposure to shift work. Melatonin levels measured from urine samples were decreased when working three or more nights in a row. Additionally, chronotypes who preferred day shift work had more pronounced melatonin reduction from exposure to

artificial light at night. These results suggest that long-term shift work may chronically reduce melatonin levels (Leung et al., 2016).

Another hormone affected by sleep cycle interruption is leptin, which normally regulates appetite. Dysregulation of leptin results in weight gain from increased food intake and sleep loss. Particularly problematic is eating close to bedtime – a common habit when working nights. This vicious cycle can potentially contribute to metabolic syndrome and type 2 diabetes. Evidently abdominal obesity, which is an important risk factor of cardiovascular diseases in Western and Asian populations, has been reported to be associated with night shift work (Potter et al., 2016).

Nurses who work at night are at risk for experiencing prolonged fatigue. Fatigue accumulating across subsequent day and night shifts is a big reason nurses nurses working long shifts are prone to exhibiting reduced performance and high injury rates. Results from Haluza et al (2019) suggested that after two consecutive 12-hour night shifts, full recovery needs at least three days off from work. That is, two days off are not sufficient for full recovery, and at least three rest days, one sleeping day (12 hours) and two full days off-duty (48 hours), are needed.

There are two distinct neurobiological processes that both have a profound effect on fatigue. One is called the homeostatic process, and it involves a build-up of pressure for sleep in the brain as a function of time awake as well as dissipation of that pressure during sleep. The other is the circadian process driven by the biological clock, and involves a daytime waxing and nighttime waning of pressure for wakefulness (Wilson et al., 2019). The negative impact of fatigue is especially tied to less than 11 hours between shifts and shifts greater than 10 hours (Venneman, 2023). High levels of of poor sleep quality among nurses have been found to be worse with the evening chronotypes ("night owl" vs morning larks") (Potter et al., 2016). Nurses

working rotating shifts may spend more time in bed than their day-working counterparts but exhibit poorer quality of sleep (McHill et al., 2018). Furthermore, the effects of sleep disruption is known to affect both short- and long-term memory and can negatively impact nurses' ability to provide high-quality care.

Analysis

Despite the evidence that shifts greater than 10 hours leads to fatigue, the 12-hour shifts has been popularized due to the prevalent nursing shortage and desire for a more balanced work-home lifestyle. A study by Wilson et al (2019) investigated sleep/wake cycles and fatigue levels in 22 nurses working 12-hour shifts, comparing day versus night shifts. Their findings were consistent with expectations based on the neurobiology of fatigue, that night shift nurses experienced greater difficulties with performance and their sleepiness was accentuated by the end of a 12-hour shift.

There apparently is a plethora of data reflecting positive association between night shift work and negative health consequences. So what have the majority of nurses done for themselves to offset the detrimental effects of working nights? Pélissier (2021) had 18 nurses fill out questionnaires on coping strategies and quality of care at 3-hour, 6-hour, 9-hour and 12-hour points after the start of the shift. The study did not demonstrate significantly excessive sleepiness or vigilance impairment or poor self-perception of quality of work during 12-hour nursing work shifts, although Psychomotor Vigilance Test results gradually deteriorated slightly over duty time (from start to end of shift). Certain coping strategies were preferred such as 'having a nap' later in the night shift. A Chinese mixed-methods systematic review (2019) concluded that, although research on the topic of napping during night shift is still in the early stages, napping during

night duty is beneficial to health, psychomotor vigiliance, and performance. A Mixed-Methods Assessment Tool and Cochrane Risk of Bias Tool were applied to assess the methodological quality of 22 studies. Although no clear policy emerged, many nurses experienced napping during their night shift. Related studies were also limited (Li et al., 2019).

Nap duration is an important factor if napping at work is to provide any benefit. Patterson (2023) sought to test the effects of different duration naps on post-nap cognitive performance during simulated night shifts. Their study discovered that deficits in cognitive performance and subjective ratings quickly dissipated and were not detectable at 10–30 minutes post-nap. Performance fared worse for short 30-minute naps and long 2-hour naps.

As far as the timing of a healthy sleep cycle, Venneman (2023) highlighted a beneficial regular bedtime and rise time: even on days off, a consistent bedtime and wake-up time should be maintained. Likewise, to mitigate the negative impact of scheduling changes on fatigue, establishing "anchor hours," or four hours of consistent and fixed daily slumber is encouraged. A qualitative study was undertaken using a cross-sectional convenience sample of night shift nurses with whom sleep deprivation was common (Lawson, 2013). Nurses in the survey group employed a wide variety of coping techniques to function with the circadian disruption inherent in their work schedules. The vast majority of these coping techniques were learned by trial and error. Some coping recommendations from this study were that workers should not work in isolation during night hours, but rather have regular contact with coworkers to provide stimulation and accountability. Furthermore, with regard to fatigue and circadian disruption, night shift nursing professionals should obtain the information and resources needed to ensure

their own safety and that of their patients. This brings the subject to the role of management in promoting education to mitigate problems associated with the night shift hours.

Representative studies would support that nurse managers should be aware of the beneficial effects of sleep during night work keeping nurses in the workplace in good health and caring attitudes. Optimized schedules for night shift work should be kept as flexible as possible with limited frequent or permanent night shift work to reduce social disruption.

Decision makers and nursing home administrations could provide an adequate number of rest days. This could be the most important management intervention to alleviate adaptive costs of occupational fatigue in shift-working nurses. Fatigue management plans should include continuous staff education on personalized recovery and stress reduction practices and regular breaks (Haluza et al., 2019).

Findings suggested a need for organizations to evaluate practices and policies to lessen the inevitable fatigue that occurs during long night shifts, in order to improve patient and healthcare worker safety. Examination of alternative shift lengths or sanctioned workplace napping are strategies to be considered (Wilson et al., 2019). Managers should actively develop strategies to address night-shift napping barriers (Li et al., 2019).

One promising alternative would be to employ clinical nurse specialists (CNSs) as resource support during night shift. CNS encounters were documented between 2017 and 2019 (Fischer-Carlidge et al., 2020). The top reasons for consultation included policy/procedure education, medication/blood administration, and clinical assist. There was also a 17% increase in event reporting on night shift with CNS present. These outcomes indicate a night CNS is vital with their expertise and knowledge to offset novice and junior nurse deficits in advanced

assessment. Fatigued nurses would benefit with the advocacy of a CNS and management everywhere would do well to consider such a role during night shift.

As far as recommendations by the studies cited to warrant research on this subject, most of them encourage further research into the effect of an organized educational program on adaptation to circadian disruption on worker satisfaction, turnover, and safety.

Discussion

In review of these research findings, the careful and conscientious nurse should not ignore the effects of working night shifts (whether short or long term) and the coping mechanisms to reverse these effects cannot be neglected. Because of the insults to key bodily hormones and natural circadian rhythm when staying up at night, making wise choices on diet and timing of eating will help control undue weight gain and avoid the path to poor health. Finding time during the day to exercise and maintain healthy relationships will counter built up stress from the imbalances caused by working nights. The keen findings that the support of co-workers during night shift is integral in providing quality patient care is advantageous, especially when fatigue starts to set in which could hamper focus and alertness necessary during the night hours. The role of management is highly influential as well, and actions on their part to promote wellness education and methods to improve and maintain vigilance during the night hours would greatly assist nighttime nurses.

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