

Working From Dusk to Dawn

A Joy or Nightmare

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Nurses are needed to work night shift because patients in acute care, subacute, and long-term care facilities require round-the-clock care. A systematic review on the experiences and perceptions of nurses working the night shift in varied settings found the night shift work environment is different and night shift nurses juggle their sleep and deal with ongoing sleep deprivation. Based on the systematic review and the evidence that forewarns of the physical and psychological burden of night shift work, recommendations are made for employers and nurses to navigate the challenges posed to those working against their circadian rhythm.

At 2 a.m., the charge nurse of the orthopedic unit contacted the administrative (house) supervisor because she had concerns about one of the registered nurses (RN) she was working with, suspecting impairment. The supervisor promptly went to the unit and after talking to the RN escorted her to the Emergency Department for the required testing. While completing the necessary paperwork and testing, the supervisor discovered that this RN had recently started working the night shift and it was her third consecutive night shift. The RN explained her struggles with daytime sleep due to the responsibility of caring for her 2-year old twin boys.

The impairment of this RN did not arise from drugs and alcohol, but rather from the detrimental effects of sleep deprivation. Contributing to sleep deprivation are not only the hours worked but concomitant organizational and social practices that superimpose “daytime” norms and expectations onto those working nights.

A qualitative systematic review (Weaver et al., 2023) done by two of the authors of this paper (Weaver and Salmond) examined the primary qualitative literature on the experience of night shift nursing to answer questions about night nurses’ perceptions of the working conditions, duties unique to night nursing, and challenges in working the night shift. The systematic review followed the Joanna Briggs Institute (JBI) methodology for systematic reviews of qualitative evidence. Thirty-four papers were selected for inclusion after screening and appraisal. From each paper, four reviewers extracted the author’s themes with supporting participant

quotes which were then pooled, aggregated, and categorized based on similarity of meaning. A total of 220 findings were combined to form 11 categories which resulted in three synthesized findings (meta-syntheses) (Table 1). Comprehensive details of this qualitative systematic review, including the full methodology, can be found in a separate publication (Weaver et al., 2023).

The included studies were conducted across six continents, in the 11 countries of the United States, Australia, Brazil, Iran, Sweden, Canada, China, France, Italy, Kenya, and the United Kingdom. Participants were licensed nurses who worked night shift or rotated between night and day shift in any nursing specialty in the acute care, subacute, or long-term care setting. A total of 601 nurses were interviewed or participated in focus groups and worked in a variety of areas such as medical-surgical, intensive care, step-down, emergency department, maternal-child, and oncology. This article will integrate findings from a review of the literature on night shift nursing and the physiologic impact of sleep disruption with Weaver et al.’s (2023) systematic review findings of the experience of nurses working the night shift and provide recommendations for advancing the well-being of nurses working the night shift.

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TABLE 1. FINDINGS FROM SYSTEMATIC REVIEW OF NURSES' EXPERIENCES WORKING NIGHT SHIFT (WEAVER ET AL., 2023)

Synthesized Findings (Meta-syntheses)	Category
The "Other" shift: The distinctiveness of night nursing	Workplace environment, Characteristic of night shift work environment Trust, teamwork, and camaraderie at night Autonomy for decision-making and problem-solving Lack of understanding by the organization
Juggling sleep and all aspects of life when working nights	Juggling sleep with home/role responsibilities Social isolation ensues Working nights necessitates family role changes Impact on health can be detrimental or may be moderated
Existing in the Twilight Zone: Battling the negative impact of sleep deprivation consumes nurses who strive to keep patients, self, and others safe	Obsessed about sleep Strategies to combat sleep deprivation Safety concerns for patients, nurses, and others

Themes from the qualitative systematic review are available in Table 1 and are bolded throughout the manuscript.

The Distinctiveness of the Night Shift – The Other Shift

According to the U.S. Bureau of Labor Statistics, the night shift is defined as the period from 9 p.m. to 8 a.m. (McMenamin, 2007). In the United States, the most frequently worked shifts by night shift nurses are either from 7:00 p.m. to 7:30 a.m. or from 11:00 p.m. to 7:30 a.m. As patients in various health-care settings need care 24-h a day, nurses are needed to work during the day and at night.

The first synthesized finding from the qualitative systematic review captures the distinctiveness of the night shift work environment (Weaver et al., 2023). Compared to day shift, the units have fewer staff members, often newer, less experienced staff, reduced managerial presence, and limited availability of ancillary departments such as dietary, physical and occupational therapy, and equipment supply departments are often closed. The physical environment differs. It is less chaotic – fewer procedures, visitors, and consultations allow night nurses the potential for time to learn about patients and their presenting problems.

The environment has an eerie quality to it. Doors to patients' rooms are closed to minimize noise. Overhead lights in the hallways and at the nurse's station are dimmed and staff talk in hushed tones or

are silent to promote a quiet atmosphere. Patients may be momentarily confused due to sleepiness or being awoken from sleep and many patients become more confused at night as symptoms associated with delirium get worse with the darkened environment and unfamiliar setting (Martins & Fernandes, 2012). For night nurses, who are working against their own natural circadian rhythm, these subdued conditions potentiate their fatigue.

Patient complexity and patient needs continue despite fewer staff and less ancillary department support. Night nurses must provide the same care at night, as during the day, without support staff such as an educator to assist with high risk, low volume procedures or a unit assistant to contact the physician about a change in the patient condition. Changing patient acuity, less staff and unanticipated events can "flip the calm to chaos," leaving the nurse stressed and anxious about the autonomous care expectations.

It's very changeable. It can start off absolutely crazy, and then taper off, or it can be crazy the whole time... You're dealing with a lack of physician, you're dealing with the possibility of going on codes in the middle of the night, you're dealing with junior staff, and often dealing with short staff in the nights (Belding, 2000, p. 6).

Although there can be stress and anxiety in the absence of unit managers and night support (professional and non-professional) staff, working night shift also puts nurses in a position for **more autonomy, responsibility for decision-making, and innovative problem solving, as well as unique learning opportunities**. When performing a patient assessment for a change in condition, night nurses must decide if there is a need to call the physician in the middle of the night or wait until the morning. This independence builds ability and confidence in problems confronted as well as satisfaction and fulfillment in the nursing role, as explained by a night nurse:

...but at nights we plan for our work personally, manage the patient's needs independently and this satisfies us and gives a sense of fulfilment... I always get a sense of purpose when I encounter new experiences during my night shifts; the whole responsibility at night leads me to become more fluent in my work, to gain more ability in managing the problems confronted. This attitude helps me to enjoy my work (Nasrabadi et al., 2009, p. 501).

In response to the reality of less staff and because "It's just us," **teamwork** was a commonly identified positive aspect of the night shift. Nurses connect and work together particularly during busy periods. Mutual trust and friendship develop among night nurses who depend on each other to help all get safely

through the shift. Without having to ask, night nurses help each other and work together particularly during busy periods, as explained by a night nurse:

I find that on the nights we're stressed the most, it's almost like we get closer...there have been nights where you know, you got three codes going on or four rapids (rapid response teams) or you have a patient that's really sick...it takes like two of you to take care of...and I find that you pull together so tight and you work together so well...and when you leave in the morning you're like "Wow, that was great! Everybody did good together" (Grice-Swenson, 2015, p. 64).

The value of this teamwork is evident not only in ensuring quality care, but some nurses verbalized remaining on night shift despite having the option to switch to day shift and others indicated they were reluctant to call in sick – all related to this unique connection and commitment to others on the team. A night nurse described:

I've had the option to move to days, but the nightshift, the people that I work with is one of the major reasons, to (stay on nights). Because we work as a team at night. It's a little different during the day. I just... I think also being like a newer nurse I will... I have all this work, and my nurses, I could go to and they would help me. So, that's a major reason (Sargent, 2013, p. 59).

However, nurses working the night shift **feel unseen and unappreciated** and believe that others do not understand their scope of work during the nighttime hours. Although some studies of night nurses show that they perceive a heavier workload in comparison to day shift nurses (Allawa, 2014), the findings from this systematic review showed that night nurses perceive that day shift nurses believe working at night is less demanding as captured by one night nurse's explanation:

the people that never worked nights think that we just sit here and eat a lollipop or something or just eat all night... I think the day shift doesn't always understand a lot of what the night shift does. They think we are babysitting at night, which is kind of upsetting. Even the PA's or NP's on call at night...they will say things can wait until the morning, but why shouldn't we address it now when we know it's happening? That's very frustrating! (Grice-Swenson, 2015, pp. 66–67)

Nurses on day and night shift provide the same level of care but the routines, activities, and resulting patient-nurse ratio during the shifts vary. It is critical that we move away from judgments of shift load or difficulty and acknowledge that the shifts are different, and this difference is not a reflection of who works hardest. The myth that night nurses "hold the

fort" and serve as caretakers who are even able to sleep on the job and other myths must be dispelled if we are to demonstrate respect and appreciation for all nurses and their shift requirements.

Another area of concern by night nurses was that organizational norms and processes are strongly biased toward daytime hours requiring daytime attendance and consequently **disregard the night nurses needs and lack appreciation of the importance for daytime sleep**. Educational programs and organizational meetings are predominantly held during the day. Night nurses must either attend these "out of shift" events or not receive the same information and communication. This can create a gap in communication to and with the night nurses about issues and policy changes and reinforces the message of day time preference and importance.

Juggling Sleep and All Aspects of Life When Working Nights

The second synthesized finding captures the challenges night nurses encounter when working opposite of the typical daytime routine of society (Weaver et al., 2023). Night nursing affects one's personal life and spare time activities (Agosti et al., 2015) and may be accompanied by disruptions in relationships (Schernhammer et al., 2001). **Accommodating sleep** is a priority. For many however, there is a tug of war between the need for sleep and the expectation that they are "available" during daytime hours to accomplish personal, family, social, and societal expectations. This "family first" approach and accommodation of family versus self-priorities is why many nurses opt for the night shift.

You do what you have to do when you have to do it, regardless of if you have slept or not... Family comes first, and so my sleep would suffer over that, because everything for the family is scheduled for the daytime. That's why I work nights, so I can be available for those things (Gallew & Mu, 2004, pp. 26–27).

Even in the presence of arrangements and support from family members and friends to enable sleep time, nurses identified feeling guilty that someone other than themselves were caring for their children when it should be their role.

...you'd only sleep till [one o'clock]. I have a very good mother-in-law and she used to have them. I used to drop them down there. So, she would have them, but I would feel guilty, you shouldn't but you would think, I should be looking after them, I had that sense that they were my children and I wanted to be looking after them. I know I shouldn't have had [feeling of guilt] (Matheson et al., 2019, p. 3,821).

Evidence suggests that women have a greater burden for maintaining smooth transitions between work

and home responsibilities with a common underlying factor being social norms defining role expectations (Agosti et al., 2015). Working nights adds to the complexity of balancing work and family time. If well-being is to be achieved, these sentiments of “what one *should* do” must be balanced with a clear understanding of the negative physical, psychological, psychosocial and performance effects of sleep deprivation on nurses’ health, well-being, and performance. Approximately two-thirds of night nurses are thought to get inadequate sleep (Books et al., 2020; Ferri et al., 2016) averaging about 5–6 h per day (Geiger-Brown et al., 2012; Min et al., 2021) as opposed to the recommended 7 h of sleep per day (Hirshkowitz et al., 2015). The impact of sleep deprivation due to both circadian rhythm disruption and increased sleep homeostatic pressure (Books et al., 2020; Ferri et al., 2016) has significant health and safety risks that must be considered by both the individual and the organization. Box 1 provides greater detail on sleep and the impact of disruption of sleep and circadian rhythm cycles for nurses working nights. Table 2 provides the background for health deficits common to night shift workers with sleep deprivation. Proactively planning for how to secure sufficient sleep requires the nurse to be aware of and share with family and friends these negative outcomes of sleep deprivation in order to negotiate self-care, childcare and other role responsibilities.

Shift work also creates **challenges for health, healthy nutrition, and exercise**. The disruption to night nurses’ circadian rhythm has one eating at times when your digestive tract is prepared for sleep. Eating and digesting food opposite the normal circadian rhythm increases risk for gastrointestinal symptoms as well as obesity and metabolic syndrome. Poor diet also contributes to these health problems. The goal is to adopt healthy patterns of nutrition and exercise to counter this disruption in circadian rhythm. Two nurses present contrasting methods to nighttime eating:

On night shifts, I will eat all during the day, and all during the night, and so I’m actually eating a huge amount more calories than I usually would and my weight is just all over the place... [on night shifts] I drink cans of coke and eat lots of chocolate and stuff because my preparation is terrible and I rely on those sweet foods to keep awake and help with the fatigue (Gifkins et al., 2018, pp. 4–5)

I try and eat healthy. I try and exercise at least once a day for about 30 minutes and that is when I am not working really. When I am working, I don’t get really have time for that. But when I am off, I do that. I have got hobbies as well as to keep my mind sound (Gifkins et al., 2018, p. 5).

Night shift nurses need survival tips on healthy sleep and self-care habits. Self-care strategies on healthy

eating, exercising, how to decompress when arriving home, especially after working a particularly challenging night, and how to maximize daytime sleep should be part of orientation and ongoing education. Routines will vary based on personal context, but the following quote from an experienced night nurse, who happens to work on an orthopedic unit, exemplifies a positive approach.

I like to go to my garden to water the plants and prune my flowers or weeds. Once I’m relaxed, I’ll have a light breakfast to take away my hunger and after a quick shower, I jump right into bed. I mute my cell phone, draw my blackout curtains, and put in my earplugs. If I experience difficulty falling asleep, I take 5mg of the non-habit-forming supplement Melatonin which usually gives me 5–6 hours of interrupted sleep.

Working at night and sleeping during the day, which is opposite of society’s daytime routine, can **limit time for socialization**, cause social strain, and place stress on marriage and personal relationships. Kerkhof (2018) reports lower rates of intimate partnership in shift workers compared to day workers. Jensen et al. (2018) found that 31% of night shift workers felt socially isolated compared to reports of 9% in a representative community sample. The gap between work schedules of night nurses and other day workers makes it difficult to participate in social events/activities typically scheduled for evenings and weekends.

And the other hard thing was still trying to socialize with people who have a regular day job. So, you get off work on a Saturday morning and you want to go to bed because you’re extremely tired but there’s a birthday party going on. Or there is, you know whatever...so there’s a lot of sleep deprivation if you want your social life to continue (Sargent, 2013, p.70).

Before weekend or holiday plans are made, family and friends must consider the night nurse’s schedule. Some night nurses report that family events are planned around their schedule and holidays are often celebrated before or after the official holiday.

Working nights necessitated **negotiation of family role changes** for spouses and children to accommodate nighttime work responsibilities and daytime sleep needs. Depending on the stage of a nurses’ life, whether they are raising children or have seen their children grow up and move away, the work schedule can significantly impact not only the nurse but also their family, potentially causing stress and conflict. Books et al. (2020) examined night shift work and its health effects on nurses and found family stress as one of the highest impact factors on health along with lack of support around fatigue and reduced social activity.

Box 1. Understanding Sleep and the Impact of Disruption of Sleep and Circadian Rhythm Cycles for Nurses Working Nights

Working night shift nurses are awake and functional at unusual hours. Shift work disrupts circadian rhythms and for many is associated with sleep deprivation. Disruption of circadian rhythms and sleep deprivation overlap to create a significant health burden for the population of night shift nurses.

Basic Physiology of Circadian Rhythms

Circadian rhythm is an internal timing system that anticipates and adapts to the 24-h cycles in the environment (Finger & Kramer, 2021). It is primarily known for its role in the sleep-wake cycle, but also coordinates a host of mental and physical systems and processes to optimize physiology and behavior, and health. The central internal clock, called the suprachiasmatic nucleus (SCN), acts as the orchestra “conductor” and directs peripheral clocks located within almost all tissue and organ systems in the body via the neuroendocrine and autonomic nervous system (Richards & Gumz, 2012). This reciprocal interaction between the SCN and peripheral clocks maintains rhythmic gene expression within the cells and is fundamental to many key metabolic pathway mechanisms associated with cycles of activity and rest, feeding, body temperature and hormonal response (Mohawk et al., 2012). This recurring 24-h rhythm pattern controls wakefulness and sleepiness, organ function and cognition.

As the master circadian pacemaker, the SCN regulates cycles of alertness and sleepiness based primarily on light in the environment (Reddy et al., 2023) with some influence from recurring external cues such as food, activity, temperature fluctuations and regularly timed social interactions. Light entering the eye stimulates the SCN through the optic nerve, producing electrical signals. In the SCN, these electrical signals are transmitted and converted to chemical signals, which trigger the release of cortisol and other hormones to help you wake up. This activation of the sympathetic nervous system prevents melatonin (also known as the hormone of darkness) from being released from the pineal gland into the bloodstream. In the absence of melatonin, signaling for wakefulness and alertness occur. When darkness falls at night, the SCN sends messages to the pineal gland, triggering melatonin release into the bloodstream. This release of melatonin sends clear signals to sleep-generating regions of the brain. Day-night cycles and brief pulses of intense and prolonged light can moderate the secretion of melatonin, abruptly suppressing its production (Brennan et al., 2007).

Homeostatic Sleep Drive

Aside from the circadian rhythm process, brain arousal and sleep are also controlled by a homeostatic sleep drive regulated by the buildup of adenosine. Adenosine accumulates as hours of wakefulness persist, creating a need or pressure to sleep. Sufficient sleep dissipates adenosine and allows for wakefulness and attentiveness. The natural body rhythm tends to favor sleeping at night. During the day, as wakefulness persists, the levels of adenosine increase, which results in the suppression of brain regions responsible for maintaining alertness, and the activation of regions that trigger the onset of sleep. The combination of these two processes working in unison maintains alertness during wakefulness and enables consolidated sleep during the night (James et al., 2017). Night nurses face the challenge of staying awake at night amidst increasing homeostatic pressure and reduced circadian signals. The intense fatigue and sleepiness experienced around 3 AM during night shifts is a result of heightened sleep pressure caused by adenosine buildup. Early morning light may temporarily counteract this fatigue by triggering the circadian rhythm response and boosting alertness. Caffeine promotes wakefulness by blocking the receptors to adenosine, thus masking the effect of adenosine.

Disruption of Circadian Rhythms

Approximately one-third of night nurses struggle with adapting to the disruption in circadian rhythms, resulting in typically short sleep duration and shift work sleep disorders (Flo et al., 2012). Working night shift has nurses awake when their natural alertness drive is low and asleep when it is high, contradicting their natural biological rhythm. This pattern of working hours which displaces sleep and forces wakefulness to be out of sync with natural circadian rhythms, often leads to shortened and disrupted sleep as well as excessive sleepiness while awake (James et al., 2017).

Function of Sleep and Sleep Health

“Sleep and wakefulness are endogenous, recurring, behavioral states that reflect coordinated changes in the dynamic functional organization of the brain and that optimize physiology, behavior, and health” (NIMH, 2012, p. 2). Sleep has restorative and transformative effects which promote physical and mental well-being allowing for the body and mind to recharge and optimizing neurobehavioral functions during wakefulness. Quality sleep is health-promoting and reduces the risk of chronic diseases and conditions such as obesity,

metabolic syndrome, type 2 diabetes, high blood pressure, heart disease, gut dysfunction and poor mental health. Absence of sufficient, quality sleep impairs concentration and memory, reduces cognition, delays reaction time and results in mood shifts.

Buyse (2014) presents a conceptual model of the relationship between sleep dimensions and health (Figure 1) proposing that various dimensions of sleep-wake functions can impact distal outcomes of health and functioning through intermediary processes including epigenetic, molecular, and cellular processes that in turn affect systems-level processes. The systems-level processes, consisting of inflammation, sympathetic nervous system activation, hormonal responses and neural circuitry responses are more proximally linked to health outcomes.

Buyse (2014) is one of the few authors to define sleep health versus sleep deficit. He defines sleep health as “a multidimensional pattern of sleep-wakefulness, adapted to individual, social, and environmental demands, that promotes physical and mental well-being. Good sleep health is characterized by subjective satisfaction, appropriate timing, adequate duration, high efficiency, and sustained alertness during waking hours” (p. 12).

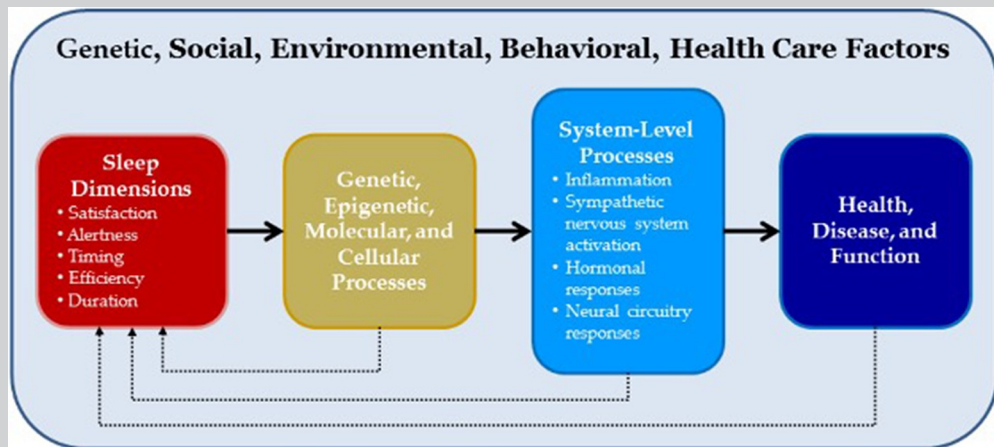


FIGURE 1. Conceptual model of the relationship between sleep dimensions and health. Reprinted with permission. From Buyse, D. J. (2014). Sleep health: can we define it? Does it matter? *Sleep*, 37(1), 9-17.

Sleep Deficiency and Health

The 2011 National Institutes of Health Sleep Disorders Research Plan defines sleep deficiency as a “deficit in the quantity or quality of sleep obtained versus the amount needed for optimal health, performance, and well-being; sleep deficiency may result from prolonged wakefulness leading to sleep deprivation, insufficient sleep duration, sleep fragmentation, or a sleep disorder, such as in obstructive sleep apnea, that disrupts sleep and thereby renders sleep non-restorative” (p. 25) (National Heart, Lung, and Blood Institute, 2011). The National Heart, Lung, and Blood Institute (n.d.) further defines sleep deficiency as present if you have one or more of the following: “You don’t get enough sleep (sleep deprivation); You sleep at the wrong time of day (not in sync with your body’s circadian rhythm); You don’t sleep well or get all of the different types of sleep that your body needs; You have a sleep disorder that prevents you from getting enough sleep or causes poor quality sleep.”

Daytime sleepiness, or feeling drowsy during the day, is a general symptom that can indicate not getting enough sleep (either from short-term sleep deprivation, consistently not getting enough sleep, or having disrupted sleep from a sleep disorder), having your internal body clock out of sync (like when working night shifts or traveling across time zones), having a fatigue-inducing illness (such as mononucleosis or cancer), or taking a medication that causes drowsiness (like an antihistamine).

Lack of sleep weakens the immune system and negatively affects cardiovascular and metabolic function. When sleep is restricted, it leads to insulin resistance, craving for carbohydrates, higher intake of calories, and reduced immune response. Consistently getting insufficient sleep is linked to various health problems including glucose intolerance, obesity, diabetes, vulnerability to infections, high blood pressure, and cardiovascular disease (Czeisler, 2011). Table 2 explains health deficits common to night shift workers with sleep deprivation.

Impaired Alertness and Performance during Night Shifts

Not only does circadian rhythm malalignment and sleep deprivation contribute to significant health burden for the night nurse, it also places the night nurse at risk for impaired alertness, lowered attention performance, decreased reaction time, and performance lapses during their shift (Ganesan et al., 2019; Di Muzio et al., 2019; Seong et al., 2022; Wilson et al., 2019). This excessive sleepiness potentially jeopardizes quality of care and patient safety (Wilson et al., 2019) and is a contributing factor in accidents related to drowsy

driving. Studies comparing alertness scores for night shift nurses and day shift nurses have found lower alertness scores for those working permanent nights (James et al., 2020; Seong et al., 2022). In fact, a steep drop in alertness was found for each hour of the night shift (Min et al., 2021; Seong et al., 2022; Wilson et al., 2019). Decreased alertness and performance lapses are linked with greater errors in clinical judgment, more medical errors, and higher risk of post-shift motor vehicle accidents.

Existing in the Twilight Zone: Battling the Negative Impact of Sleep Deprivation Consumes Nurses Who Strive to Keep Patients, Self, and Others Safe

The third and last synthesized finding of the systematic review (Weaver et al., 2023) centers on the ongoing fatigue and exhaustion that night nurses experience working in the “twilight zone.” This fatigue leads them to become fixated on sleep. Sleeping during the day is not the same as sleeping at night, causing night nurses to be preoccupied about when and how long they can sleep. A night nurse explains:

I am obsessed with sleep... I'm always thinking about sleep, even after I wake up I'm planning how to get any sleep at all... I can't get sleep out of my thought...it's always a background worry (Vitale et al., 2015, p. 73).

Many nurses working the night shift experience a **pervasive feeling of sleepiness and tiredness**. As explained in Box 1, this sleepiness is accompanied by impaired alertness, lowered attention performance, decreased reaction time and performance lapses. A systematic review of studies examining work hours and patient outcomes found that more than 40 h of work a week result in adverse patient care outcomes and health risks to the nurse (Bae & Fabry, 2014). Risk of medical error and impaired clinical judgment increases under these conditions. To compensate for the potential safety risk associated with fatigue, nurses had colleagues double check medication calculations, and key assessments especially towards the end of night shift. A nurse explains how a medication error was narrowly averted because she had a feeling the dose does not look right:

...a medication error that almost occurred because I was tired. I was calculating the medication formulae in my head, not writing them down, and then showing the calculations to the other nurse, who did not make her own calculations... The error was avoided because of an instinct I felt. The amount of fluid in the syringe simply did not look right so I stopped the infusion (McAllister et al., 2019, p. 32).

Another health-related problem linked with persistent fatigue is **exposure to occupational injury** and disease including muscle and back strain and needle stick injuries. Allawa (2014) found that night nurses

were exposed to greater risk of occupational injuries compared to their daytime counterparts including muscle strain and needle stick injury. Loss of sleep, tiredness, and loss of concentration might expose nurses to needle stick injury exposing them to acquired infectious diseases such as HIV and Hepatitis B or C viruses and other viral infections.

One night, nurses were getting switched around a lot. I was asked to change rooms and to go care for an ICU 'hold' client in the emergency room. The patient was sleeping, and the lights had been dimmed. I noticed a lot of trash on the floor. As I picked it up, a hypodermic needle went up under my fingernail. The client was positive for hepatitis C. The nurse who had left all the trash and that needle on the floor was probably just as exhausted as I. I did not turn up the lights so as to not disturb the client. I was tired and not thinking clearly. Others had to remove the needle from under my fingernail, and I was tested for Hep C every month for six months (Yarger, 2019, p. 57).

The **commute home after working nights can be dangerous** as the strong circadian drive for sleep interacts with the sleep pressure accumulating with extended wakefulness (Liang et al., 2019). The United States National Department of Transportation has estimated that drowsy driving results in 1,550 deaths and 40,000 nonfatal injuries annually (NCSDR, 2013). Walker (2018) translates this into one person dying in a traffic accident every hour in the United States due to a fatigue related error. Weaver et al. (2024) conducted a survey of nurse's fatigue, sleep quality, and consequences of fatigue and found that more night shift nurses recalled a fatigue-related near miss or event, falling asleep at a red light, missing their exit, and having a car accident or near miss when driving home compared to day shift nurses. James and James (2023) examined the impact of 12-h night shifts on nurses' driving safety. They found that nurses working night shift had significantly greater lane deviation during their drive home compared to their dayshift counterparts, which is a common indicator of impaired driving safety and collision risk. Experiencing excessive sleepiness can lead to microsleeps, which are very brief episodes of involuntary sleep that last for 15 s or less. During these episodes, the brain does not process external information, and the person is unable to consciously control their actions. These instances of microsleep have been linked to a decline in driving abilities (Caruso, 2014).

TABLE 2. HEALTH DEFICITS COMMON TO NIGHT SHIFT WORKERS WITH SLEEP DEPRIVATION

Disorder	Pathophysiologic Rationale
Gastrointestinal Dysfunction	<p>The molecular circadian clock produces a pattern of daily circadian rhythms that have a significant impact on the functioning of the gastrointestinal system. These rhythms regulate various aspects of gastrointestinal physiology and functionality, such as "motility, secretion, digestion, absorption/metabolism of nutrients, cell proliferation, and tissue repair" (Voigt et al., 2019, p. 412). Maintaining circadian balance or homeostasis is crucial for optimal gastrointestinal function. However, disruptions in circadian rhythms caused by factors like shift work, exposure to light at night, irregular eating patterns, and late-night eating leads to an increase in GI symptoms and dysregulation. Some of the specific problems that can arise from these disruptions include inflammatory bowel disease, dyspepsia, impaired carbohydrate digestion, which can contribute to an increased risk of metabolic syndrome and insulin resistance. These disruptions can also affect the absorption of triglycerides and cholesterol, leading to a higher risk of dyslipidemia. Immune system dysfunction and increased susceptibility to infections and cancer can also result from these disturbances. Esophageal sphincter dysfunction, alterations in the microbiome, and greater amounts of gastric acid production can lead to gastroesophageal reflux disease GERD and greater risk for peptic ulcers (James et al., 2017).</p>
Metabolic Syndrome	<p>Metabolic syndrome is a collection of conditions, which include visceral obesity, hypertension, dyslipidemia and hyperglycemia. These conditions are linked to type 2 diabetes and cardiovascular disease (Alberti et al., 2005).</p> <p>Night shift work disrupts the amount of time people spend sleeping, which can lead to disturbances in the synchronization between sleep/activity and alternating periods of feeding/fasting and energy storage/usage (Voigt et al., 2019).</p> <p>Circadian rhythm disruption and sleep deprivation results in higher levels of leptin, which can cause increased hunger, as well as fewer hormonal signal from ghrelin, leading to decreased satiety or food satisfaction. This can potentially result in overeating. Under normal circadian rhythms, ghrelin and leptin work together to regulate feeding behavior. However, changing mealtimes to accommodate night shift work can disrupt this synergistic response and cause disturbances in the peripheral clock synchrony in the liver and gut. Ultimately, this can lead to irregular eating habits, weight fluctuations, and metabolic problems. Moreover, sleep displacement, altered meal timing and disrupted melatonin patterns play a role in regulation of glucose levels, contributing to metabolic syndrome and increased risk of type II diabetes.</p> <p>Adding to this problem is the craving that night shift workers experience for calorie-dense foods with high carbohydrate content during the shift. Available food options for night shift often comes from vending machines, fast food restaurants and processed and fried foods that may be available in the cafeteria. Metabolic Available food options for night shift often comes from vending machines, fast food restaurants and processed and fried foods that may be available in the cafeteria. Metabolic disruption, lack of available healthy food options along with lack of exercise by many who work nights results, in weight gain, pre-diabetes and a 50% increase in metabolic syndrome (James et al., 2017).</p>
Increased Cancer Risk	<p>The central internal clock, the suprachiasmatic nucleus (SCN) controls peripheral clocks or oscillators located within almost every tissue and organ systems in the body (Richards & Gumz, 2012). This synchronicity is necessary for the precise regulation of cellular processes such as cell cycles, DNA repair, and immune modulation (Fu & Kettner, 2013). If this synchronicity is disrupted, it may increase the risk for cancer by affecting cell cycle dysregulation, increasing DNA damage, and reducing tumor suppression (James et al., 2017). Furthermore, disturbances in melatonin levels caused by circadian misalignment and by exposure to light during night shift can suppress melatonin secretion and alter immune function. Melatonin acts as a protective factor against DNA damage. When melatonin is suppressed, DNA damage may accrue faster than it can be repaired, potentially contributing to the increased risk of breast cancer found in shift workers (Bhatti et al., 2016; Brennan et al., 2007). Despite the absence of strong randomized controlled trial evidence and the variability of associative findings likely due to confounders such as individual differences in susceptibility to carcinogens, occupational exposure to carcinogenic agents, and lifestyle, epidemiological data from the population of night shift workers has led the International Agency for Research on Cancer of the World Health organization to classify night shift work as a probable carcinogen. In addition to the greater incidence of breast cancer, there is an association between night shift work and other cancers including lung, colon, bladder, prostate, rectal, and pancreatic cancer.</p>
Cardiovascular Health	<p>Circadian misalignment, which is observed in cases of shift work, late eating, and disturbed sleep-wake patterns, is linked to epidemiologic evidence indicating a higher risk of hypertension, ischemic stroke, coronary artery disease and sudden cardiac death (James et al., 2017). Additionally, these risks are thought to be influenced by lower levels of high-density lipoprotein-cholesterol levels, higher levels of triglycerides, reduced insulin sensitivity, inflammation, and changes in the responses of epinephrine/norepinephrine.</p>
Mental Health	<p>Sleep is essential to our cognitive functions, including attention, learning ability, memory, and decision making. When we sleep, our brain circuits related to emotions are reset, helping us to better cope with stress (Columbia Psychiatry, 2022). When our natural sleep-wake cycle is disrupted, it can lead to ongoing activation of the hypothalamic-pituitary-adrenal (HPA) axis, resulting in an increase in the neurotransmitters and hormones adrenaline, norepinephrine and cortisol. This desynchronization of the HPA axis can disrupt sympathovagal balance, leaving individuals in a constant "fight or flight" state. This can increase the risk of cardiovascular problems and disrupt the fear and reward systems, making it difficult for individuals to effectively manage physical and mental responses to stress (James et al., 2017).</p> <p>In a comprehensive population-based study of US adults, it was found that not getting enough sleep was associated with significantly higher likelihood of experiencing mental distress, even after controlling for other factors that could influence the results (Blackwelder et al., 2021). Individuals who reported sleeping 6 h or less</p>

(continues)

TABLE 2. HEALTH DEFICITS COMMON TO NIGHT SHIFT WORKERS WITH SLEEP DEPRIVATION (CONTINUED)

Disorder	Pathophysiologic Rationale
	<p>were 2.5 times likelier to also report frequent mental distress (U Maryland Medical System, n.d.). Sleep deprivation is linked to all major psychiatric conditions including depression, anxiety and suicidality (Walker, 2018). This relationship is bidirectional, meaning that sleeping problems may be both a cause and an outcome of mental health issues. Insufficient sleep disrupts emotional and mental well-being. Adequate rapid eye movement (REM) sleep is needed for processing of emotional information, and when it is lacking, there can be detrimental effects on mood and emotional responses, as well as the severity of mental health disorders, potentially increasing the risk of suicidal thoughts and behaviors. Additionally, there is a strong association between anxiety disorders and sleep problems. Worry and fear contribute to a state of heightened arousal. The mind races and this hyperarousal contributes to insomnia. Sleep deprivation is also linked to higher rates of depression, and in some cases, even suicide. Furthermore, lack of sleep can exacerbate symptoms of attention-deficit/hyperactivity disorder.</p>

The systematic review conducted by Weaver et al. (2023) also revealed a risk of accidents while driving home because of fatigue, which impairs the nurse's ability to stay alert and drive safely. Many nurses reported instances of falling asleep at stoplights and getting into car accidents due to extreme tiredness. Some nurses attempt to stay awake on their way home by increasing the volume of the radio and taking local roads, hoping that the lights will help them remain vigilant. Others reported relying on snacking, having phone conversations with friends, or having a few sips of coffee just before leaving work. A night nurse shares her routine for ensuring a safe journey home:

I roll my windows down, turn music all the way up, I pack my snacks in my backpack...some chips, some candy or something. If I'm really tired, I'll call my mom or call one of my coworkers and we'll talk on my way home. Just something to keep me up (Smith et al., 2020, p. 5).

Unfortunately, there is strong evidence showing that these measures do not prevent microsleeps (Watson et al., 2015).

Recommendations

The findings from the systematic review and literature review reveal the distinctiveness of the night shift and the sleep deprivation experienced by nurses working night shift worldwide. Despite overwhelming epidemiologic evidence of fatigue and fatigue-related illnesses in night shift workers, Books et al. (2020) found that this information is falling on deaf ears. To advance the health, safety, and quality performance of nurses working night shift, both individual and organizational strategies are needed to ensure a fatigue-aware culture (Mofidi, 2013) which improves sleep and recovery, reduces fatigue, and contributes to employee satisfaction, well-being, and productivity.

Increase Awareness of the Risks of Night Work and Ways to Decrease the Risk

It is essential that nurses working day and night shift, managers, and organizational leaders are fully aware

of the potential health and safety risks associated with shift work and possible sleep deprivation so that it can guide their decision-making regarding fatigue self-management and organizational policy. This is a shared organizational and individual responsibility. Education modules can be incorporated into orientation and should be periodically reviewed and updated so that there is open sharing and discussion of evidence. Annual education, either in-person or e-learning platforms, should also be conducted to provide reminders and updates on the latest evidence, covering topics such as circadian rhythm, fatigue, sleep hygiene, safe driving practices, nutrition, and exercise (Knauth & Hornberger, 2003). Along with the education, night nurses should be challenged to set goals and try different approaches to advance self-efficacy in fatigue self-management (van Elk et al., 2022). Box 2 provides key resources for educating nurses about night shift health and safety.

It is also important to increase awareness of family and friends regarding the demands and risks of night shift work and the consequences of poor sleep quality so that together the night shift nurse can negotiate a work-life balance that has protected sleep times where they are not disturbed. Nurses should not sacrifice their sleep to fit in an array of family and personal responsibilities, rather these responsibilities need to be prioritized and scheduled around sleep. Just as nurses who work during the daytime must arrange for childcare when they are working, night nurses must plan for childcare so they can sleep. Sleep needs to be part of the night nurse "work, sleep, eat, repeat" routine. In addition to modules on the health risks of night nursing, education around sleep, nutrition, exercise, and commitments outside of work should be provided. These trainings or night shift survival guides provide the foundation for thriving while working nights.

Assess Individual and Population Risks

It is not enough to simply understand the potential risks and health promotion activities to minimize these risks. Rather, there needs to be intentional, ongoing assessments of health/well-being status or outcomes along with the work-related, individual, and

Box 2. Resources for Educating Nurses about Night Shift Health and Safety

American Academy of Nursing on Policy. Position statement: Reducing fatigue associated with sleep deficiency and work hours in nursing.

American Nurses Association. Tips for Surviving the Night Shift in Nursing

ANA Position Statement: Addressing Nurse Fatigue to Promote Safety and Health: Joint Responsibilities of Registered Nurses and Employers to Reduce Risks

Promoting Sleep Health: The Development of an Educational Resource for Night Shift Nurses.

Scoping Review of Sleep Education and Training for Nurses

The Joint Commission

Caruso, C. C., Baldwin, C. M., Berger, A., Chasens, E. R., Landis, C., Redeker, N. S. & Trinkoff, A. (2017). Position statement: Reducing fatigue associated with sleep deficiency and work hours in nurses. *Nursing Outlook*, 65(6), 766–768. <https://www.nursingoutlook.org/action/showPdf?pii=S0029-6554%2817%2930600-0>

<https://www.nursingworld.org/practice-policy/work-environment/tips-for-surviving-the-night-shift-in-nursing/>

ANA. 2014. www.nursingworld.org/~49de63/globalassets/practiceandpolicy/health-and-safety/nurse-fatigue-position-statement-final.pdf

NIOSH [2015]. NIOSH training for nurses on shift work and long work hours. Caruso, C. C., Geiger-Brown, J., Takahashi, M., Trinkoff, A., & Nakat, A. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2015-115 (Revised 10/2023). <https://doi.org/10.26616/NIOSH PUB2015115revised102023>

Mofidi (2013). *Promoting Sleep Health: The Development of An Educational Resource for Night Shift Nurses*. University of California, Davis.

Hittle, B. M., Hils, J., Fendinger, S. L., & Wong, I. S. (2023). A scoping review of sleep education and training for nurses. *International Journal of Nursing Studies*, 104468.

The Joint Commission (TJC). Sentinel Event Alert. *Health care worker fatigue and patient safety*. Issue 48;2011, 2018. https://www.jointcommission.org/-/media/tjc/documents/resources/patient-safety-topics/sentinel-event/sea_48_hcw_fatigue_final_w_2018_addendum.pdf

environmental factors contributing to these outcomes. Individual night nurses should perform periodic self-assessments of their sleep quality, fatigue levels, physical and mental health symptoms, especially in relation to the disorders identified in Table 2, and their self-care strategies used to promote wellness.

At an organizational level, the night shift staff should be managed from a population health perspective, examining the outcomes of the group. This may include annual health assessment surveys to track physical or mental health of this special population. More focused surveys can examine sleep (Global Sleep Assessment Questionnaire, Satisfaction, Alertness, Timing, Efficiency and Duration (SATED) sleep scale), insomnia (Bergen Insomnia Scale), Sleepiness (Epworth Sleepiness Scale), and fatigue (Fatigue Questionnaire). This data can be tracked in relation to changing outcomes and correlation with turnover, accidents, errors and near misses. Furthermore, the data can be used to guide program and policy development to enhance the well-being of night nurses.

Practice Fatigue Self-Management Using Evidence-Based Fatigue Countermeasures and Personal Strategies to Decrease Fatigue

There are many health-promoting, preventive strategies that can be adopted to minimize the risk of fatigue

and ensure that nurses are well-rested and alert and able to provide optimal patient care. If nurses are not fully recovered from previous work shifts, the risk of fatigue increases as does the risk to health and safety. Implementing sleep routines and creating environments that are conducive to sleep is essential. Begin by wearing dark sunglasses while driving home to minimize exposure to sunlight (Knauth & Hornberger, 2003). When arriving home, have a light breakfast to prevent hunger from waking up. Utilize integrative health techniques such as journaling or guided meditation to unwind and consider incorporating a natural sleep aid such as chamomile tea or melatonin (Trinkoff et al., 2021). Sleep in a cool, darkened room using an eye mask and black out curtains or covering the windows with black plastic. Create a quiet environment by using a white noise machine, earplugs, along with silencing screens and phone notifications. Prioritizing getting additional sleep or rest before your next shift. Additionally, as many organizations have sleep centers, take advantage of the sleep assessments and consultations with sleep coaches.

Promote Healthy Nutrition and Exercise

As highlighted in this article, night shift nurses are at a greater risk for GI disturbances, metabolic disease, type II diabetes, obesity, cardiovascular disease, cancer, and mental health disorders. A key to preventing these chronic conditions is adopting a healthy nutritional and

exercise regimen consistent with working night hours. This requires attention to chrononutrition, or the intersection of circadian rhythm disruption and diet (Tucker, 2020).

For nurses working the night shift, it is a real challenge to avoid the dangers of nighttime eating and using sugary foods as a coping mechanism for staying awake, which interrupts normal metabolism and adds empty calories that leads to clinical obesity, insulin resistance, and diabetes (Vetter et al., 2018; Wyse et al., 2017). Heavy meals during the night shift increases sleepiness and decreases cognitive performance so it is recommended that the main meal be eaten prior to arriving at work. A preferred pattern of nighttime eating is small, healthy meals and snacks such as fruits, vegetables, protein (nuts, eggs, vegetable soups, whole grain sandwiches, yogurt, eggs, tuna), and salads. Food high in fat and dense sugars and carbohydrates produce metabolic effects that increase sleepiness and decrease alertness. Good hydration promotes mental alertness and reduces fatigue and headache (Tucker, 2020). When arriving home, eat a small breakfast before day sleep to avoid waking due to hunger. Caffeine should be avoided for about 7 h before sleep. Natural sleep aids such as chamomile, melatonin, valerian or passionflower may be taken prior to one's main sleep time. To encourage healthy nutrition, night nurses need training on food selection and food timing. The National Institute for Occupational Safety and Health (NIOSH) training for nurses on shift work and long work hours, refer to Box 2, provides diet suggestions for night shift nurses.

Another challenge when fatigued is obtaining adequate exercise as the nurse may opt out of exercise due to fatigue. The night nurse has the same requirements for activity as their day shift colleagues. The World Health Organization suggests a minimum of 150 minutes of moderate intensity physical activity each week. Physical activity enhances sleep quality which improves overall performance. It is generally recommended that you exercise before you start your shift as it increases energy levels and improves focus. Working out before you sleep can increase alertness and contribute to sleep disruption. Organizations can facilitate opportunities for night shift activity/exercise. Dedicated breaks with organized exercise using pre-recorded videos can enhance exercise consistency and increase alertness. Salle et al. (2021) reported awareness of the detrimental effects from working night shift on one orthopedic unit. To this end they created a night shift group exercise program. The team held two short group exercise sessions, between 3:30 a.m. and 4:30 a.m. in the physical therapy gym on their unit. The team members enjoyed the camaraderie of exercising together and reported returning to work re-energized (Salle et al., 2021).

Organizational Policies to Advance Culture of Fatigue Awareness and Well-Being

Night shift well-being is not solely an individual responsibility but one that must be shared by the

organization. Recognizing the increased health and safety risks for night nurses, health care organizations must examine policies and practices that promote health, decrease fatigue, and increase alertness. Specifically, policies around scheduling, mandatory breaks, napping, availability of healthy food options, and improving night organizational climate should be examined.

FOOD OPTIONS

Unfortunately, in most organizations, food choices, especially healthy food choices are limited at night. It would be unconscionable for an organization to provide limited food options for day shift employees. However, the reality of night shift work is that food options are limited to vending machines or if a cafeteria is open the hours are limited, and a narrow selection of food choices are available. This practice warrants reexamination, with organizations ensuring access to healthy food options like fruits, vegetables, protein, and salads, either by having the cafeteria open and/or providing self-service kiosks. Additionally, having coffee and even healthy soups available on the nursing units would further support those working night shift. Lastly organizational leaders should engage with night council members to address their specific food needs.

BREAKS

A scoping review (Wendsche et al., 2017) identified that rest breaks of nurses are associated with good physical and mental well-being. However, evidence shows a high prevalence of missed, interrupted, or delayed rest breaks. This contributes to increasing fatigue, exhaustion, decreased alertness and potential safety issues. Taking frequent and short breaks (specifically, every 2 h) during the night shift is more effective in combating fatigue than taking a few longer breaks. Of note, Barthe et al. (2016) examined sleepiness after rest breaks and found that resting did not reduce sleepiness, but sleepiness was reduced after napping. Although in some organizations, naps are culturally taboo, evidence shows that napping may be an effective countermeasure to sleepiness thereby potentially improving psychomotor vigilance and performance (Li et al., 2019; Zion & Shochat, 2019).

NAPPING

Taking a nap can serve to counteract the increased levels of stress in the brain and hormonal system, weakened immune response, and potential heart-related hazards associated with working shifts. It is time for organizations to take the bold step, and implement napping to decrease nurse fatigue, prevent errors, and avoid accidents (Geiger-Brown et al., 2021). Naps are associated with lower levels of sleepiness at the end of the shift (Han et al., 2021; Watanabe et al., 2022), reduced drowsiness while driving home (Geiger-Brown et al., 2016), and higher level of recovery after working the night shift (Palermo et al., 2015; Watanabe et al., 2022) and lower BMI levels among

nappers (Silva-Costa et al., 2017). Researchers shared barriers to implementation of napping at night which included the concerns of nurse managers and the potential impact on patient satisfaction and inability to ensure safe staffing. Negative feedback from nurses related to the napping intervention surrounded environmental factors such as noise, climate, space, chair/recliner comfort, and staff interruptions.

NIGHT SHARED GOVERNANCE COUNCILS

Councils, specific to the night shift, should be empowered to address these key issues of rests/naps, food choices, activity/exercise opportunities and developmental opportunities for new night nurses. Winks et al. (2017) reported on the effectiveness of night council meetings at one health care system, which helped address night shift issues concerning security presence, healthy food options, N95 mask fit testing, and education programs offered during the night shift. Night councils can serve as forums for sharing self-care strategies, including advice on healthy eating, exercise, and how to decompress when arriving home, especially after working a particularly challenging night. A *Night Shift Survival Guide*, developed by one hospital's night council, provides tips on nutrition, sleep, personal health, and outside commitments for those new to night shift work (Elmowitz et al., 2023).

Night councils and resource nurses working nights can be charged to serve as a conduit for reviewing best practices that are being researched to improve the health and wellbeing of night nurses. Armed with best evidence, councils can make recommendations for and interventions/policies for consideration by the organization. For example, the systematic review by Weaver et al. (2023) highlighted the uniqueness of the night shift with its quietness and dim lighting which contribute to fatigue. However, research has shown that light at night, especially light with short wavelengths (blue light) has been shown to facilitate circadian adaptation, reduce fatigue and tiredness, and improve task performance at night (Sunde et al., 2020). Night nursing councils could advocate for illumination strategies, such as ceiling mounted LED-luminaries.

ORIENTATION, ONGOING DEVELOPMENT AND RECOGNITION

As shift preference is often associated with seniority, it is common for the night shift to have new graduate nurses assuming these positions. Organizations must move away from doing orientation of night nurses on the day shift and design development programs targeting the unique needs of the night nurse. Dedicated night preceptors and night resource nurses have been a strategy to support newer nurses. Dedicated preceptors prepare and guide new nurses in providing quality nursing care in the unique night shift work environment. These preceptors can demonstrate how to conduct a patient assessment in a darkened room along with when to wake the physician for a change in a patient's condition. With the increasing number of new nurses working night shift, some organizations

have introduced the resource nurse role to provide the necessary clinical support during the night hours. These resource nurses, who have strong clinical skills, provide assistance and direct care such as by inserting peripheral intravenous (IV) catheters in patients with difficult IV access, responding to and debriefing after rapid responses, and assisting nurses with high risk, low volume procedures.

Meaningful recognition of all nurses is important, including night nurses. However, most recognition events are scheduled during the daytime or early evening, when the night staff are either sleeping or starting their shift. Recognition events need to be held at times when night nurses can attend. Nurse leaders, particularly administrative (house) supervisors working night shift, need to ensure night shift nurses and teams are nominated for the Daisy Awards or hospital-specific awards (Barnes et al., 2016). Night councils may be involved in determining other night-specific recognition events.

A final area of recognition is attending to the importance of protecting night nurse's sleep time. There are many organizational requirements such as immunizations, skills validation, and performance reviews that are typically held during the day, requiring the night nurse to use sleep or recovery time to meet the obligation. Additionally, when organizational credentialing organizations, such as for ANCC Magnet designation, conduct site visits meetings night nurses should not be expected to stay after their shift to meet with the surveyors. All of these events need to be rescheduled to occur during the night shift.

EVIDENCE-BASED STAFF SCHEDULING

Organizations have a clear responsibility to implement effective staff scheduling to ensure a safe environment for nurses and patients. Allowing nurses some control over their schedule along with having a regular and predictable schedule is essential for nurses to effectively plan both their work and personal obligations. To prevent adverse nurse and patient outcomes, nurses should limit overtime and not work more than 40 h in a 7-day period (Bae & Fabry, 2014). When rotating or working different shifts, schedules should utilize forward-rotating shifts, morning, evening, and then night shift, which aligns with our natural circadian rhythm, in contrast with backward-rotating shifts of night shifts followed by evening and then morning shifts (Di Muzio et al., 2021). Additionally, organizations should implement policies aligned with evidence-based recommendations of no more than three consecutive 12-h shifts and scheduling two rest days after the last night shift (Knauth & Hornberger, 2003). Artificial intelligence (AI) can be utilized to automate scheduling, incorporating nurse preferences, and limiting consecutive shifts. Additionally, AI can be employed to analyze patterns from staffing and scheduling records including overtime, consecutive shifts, and hours worked in a 7-day period (Gelinias, 2023). Furthermore, staffing policies should empower nurses to decline shifts that interfere with their need for sufficient sleep and recovery.

PREVENT DROWSY DRIVING

A call to action is needed for nurses, nurse leaders, and organizations to assist night nurses, who are working contrary to their circadian rhythm, and decrease their fatigue and improve the night shift work environment. In the fall of every year, at the end of daylight-saving time, the National Sleep Foundation holds Drowsy Driving Prevention Week to bring attention to the issue of drowsy driving. Organizations can use this week to provide education for those working night shift about the driving while drowsy-related risks, behavioral signs, and appropriate countermeasures. To ensure night nurses' safe journey home organizations may consider designating a place to nap before driving home, arranging for carpooling, providing rides home at reduced rates with ride-hailing apps, and supporting the purchase of drowsy driving mitigation technology for vehicles.

Conclusion

This paper has summarized the lived experience of night nursing. Comparison of days to nights is not helpful. Rather, an understanding of the benefits and challenges associated with working the night shift needs to be stressed so that unique challenges can be addressed. Night nursing disrupts nurses' diurnal circadian rhythm creating potential physical and mental health burden risks including long-term insomnia, sleep fatigue, obesity, diabetes, hypertension, mental health concerns and a risk of injury. Individual and organizational strategies to mitigate these risks are crucial for the well-being of healthcare workers. Measures such as providing adequate breaks during shifts, offering regular health check-ups, promoting healthy sleep habits, and creating a supportive work environment can make a substantial difference.

Working night shift nurses are awake and functional at unusual hours. Shift work disrupts circadian rhythms and for many is associated with sleep deprivation. Disruption of circadian rhythms and sleep deprivation overlap to create a significant health burden for the population of night shift nurses.

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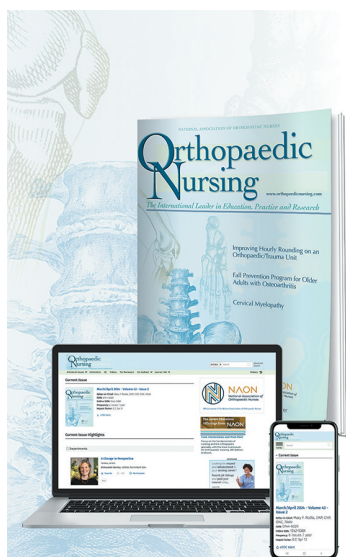
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