Addressing Nurse Fatigue to Promote Health, Safety, and Well-Being for All

******Please note that the ANA Board of Directors has not yet considered this document.***

Purpose of the Statement

Backed by extensive epidemiologic evidence, this position statement underscores the profound impact of fatigue and fatigue-related illnesses on nurses. Fatigue is not just an individual responsibility but a critical organizational imperative to safeguard both nurses' well-being and patient safety. Nurse fatigue is not a personal failing - fatigue prevention and mitigation are personal, ethical, and organizational responsibilities. This is a systemic issue rooted in workplace culture, management decisions, and environmental conditions, compromising nurse well-being and threatening patient safety.

Nurse fatigue refers to a state of physical, mental, and/or emotional exhaustion (Weinstein, 2025).

By highlighting the urgency of this issue, this position statement calls upon nurses, employers, and organizations to take decisive, evidence-based action to address and mitigate fatigue, ensuring the safety of patients and the nursing workforce. This position statement updates the recommendations for nurses and their employers based on the latest evidence. The American Nurses Association (ANA) is committed to supporting a healthy, ready-to-work nurse workforce through these updated and evidence-based recommendations.

Statement of ANA Position

Nurse fatigue is a critical ***patient safety crisis*** and a public health issue. Backed by decades of extensive epidemiologic evidence, the American Nurses Association asserts that mitigating nurse fatigue with evidence-based strategies is not only the responsibility of registered nurses (RNs) but also a non-negotiable organizational and employer imperative. Nurse fatigue, especially from long hours and shiftwork, has been linked to increased medical errors, staggering financial costs, and a spectrum of chronic physical and mental health disorders. To address this, both employers and RNs share responsibility for monitoring physical and mental capacity to ensure nurses have the alertness and energy required to provide safe, high-quality care. Furthermore, healthcare systems must implement, and RNs must participate in, effective

and evidence-based interventions to reduce fatigue and safeguard the health and safety of patients and nurses.

Background

It is essential to address nurse fatigue. Patients across healthcare settings require continuous, 24-hour care, necessitating that nurses work various shifts, including night shifts, extended 12-hour shifts, and rotating schedules to maintain uninterrupted patient care.

Updated Evidence and Research

Nurse fatigue is highly prevalent, with 75% to 80% of nurses reporting moderate to high levels of fatigue (Ross et al., 2021). Contributing factors include job demands, organizational practices such as work hours and scheduling, and challenges related to work-life balance (Trinkoff et al., 2021; Sagherian et al., 2017). Fatigue also adversely affects nurses' physical and mental health, with chronic fatigue linked to poorer health outcomes (Cho & Steege, 2021). Extended work hours and overtime, which exacerbate fatigue and reduce opportunities for inter-shift recovery, are associated with increased risks of needlestick and sharps injuries, drowsy driving, motor vehicle crashes, and other workplace accidents (Imes et al., 2023a). The danger is not a new discovery; for over two decades, extensive research has demonstrated the adverse effects of nurse fatigue on patient safety, prompting official warnings from The Joint Commission and a position statement from the American Academy of Nursing (Caruso et al., 2017; TJC, 2018). Despite this well-documented risk, the widespread implementation of effective workplace interventions remains limited. Addressing nurse fatigue through evidence-based well-being interventions is critical; as Melnyk et al. (2025) emphasize, integrating evidence-based strategies that promote nurse well-being can mitigate fatigue and improve both workforce sustainability and patient care quality.

The consequences of nurse fatigue are severe and multifaceted, consistently linked in research to negative outcomes for patients, nurses, and the healthcare system itself (Akbari et al., 2018; de Cordova et al., 2016; Farag et al., 2024; Imes et al., 2023b). These consequences include:

- **Increased medical errors:** (American Public University System, 2024; Caldwell et al., 2019; Bell et al., 2023; Cho & Steege, 2021).
- **Impaired cognitive function including** attention, reaction time, problem-solving abilities, complex planning, productivity, performance, critical thinking, decision-making skills, and patient safety management (AANA, 2015; Caldwell et al, 2019).
- **Reduced vigilance:** (Caldwell et al, 2019; Wood, 2025; Murray et al., 2024).
- **Compromised patient satisfaction:** (American Public University System, 2024).
- **Nurse burnout and turnover:** (American Public University System, 2024; Rutledge et al., 2021; Dall'Ora et al., 2023; Schimmels, et al., 2023).

- **Increased risk of workplace injuries:** The U.S. Bureau of Labor Statistics has noted that nurses are at higher risk than most other occupations for illness and injury, with overexertion and bodily reaction the major contributor (Dressner & Kissinger, 2018). Fatigued nurses are more susceptible to other types of injuries, such as needle-stick and face higher rates of drowsy driving accidents after their shift (AANA, 2015; Imes et al., 2023a).
- **Chronic health issues and illness susceptibility:** Prolonged exposure to high levels of stress without adequate recovery time can lead to chronic health conditions, including hypertension, cardiovascular disease, and gastrointestinal disorders. (Chu et al., 2024). Sleep deprivation, a common component of fatigue, weakens the immune system, leaving nurses more susceptible to illness (Zhou et al., 2024). In 2025, Baldwin et al. suggested that night nurses are at a greater risk for chronic diseases, morbidity, and mortality.
- **Decreased mental health and well-being:** Mental fatigue contributes to burnout and can escalate into anxiety, depression, or even suicidal ideation if left unaddressed (Nguyen et al., 2025).
- **Poor work/life harmony:** (Vannucci and Holliday, 2025).

Neglecting nurse fatigue threatens the well-being of healthcare workers and the safety of the patients they serve. System-wide interventions, including fatigue management programs and improving scheduling practices, are essential to creating a safer healthcare environment for all.

Causes of nurse fatigue

Fatigue comes in various forms. The most common is exhaustion from labor (Sagherian et al., 2017). But fatigue may also come from stress, illness, lack of restorative sleep, sleep deficiency, sleep deprivation, and/or lifestyle factors (Sagherian et al., 2017). For the purposes of this position statement, nurse fatigue consists of physical fatigue and mental fatigue. Contributing factors include: long work hours that may reduce overall sleep; night or rotating shifts that disrupt the circadian rhythm; the challenge of long work hours coupled with significant personal/family responsibilities that contribute to increased stress and lack of rest; the stress of caring for patients such as those in crisis, dying, contagious, demanding; the threat of violence; the complexities of interdisciplinary team work; and a host of other job related factors.

The COVID-19 pandemic significantly impacted the nursing workforce, exacerbating fatigue through demanding schedules and overwhelming workloads. Studies conducted 13 and 18 months after the pandemic's onset revealed high acute fatigue and moderate to high chronic fatigue among U.S. hospital nurses (Cho et al., 2022; Sagherian et al., 2024). Furthermore, these nurses experienced poor intershift recovery, compromising their ability to recuperate between shifts (Cho et al., 2022). The pandemic compounded the already prevalent issue of fatigue and

poor intershift recovery, attributable to the inherent occupational strain of nursing work (Ross et al., 2021; Weaver et al., 2024).

Short Sleep, Sleep deficiency and deprivation

Adult sleep deficiency is typically defined as less than seven hours of sleep in a night (Amin & Sankari, 2023). Most studies have found a U-shaped relationship between duration of sleep and risk across domains such that both less than 6 hours and more than 9 hours elevate risk (Du et al., 2023).

Impact of circadian disruption

Nurses who work evening, night, or rotating shifts often experience circadian disruption, due to misalignment between their internal biological clocks and external environmental cues (Witkoski Stimpfel, 2020). This misalignment frequently overlaps with sleep deprivation, compounding risk for a range of disorders including cardiovascular disease, metabolic syndrome, obesity, and mood disturbances (Hanson & Huecker, 2023). In a national cross-sectional study of nurses, chronotype mismatches (e.g., evening-type nurses working early-morning shifts) were associated with significantly poorer sleep quality and increased odds of obesity (Brum et al., 2020).

Data from 2023 revealed that nurses working rotating or nighttime shifts exhibited reduced amplitude in circadian activity rhythms, indicating weaker circadian entrainment, the synchronization of their internal clocks to the 24-hour day, compared with those on fixed day shifts (Dolu et al., 2024. A 2023 mini-review further highlighted that night shift nurses demonstrated poorer physical and mental health, including impaired cognition, diet disturbances, and sleep disruptions, that adversely influenced both nurse well-being and patient safety (Imes et al., 2023b).

With respect to scheduling, a 2024 BMC Nursing study identified rapid shift rotations, night shifts, long shifts (>12 hours), short recovery breaks, and quick returns conversely increased fatigue risk and exacerbated circadian misalignment among nurses. Rotating shift schedules were associated with elevated fatigue, while fixed shifts enabled better adaptation and lowered stress (Booker et al., 2024).

Cost of absenteeism, turnover, and legal liabilities

Nurse fatigue affects nurses' absenteeism, staff turnover, and legal liabilities. These, in turn affect patients, nurses, and community health as well as insurance rates, staff coverage, and bottom-line costs. International studies have found that illness and fatigue from high workloads are the leading causes of absenteeism. They also found that working later shifts or more than five nights in a row were associated with an increased risk in absenteeism due to illness (Shdaifat et al., 2023; Sabzi et al., 2023; Larsen et al., 2020). Absenteeism creates significant

challenges for employers who must find staff coverage, sometimes with short notice, which can lead to unsafe staffing levels.

Nurse turnover costs in hospitals range from an average of $61,100 to three times the average salary of the individual nurse (NSI Nursing Solution Inc., 2025; Bae, 2022). High turnover can negatively impact nurse morale and reflect poorly on the institution itself.

Legal liabilities present in multiple ways. Patient care can be compromised by medication or other errors due to nurse fatigue. The nurse's safety can be impacted too (AANA, 2015). This can include injury, exacerbation of existing condition, and death. Consequences can be financial, legal, professional, and personal resulting in fines, malpractice insurance payouts and premium increases, personal lawsuits, loss of position, revocation of nursing license, damaged reputation, and mental stress, strain, and anguish (NIOSH, 2020).

Drowsy driving and falling asleep behind the wheel by fatigued nurses are a danger to both the nurse, pedestrians, other drivers and their passengers, and the community at large due to accidents, injuries, and fatalities. Employers and nurses face stiff penalties when a death occurs due to drowsy driving, both financially, legally, and mentally (NIOSH, 2020).

Advocacy Collective action—through union membership or advocacy via professional organizations—serves as a powerful policy-level strategy to combat nursing fatigue. It empowers nurses to push for policy reforms that enhance worker protections and foster healthier, more sustainable work environments (Dean et al., 2020; Dean et al., 2022; Garcia et al., 2019; Smith et al., 2023). Notably, ANA's 2025 *Nursing Code of Ethics* (Provision 6.3) affirms that nurses have a professional responsibility to help create environments rooted in respect, to identify systemic challenges, and to advocate for conditions that support their well-being.

Roadmap for nurse fatigue strategies

To effectively address nurse fatigue, a structured evaluation roadmap is essential for continuously monitoring staff well-being, patient safety outcomes, and organizational performance. This approach is particularly vital for high-risk groups, such as night shift staff, who should be managed from a population health perspective (Salmond et al., 2025). By using methods like health assessment surveys and focus groups to track data against outcomes like turnover, errors, and near misses, organizations can guide targeted program and policy development. Reporting these findings to both leaders and staff is crucial for fostering a culture of transparency, accountability, and shared responsibility for creating a safer work environment.

Furthermore, efforts to mitigate nurse fatigue also create meaningful opportunities for collaboration across internal departments, such as Nursing Administration, Human Resources, Occupational Health, and Patient Safety, as well as with external organizations, including

professional nursing associations and academic partners. These strategic partnerships are crucial for advocating for and implementing evidence-based solutions, including wellness programs, innovative staffing models, and improved scheduling systems. Strengthening these collaborations will enable the organization to implement more sustainable fatigue mitigation strategies and ultimately advance the nursing profession.

Joint Responsibilities of Registered Nurses and Employers

Emphasize Collaboration and Shared Responsibility for Fatigue Risk Management Systems (FRMS) Effective fatigue management requires collaboration between employers and nurses. Fatigue Risk Management Systems (FRMS) involve a comprehensive approach that includes mitigation strategies, risk assessment, and the continuous monitoring of fatigue levels (Buljac-Samardžić et al., 2021). Nurses should report fatigue related concerns while employers proactively address systemic factors that contribute to exhaustion. Regular surveys and feedback mechanisms ensure ongoing improvements in fatigue management initiatives (Ross et al., 2021).

Use New Strategies for Managing Fatigue and Promoting Well-being
Holistic strategies should integrate wellness checks into routine occupational health screenings, and implement resilience training, mindfulness programs, and structured post-shift debriefing to help nurses manage stress (Pérez et al., 2022). The incorporation of fatigue monitoring technology, such as real time biometric tracking devices, can provide objective data on levels of fatigue, allowing for timely intervention. Ultimately, nurses and employers should jointly advocate for policies that promote the well-being of nurses and uphold patient safety (Sagherian et al., 2017).

Update, Promote, and Follow Guidelines for Safe Work Hours and Shift Length
Recent guidelines recommend capping shift lengths at 12 hours and limiting weekly hours to no more than 48 to prevent chronic fatigue (James & James, 2023; Meng-Juan et al., 2023). Even working more than 40 hours a week shows an increase in health and safety risks (Scott-Marshall, 2024). Most studies comparing 8- to 12-hour shifts show mixed results. Some studies have demonstrated that shifts longer than 8-hours are associated with increased errors (Rogers et al., 2004), missed care (Ball et al., 2017), and lower job satisfaction (Banakhar, 2017), while others show no differences in these outcomes (Stone et al., 2006; Webster et al., 2019). However, nearly all these studies show that shifts longer than 12 hours negatively impact patient and nurse outcomes.

Some nurses prefer twelve-hour shifts because it results in fewer workdays, longer recovery periods, and may help with balancing work and family commitments. Other nurses prefer

shorter shifts to reduce exhaustion and improve well-being. While it may make the scheduling process more complicated, organizations should offer shifts of various lengths (8-, 10-, and 12-hours) and considering job-sharing options to meet the needs and preferences of nurses (Meng-Juan et al., 2023; Trinkoff et al., 2021). The nurse's health should be prioritized in any scheduling model, not treated as an afterthought. Intershift recovery—the time between scheduled shifts—is critical to restoring mental and physical function. Without adequate recovery, fatigue compounds, increasing the risk of error, burnout, and long-term health consequences. Nurses must be given adequate time between shifts—ideally a minimum of 10 to 12 hours—to allow for sufficient rest and recovery. Other safety-sensitive professions such as property- and passenger-carrying drivers and airline pilots follow federally mandated rest periods to protect both workers and the public (FMCSA, 2022; CFR, 2025). The nursing profession, which operates 24/7/365, must adopt similar evidence-based safeguards.

Consecutive Shifts: To ensure adequate recovery, it is recommended to limit weekly work to three 12-hour shifts, with no more than three worked consecutively, and to schedule two rest days after a series of night shifts (Forcada-Parrilla et al., 2022).

Rotating Shifts: When rotating shifts are required, a forward rotating approach, where the schedules progress from morning to the evening to night, should be used (Williamson & Friswell, 2013).

Breaks during shifts: To prevent cumulative fatigue, organizations must ensure nurses take regular, uninterrupted breaks during their shifts.

Vacation time: To ensure nurses have opportunities for restorative sleep and to repay "sleep debt," nurses should use their earned time off and employers should respect approved vacation requests (Zucker, 2023).

Implement strategies for safe commuting

Safe commuting strategies are essential in the prevention of drowsy driving accidents among fatigued nurses. Exhaustion significantly impairs reaction time and decision-making abilities (James & James, 2023). Healthy Nurse, Healthy Nation® (HNHN), a wellness program by the American Nurses Association (ANA), emphasizes the critical importance of addressing nurse fatigue, particularly concerning safe commuting practices. According to the HNHN's HealthyNurse™ Survey, 12.8% of nurses reported nodding off or falling asleep while driving due to fatigue within thirty days of taking the survey (ANA, 2023).

To mitigate such risks, evidence-based recommendations include the use of alternative transportation options such as carpooling, ride-sharing options, and public transit, which reduces the risk of driving accidents by allowing the nurses to rest instead of driving (James &

James, 2023). In addition, taking short naps before commuting home after night shifts has been shown to restore alertness and minimize the dangers that come along with sleep deprivation.

Employers play a critical role in the promotion of safe commuting by providing sleep pods and designated rest areas where the nurses can recharge before leaving work (Allen, 2021; Han et al., 2021). For nurses who must drive, drowsy driving alert systems, available in some new cars or as aftermarket devices, can prevent crashes, and employers should consider subsidizing this crash-prevention technology (Geiger-Brown & McDonald, 2021). Adopting these measures would align nursing with other 24/7 professions, such as trucking and aviation, where regulated rest periods and fatigue management are standard practice to protect both workers and the public.

In addition, workplace initiatives such as peer support groups and fatigue awareness training create a culture of support and safety, ensuring that nurses feel empowered to prioritize their well-being and health (Ruvalcaba et al., 2022). Through the implementation of these strategies, both the employers and the nurses can work together to reduce the commuting risks and improve the overall job satisfaction (Cho et al., 2022; Couser et al., 2023).

Develop and participate in sleep and fatigue education and training

To effectively mitigate fatigue, nurses require standardized, evidence-based education on sleep science and fatigue countermeasures that extend beyond sleep hygiene. This training must be integrated throughout a nurse's career, beginning at on-boarding and reinforced through annual competencies. Furthermore, organizations must ensure that evidence-based interventions are readily available for nurses struggling with sleep and fatigue.

Consider additional evidence-based strategies

Strategic napping during extended shifts has been shown to restore alertness and improve cognitive function (Allen, 2021; Han et al., 2021). Short naps of 20–30-minute intervals can enhance the attention, memory, and the decision-making skills without causing sleep inertia, which allows the nurses to return to work refreshed (Han et al., 2021). A few hospitals have implemented sanctioned workplace napping to decrease nurse fatigue, prevent errors, and avoid accidents (Drake & Malcuit, 2021; Geiger-Brown et al., 2021).

Real-time technology, such as wearable devices and smartphone apps, can continuously monitor physiological and cognitive markers of fatigue, providing end-users with early warnings when alertness declines. By linking real-time data with predictive analytics, organizations can receive early alerts to intervene, and nurses themselves can be prompted to practice fatigue-mitigating behaviors. Overall, the early results confirm this approach is feasible and correlates with traditional fatigue measures (Wilton et al, 2024). By embracing these new technologies

with a commitment to ethical implementation, privacy, transparency, and a focus on systemic solutions, healthcare organizations and nurses can foster a healthier, safer, and more sustainable environment.

Responsibilities of Registered Nurses

Practice self-care for personal health and well-being

Registered nurses play a vital role in managing their well-being to mitigate fatigue. This involves nurses adopting healthy lifestyle habits such as regular physical activity, proper nutrition, and smoking cessation, while prioritizing sleep hygiene by maintaining a consistent schedule, and creating a dark, quiet environment free from pre-bedtime caffeine and screens (Balatoni et al., 2023; Forcada-Parrilla et al., 2022; Mokarami et al., 2019; Pérez et al., 2022; Rudman et al., 2023; Stiller, 2022). Nurses need to arrange their family and personal obligations around their sleep and not sacrifice their sleep to accommodate these obligations. Nurses should also incorporate structured breaks during the working hours for the prevention of exhaustion and enhancing focus (Balatoni et al., 2023; Weinstein, 2025).

Nurses should engage in relaxation techniques such as deep breathing, positive reframing, and guided imagery, which can be beneficial for stress management and mental clarity (Stiller, 2022). By implementing these evidence-based personal strategies, especially when supported by organizational policies, nurses can safeguard their health, sustain high-quality patient care, and ensure long-term professional well-being (Balatoni et al., 2023; Melnyk et al., 2022; Stiller, 2022).

Mitigate physical fatigue

Recommendations for prevention include taking frequent rest periods or breaks, use of proper body techniques/mechanics, and performing exercises that keep the joints healthy (Nunez, 2020). Attention to posture (Suwartini et al., 2020) and appropriate shoes are important (Sanno, et al, 2021; Fitria et al, 2023). Remember that no manual patient lifting is safe, always use the appropriate patient handling device.

Flourish by following Code of Ethics recommendations

The ANA Code of Ethics (revised 2025) explicitly addresses nursing fatigue by emphasizing that a safe and respectful work environment is critical to uphold responsibilities and maintain nurse health and safety to provide safe, competent care. The code establishes that the health and safety of nurses and patients are closely connected; however, nurses are not ethically obligated to sacrifice their own safety for others.

Nurses have a professional and ethical duty to care for their own well-being, recognizing its direct impact on patient safety. This responsibility includes monitoring their own practice for impairment while also compassionately reporting colleagues whose performance is

compromised by fatigue. In leadership roles, nurses should ensure that appropriate intervention and support programs are in place. If such resources are lacking, nurses should seek guidance from professional organizations, peer assistance programs, or employee support services to promote recovery and safe return to practice when possible.

Work responsibly and monitor fatigue

Whether it's overemployment, moonlighting, or simply working multiple jobs for multiple employers, nurses must monitor their own rest, hours worked, and time off. For each assignment, nurses must be alert and responsive. It is not the responsibility of an employer to be concerned about other employers' needs and the hours the nurse worked for other employers.

Since hours worked can negatively impact error rate and practice, some state boards like that of New York State consider working more than a set number of hours voluntarily as a potential "disregard of patient safety" and could lead to a "charge of unprofessional conduct" (NYS Education Department, n.d.).

Responsibilities of Employers

Develop and enforce Culture of Safety policies

Employers have a critical responsibility in the establishment of policies that will foster a culture of safety while prioritizing the well-being of the nurses. Updated guidelines put a lot of emphasis on the adoption of a just culture approach, which ensures that the nurses will feel safe reporting the fatigue-related concerns without the fear of retribution and punishment. Leadership should promote open communication of fatigue symptoms and the push for the implementation of mandatory fatigue management training to help nurses to recognize and address exhaustion before it affects the patient care (Boelens et al., 2024). Effective organizational strategies include implementing peer support, fostering a culture of psychological safety and creating a culture that ensures nurses take their scheduled breaks in a designated area (Hines-Stellisch et al., 2024; Salmond et al., 2025).

In addition, maintaining adequate nurse to patient ratios is essential in the prevention of burnout and ensuring high-quality care (Mollica & Schwerha, 2021). Reducing or eliminating mandatory overtime and offering flexible scheduling options can help mitigate fatigue and improve job satisfaction. Through the implementation of these evidence-based policies, healthcare organizations can create a healthier and sustainable workforce, improving patient outcomes and nurse retention (Bell et al., 2023; Forcada-Parrilla et al., 2022).

Utilize new evidence-based scheduling practices

Recent studies have emphasized the significant impact of evidence-based scheduling on the reduction of nurse fatigue and the improvement of the overall well-being. One of the key strategies is the implementation of the forward rotating shifts, where the schedules progress from morning to the evening to night instead of the reverse. Such an approach aligns well with the natural circadian rhythms, which minimizes sleep disturbances and the enhancement of alertness.

In addition, effective scheduling strategies include limiting the consecutive night shifts to no more than three and ensuring a minimum of 10-12 hours for inter-shift recovery (Forcada-Parrilla et al., 2022). Providing predictable schedules further helps in the reduction of stress, as the nurses can plan their personal activities and the rest periods in a more efficient manner (Wirth et al., 2023). While offering self-scheduling can enhance autonomy, job satisfaction and reduce turnover (Thompson, 2021; Wirth et al., 2023, Stimpfel et al., 2025), recent evidence shows it can lead to less equitable scheduling, more schedule change requests, and greater overtime (O'Connell et al., 2024). Therefore, the success of any flexible scheduling systems is contingent upon structured governance, clear policies, and leadership oversight to ensure fairness, accountability, and operational efficiencies.

Leveraging artificial intelligence (AI) offers a promising solution for creating data-driven schedules that optimize staffing while respecting individual limitations (Renggli et al., 2024). AI-based scheduling algorithms can more effectively account for complex variables, such as fatigue, shift length limits, and preference requests, compared to manual methods. Nursing leaders should consider AI-driven staffing tools to mitigate clinician workload stress and cognitive overload (Baldwin et al., 2025). Early evidence suggests that establishing more equitable and predictable schedules through such technology can significantly reduce nurse fatigue, enhancing both nurse well-being and patient safety. By integrating these evidence-based scheduling practices, healthcare organizations can enhance the well-being of nurses, patient care, and the workplace environment (Murray et al., 2024).

Enhance support systems for nurse well-being

Employers should invest in a comprehensive support system that will enhance the well-being of nurses and mitigate the effects of occupational fatigue. Providing access to mental health resources such as employee assistance programs (EAPs), which includes counselling services and stress management programs enables nurses to address the psychological and emotional stressors that contribute to burnout (Couser et al., 2023). Wellness initiatives, including on-site fitness programs, relaxation spaces, and mindfulness-based resilience training workshops, create an environment that prioritizes health and reduction of stress (Boelens et al., 2024; Pérez et al., 2022). These programs need to be available around the clock and include virtual options, asynchronous resources, and shift-friendly events. Employer support must reflect the realities of employees' work and schedules (Sovold et al, 2021).

Peer mentoring programs also play a significant role in the fostering of a supportive culture in the workplace, which allows the experienced nurses to guide their colleagues in the management of stress and maintaining of the work life balance (Fleming, 2023). In addition to that, organizations may offer subsidized childcare services and flexible leave policies, that ensure that nurses can meet their family and personal responsibilities without excessive strain. The financial incentives for participation in wellness programs, such as gym memberships and mindfulness training, further promote a holistic approach to the well-being of nurses (Ruvalcaba et al., 2022). Through prioritizing these initiatives, healthcare organizations can improve job satisfaction, enhancing nurse retention and supporting better patient outcomes through a healthier and more engaged workforce (Imes et al., 2023b; Pérez et al., 2022; Rubery et al., 2022; Ruvalcaba et al., 2022).

Implement an organizational fatigue management program

This can include providing education during orientation and annually on the impact of fatigue, sleep hygiene, and strategies to combat fatigue and drowsy driving for all those working shifts. Create policies with evidence-based scheduling such evidence-based recommendations of no more than three consecutive 12-hour shifts and scheduling two rest days after the last night shift. Encourage open communication between staff and management regarding fatigue-related concerns. Provide sleep assessments, testing and treatment. Ensure policies (and practices) promote health, decrease fatigue, and increase alertness, including policies around mandatory breaks, napping, and availability of healthy food options for all shifts. Policies should stipulate that education and employee job requirements such as immunizations, testing, and committee work be offered during employees' shift, particularly for night nurses who are often expected to stay after their shift to fulfill these requirements.

Improve the physical work environment

Lighting interventions, especially for night shift workers, may help in regulating circadian rhythms, reducing fatigue, and improving alertness and sleep quality (Butler et al., 2023; Wu et al., 2022). Exposure to bright light at the appropriate times can also signal the body to suppress melatonin production to help one to remain alert and adjust to the irregular working schedules more effectively (Wu et al., 2022). However, bright light has been shown to disrupt the circadian cycle therefore Wang et al. recommend a changable, lower-level lighting for night work (Wang et al., 2022).

Prevent drowsy driving

Utilize the National Sleep Foundation Annual Drowsy Driving Prevention Week as an opportune time to educate staff about the dangers of drowsy driving and methods for its prevention. Provide organizational support for night nurses' safe journey home by designating a place to nap before driving home, arranging for carpooling, providing rides home through discounts with

rideshare companies, and supporting the purchase of drowsy driving mitigation technology for vehicles.

Implement formal rest period policies that permit napping. Nurses often fear reprisal for resting during breaks, hindering their ability to mitigate fatigue. Research has shown the benefits of napping (Geiger-Brown et al., 2021). Mission Hospital has an evolving nap protocol, which addresses time allotment, handoff procedures, designated spaces, and expectations for interruptions (Drake & Malcuit, 2021). Their experience underscores the importance of leadership support and dedicated spaces for successful program implementation and sustainability.

Responsibilities of Academe

- Provide education during coursework on the impact of fatigue, sleep hygiene, and evidence-based strategies to combat fatigue and drowsy driving.
- Promote a culture of wellness.
- Provide clinical experiences for students on various shifts including night shifts and prior to these experiences provide education on the evidence-based strategies for working these shifts.

Responsibilities of Professional Associations

As over two decades of extensive research has demonstrated the adverse effects of nurse fatigue on patient safety, along with official warnings from The Joint Commission and a position statement from the American Academy of Nursing (Caruso et al., 2017; TJC, 2018), widespread implementation of effective workplace interventions remains limited. Now is the time for nursing associations to join forces, creating a powerful coalition to advocate for and implement evidence-based solutions that will ensure the well-being of every nurse and the safety of every patient. They can do this by:

- Supporting and establishing funds for research related to the implementation of evidence-based interventions, such as comprehensive fatigue risk management systems, to mitigate fatigue for those doing shift work.
- Advocating for limits on mandatory overtime, safe staffing ratios, and improved workplace safety to mitigate fatigue.
- Advocating for credentialing organizations to incorporate standards to promote a culture of fatigue awareness and well-being, including establishing night shift shared governance councils, and implementing organizational fatigue management programs.

Conclusion

This statement addresses both **acute and chronic physical fatigue** arising from work responsibilities, excluding compassion fatigue and medical disorders. It provides detailed guidance for the mitigation of fatigue by employees, employers, educators, and policymakers.

Fatigue undermines judgment, vigilance, and reaction time; increases errors and turnover; and heightens burnout, absenteeism, and accident risk. Night shifts, long hours, high patient acuity, workplace stress, and competing personal demands are key contributors, with sleep deficiency further exacerbating risks.

These devices provide some real time feedback, which enables the nurses to make informed decisions about their rest and recovery. Moreover, educational programs focused on fatigue recognition and mitigation empower the nurses with skills and knowledge to address exhaustion proactively. When combined with the peer support initiatives, these measures foster a workplace culture that prioritizes well-being and promotes sustainable energy levels among the healthcare professionals (Baldwin et al., 2025).

Immediate, coordinated action is essential. By adopting evidence-based solutions—flexible scheduling, structured rest opportunities, fatigue management programs, and well-being initiatives like *Healthy Nurse, Healthy Nation*—we can protect nurses, ensure patient safety, and build a healthcare system that is safer, more resilient, and sustainable for the future.

References

Akbari, H., Ghasemi, F., Akbari, H., & Adibzadeh, A. (2018). Predicting needlestick and sharps injuries and determining preventive strategies using a Bayesian network approach in Tehran, Iran. *Epidemiology and Health*, *40*, e2018042–e2018042. https://doi.org/10.4178/epih.e2018042

Allen, D. (2021). How napping at work can help fight fatigue. *Nursing Standard*, *36*(3), 19–21. https://doi.org/10.7748/ns.36.3.19.s12

American Association of Nurse Anesthesiology. (2015). Patient Safety: Fatigue, Sleep, and Work Schedule Effects. Accessed 2/15/2025 at https://www.aana.com/wp-content/uploads/2023/01/patient-safety-fatigue-sleep-and-work-schedule-effects-011523.pdf

American Nurses Association. (2025). *Code of ethics for nurses with interpretive statements* (2025 ed.). https://www.nursingworld.org/coe-view-only

American Nurses Association. (2023). Healthy nurse, healthy nation: Celebrating 5 years. *American Nurse Journal, 18(4), supplement.*

American Nurses Association. (2014). Addressing Nurse Fatigue to Promote Safety and Health (Position Statement). https://www.nursingworld.org/globalassets/practiceandpolicy/health-and-safety/nurse-fatigue-position-statement-final.pdf

American Public University System. (2024). What is nurse burnout and how can it be prevented in healthcare? https://www.apu.apus.edu/area-of-study/nursing-and-health-sciences/resources/what-is-nurse-burnout-and-how-can-it-be-prevented-in-healthcare/

Amin, F. & Sankari, A. Sleep Insufficiency. [Updated 2023 Jul 25]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK585109/

Bae, S. H. (2022). Noneconomic and economic impacts of nurse turnover in hospitals: A systematic review. *International nursing review*, *69*(3), 392–404. https://doi.org/10.1111/inr.12769

Balatoni, I., Szépné, H. V., Kiss, T., Adamu, U. G., Szulc, A. M., & Csernoch, L. (2023). The importance of physical activity in preventing fatigue and burnout in healthcare workers. *Healthcare*, *11*(13), 1915. https://doi.org/10.3390/healthcare11131915

Baldwin, C. M., Tucker, S.J., Imes, C.C., Trinkoff, A. M., Weinstein S.M., Dunbar-Jacob, J., et al. (2025). American Academy of Nursing policy recommendations to reduce and prevent negative health outcomes and health care costs among night shift nurses: An AAN consensus paper. *Nursing Outlook, 73*(1), 102344. https://doi.org/10.1016/j.outlook.2024.102344

Ball, J., Day, T., Murrells, T., Dall'Ora, C., Rafferty, A. M., Griffiths, P., & Maben, J. (2017). Cross-sectional examination of the association between shift length and hospital nurses job satisfaction and nurse reported quality measures. *BMC Nursing*, *16*, 26. https://doi.org/10.1186/s12912-017-0221-7

Banakhar, M. (2017). The impact of 12-hour shifts on nurses' health, wellbeing, and job satisfaction: A systematic review. *Journal of Nursing Education and Practice, 7*(11), 69-83. https://doi.org/10.5430/jnep.v7n11p69

Bell, T., Sprajcer, M., Flenady, T., & Sahay, A. (2023). Fatigue in nurses and medication administration errors: A scoping review. *Journal of Clinical Nursing, 32*(17-18), 5445–5460. https://doi.org/10.1111/jocn.16620

Boelens, M., Kiefte-de Jong, J. C., Schweitzer, D. H., Elstgeest, L. E., Mimpen, S., & Hilders, C. G. (2024). The impact of the multicomponent "Healthy and vital" 3-month lifestyle intervention in health professionals: A single group pre-(multiple) post-study. *BMC Health Services Research*, *24*(1). https://doi.org/10.1186/s12913-024-11831-1

DRAFT

Booker, L. A., Mills, J., Bish, M., Spong, J., Deacon-Crouch, M., & Skinner, T. C. (2024). Nurse rostering: Understanding the current shift work scheduling processes, benefits, limitations, and potential fatigue risks. *BMC Nursing*, *23*(1). https://doi.org/10.1186/s12912-024-01949-2

Brum, M. C. B., Dantas Filho, F. F., Schnorr, C. C., Bertoletti, O. A., Bottega, G. B., & da Costa Rodrigues, T. (2020). Night shift work, short sleep and obesity. *Diabetology & Metabolic Syndrome*, *12*, 13. https://doi.org/10.1186/s13098-020-0524-9

Buljac-Samardžić, M., Dekker-van Doorn, C. M., & Maynard, M. T. (2021). What do we really know about crew resource management in healthcare? An umbrella review on crew resource management and its effectiveness. *Journal of Patient Safety*, *17*(8), e929-e958

Butler, M., D'Angelo, S., Ahn, H., Chandereng, T., Miller, D., Perrin, A., Romain, A.-M. N., Scatoni, A., Friel, C. P., Cheung, Y.-K., & Davidson, K. W. (2023). A series of personalized virtual light therapy interventions for fatigue: Feasibility randomized crossover trial for N-of-1 treatment. *JMIR Formative Research*, *7*. https://doi.org/10.2196/45510

Caldwell, J. A., Caldwell, J. L., Thompson, L. A., & Lieberman, H. R. (2019). Fatigue and its management in the workplace. *Neuroscience and Biobehavioral Reviews*, *96*, 272–289.

Caruso, C. C., Baldwin, C. M., Berger, A., Chasens, E. R., Landis, C., Redeker, N. S., Scott, L. D., & Trinkoff, A. (2017). Position statement: Reducing fatigue associated with sleep deficiency and work hours in nurses. *Nursing Outlook*, *65*(6), 766-768. https://doi.org/10.1016/j.outlook.2017.10.011

Cho, H., Sagherian, K., Scott, L. D., & Steege, L. M. (2022). Occupational fatigue, workload and nursing teamwork in hospital nurses. *Journal of Advanced Nursing*, *78*(8), 2313–2326. https://doi.org/10.1111/jan.15246

Cho, H., & Steege, L. M. (2021). Nurse fatigue and nurse, patient safety, and organizational outcomes: A systematic review. *Western Journal of Nursing Research*, *43*(12), 1157–1168. https://doi.org/10.1177/0193945921990892

Chu, B., Marwaha, K., Sanvictores, T., et al. Physiology, stress reaction. (Updated 2024 May 7). In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK541120/

Code of Federal Regulations. (2025). 91.1059 Flight time limitations and rest requirements: One or two pilot crews. https://www.ecfr.gov/current/title-14/chapter-I/subchapter-F/part-91/subpart-K/subject-group-ECFRc17623c0e0be17e/section-91.1059

Couser, G. P., Nation, J. L., Apker, D. P., Connaughty, S. M., & Hyde, M. A. (2023). The evolution of employee assistance programs to best support healthcare organizations. *Journal of Healthcare Management*, *68*(6), 404–419. https://doi.org/10.1097/jhm-d-23-00085

Dall'Ora, C., Ball, J., Recio-Saucedo, A., & Griffiths, P. (2023). Shift work characteristics and burnout among nurses: cross-sectional study. *Occupational Medicine*, 73(4), 199-205.

Dean, A., Venkataramani, A., & Kimmel, S. (2020). Mortality rates from COVID-19 are lower in unionized nursing homes. *Health Affairs, 39*(11). https://doi.org/10.1377/hlthaff.2020.01269 reddit.com+3healthaffairs.org+3en.wikipedia.org+3

Dean, A., McCallum, J., Kimmel, S. D., & Venkataramani, A. S. (2022). Resident mortality and worker infection rates from COVID-19 lower in union than nonunion US nursing homes, 2020-21. *Health Affairs, 41*(5). https://doi.org/10.1377/hlthaff.2022.0415 en.wikipedia.org+2healthaffairs.org+2reddit.com+2

de Cordova, P. B., Bradford, M. A., & Stone, P. W. (2016). Increased errors and decreased performance at night: A systematic review of the evidence concerning shift work and quality. *WORK*, *53*(4), 825–834. https://doi.org/10.3233/WOR-162250

Drake, D., & Malcuit, M. (2021). To nap or not to nap? *American Nurse, 16*(10), 92-95.

Dressner, M. A. & Kissinger, S. P. (2018). Occupational injuries and illnesses among registered nurses. *Monthly Labor Review.* U.S. Bureau of Labor Statistics. https://doi.org/10.21916/mlr.2018.27

Du, M., Liu, M., & Liu, J. (2023). U-shaped association between sleep duration and the risk of respiratory diseases mortality: A large prospective cohort study from UK Biobank. *Journal of Clinical Sleep Medicine, 19*(11), 1923–1932

Farag, A., Gallagher, J., & Carr, L. (2024). Examining the relationship between nurse fatigue, alertness, and medication errors. *Western Journal of Nursing Research*, *46*(4), 288–295. https://doi.org/10.1177/01939459241236631

Federal Motor Carrier Safety Administration. (FMCSA, 2022). Summary of hours of service regulations. https://www.fmcsa.dot.gov/regulations/hours-service/summary-hours-service-regulations

Fitria, N., Karisa, P., Prabowo, T., Ramadhan, A. K., Fajar, M. G. A., Setiawan, Ibrahim, K., Salva, A., & Sustanti, R. D. (2023). The effect of anthropometric shoes on lactic acid reduction in nurses: A mixed-methods study from Indonesia. *Journal of Multidisciplinary Healthcare. 16*(4227-4238). doi: 10.2147/JMDH.S437177

Fleming, K. (2023). Reducing staff turnover through the implementation of a peer mentoring program. *Nursing Management*, *54*(1), 32–39. https://doi.org/10.1097/01.numa.0000905016.75550.3f

595 Forcada-Parrilla, I., Reig-Garcia, G., Serra, L., & Juvinyà-Canal, D. (2022). The influence of doing
596 shift work on the lifestyle habits of primary care nurses. *Nursing Reports*, *12*(2), 291–303.
597 https://doi.org/10.3390/nursrep12020029

598 Garcia, C. L., Abreu, L. C., Ramos, J. L. S., Castro, C. F. D., Smiderle, F. R. N., Santos, J. A. D., &
599 Bezerra, I. M. P. (2019). Influence of burnout on patient safety: Systematic review and meta-
600 analysis. *Medicina (Kaunas, Lithuania)*, *55*(9), 553. https://doi.org/10.3390/medicina55090553

601 Geiger-Brown, J., Harlow, A., Bagshaw, B., Sagherian, K., & Hinds, P. S. (2021). Going beyond
602 position statements: One hospital's successful initiative to implement napping for night shift
603 nurses. *Workplace Health & Safety*, *69*(10), 474–483.
604 https://doi.org/10.1177/21650799211038003

605 Geiger-Brown, J., & McDonald, A. (2021). Mitigating Drowsy Driving Risk for Night Shift
606 Nurses. *The American Journal of Nursing*, *121*(10), 11–11.
607 https://doi.org/10.1097/01.NAJ.0000794192.75580.70

608 Han, K., Hwang, H., Lim, E., Jung, M., Lee, J., Lim, E., Lee, S., Kim, Y.-H., Choi-Kwon, S., & Baek, H.
609 (2021). Scheduled naps improve drowsiness and quality of nursing care among 12-hour shift
610 nurses. *International Journal of Environmental Research and Public Health*, *18*(3), 891.
611 https://doi.org/10.3390/ijerph18030891

612 Hanson, J. A., Huecker, M. R. [Updated 2023 Jun 12]. Sleep Deprivation. In: StatPearls [Internet].
613 Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from:
614 https://www.ncbi.nlm.nih.gov/books/NBK547676/

615 Hines-Stellisch, K., Gawlik, K. S., Teall, A. M., & Tucker, S. (2024). Implementation of coaching to
616 address burnout in emergency clinicians. *Journal of Emergency Nursing, 50*(5), 601–609.
617 https://doi.org/10.1016/j.jen.2024.06.007

618 Imes, C. C., Barthel, N. J., Chasens, E. R., Dunbar-Jacob, J., Engberg, S. J., Feeley, C. A.,
619 Fennimore, L. A., Godzik, C. M., Klem, M. L., Luyster, F. S., Ren, D., & Baniak, L. (2023a). Shift
620 work organization on nurse injuries: A scoping review. *International Journal of Nursing Studies*,
621 *138*, 104395. https://doi.org/10.1016/j.ijnurstu.2022.104395

622 Imes, C. C., Tucker, S. J., Trinkoff, A. M., Chasens, E. R., Weinstein, S. M., Dunbar-Jacob, J.,
623 Patrician, P. A., Redeker, N. S., & Baldwin, C. M. (2023b). Wake-up call: Night shifts adversely
624 affect nurse health and retention, patient and public safety, and costs. *Nursing Administration*
625 *Quarterly, 47*(4), E38–E53. https://doi.org/10.1097/NAQ.0000000000000595

626 James, S. M., & James, L. (2023). The impact of 12 h night shifts on nurses' driving
627 safety. *Nursing Reports*, *13*(1), 436–444. https://doi.org/10.3390/nursrep13010040

628 Larsen, A. D., Ropponen, A., Hansen, J., Hansen, Å. M., Kolstad, H. A., Koskinen, A., Härmä, M. I.,
629 & Garde, A. H. (2020). Working time characteristics and long-term sickness absence among

Danish and Finnish nurses: A register-based study. *International Journal of Nursing Studies*, *112*, 103639. https://doi.org/10.1016/j.ijnurstu.2020.103639
https://pubmed.ncbi.nlm.nih.gov/32505388/

Melnyk, B. M., Hsieh, A. P., Tan, A., Teall, A. M., Weberg, D., Jun, J., Gawlik, K., & Hoying, J. (2022). Associations among nurses' mental/physical health, lifestyle behaviors, shift length, and workplace wellness support during COVID-19: Important implications for health care systems. *Nursing Administration Quarterly, 46*(1), 5–18.
https://doi.org/10.1097/NAQ.0000000000000499

Melnyk, B. J., Teall, A. M., & Gawlik, K. S. (2025). *12 keys to health, happiness, and well-being for nurses and the healthcare workforce: An evidence-based guide*. Wolters Kluwer Health. ISBN 9781975250157

Meng-Juan, J., Li, H., Chun-Peng, L., Xiao-Jing, W., Wei-Quan, L., Shi-Chao, Z., Yu-Lin, X., & Li-Ming, L. (2023). The association between working hours with vigilance and executive function of intensive care unit nurses. *Journal of Nursing Management 2023.*
https://doi.org/10.1155/2023/3770404

Mokarami, H., Rahimi Pordanjani, T., Mohammadzadeh Ebrahimi, A., Kiani, F., & Faridan, M. (2019). Lifestyle and shiftwork: Designing and testing a model for health promotion of Iranian nurses. *Journal of the American Psychiatric Nurses Association*, *26*(3), 262–268.
https://doi.org/10.1177/1078390319886658

Mollica, J., & Schwerha, D. (2021). Exploring the relationship between patient acuity, patient assignments and fatigue among nurses. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, *65*(1), 1200–1204. https://doi.org/10.1177/1071181321651016

Murray, J., Sorra, J., Gale, B., et al. (2024). Ensuring patient and workforce safety culture in healthcare. PSNet [Internet]. Rockville (MD): Agency for Healthcare Research and Quality, U.S. Department of Health and Human Services. Available from:
https://psnet.ahrq.gov/perspective/ensuring-patient-and-workforce-safety-culture-healthcare

New York State Education Department Office of the Professions. (n.d.) Workplace information.
https://www.op.nysed.gov/professions/licensed-practical-nurses/workplace-information.

Nguyen, N., Spooner, E., O'Balle, P., Ashraf, H., Heskett, K., Zisook, S., & Davidson, J. E. (2025). The relationship between depression, burnout, and suicide among healthcare professionals: A scoping review. *Worldviews on Evidence-based Nursing*, *22*(3), e70037.
https://doi.org/10.1111/wvn.70037

NIOSH. (reviewed 2020). NIOSH Training for Nurses on Shift Work and Long Work Hours.
https://www.cdc.gov/niosh/work-hour-training-for-nurses/longhours/mod5/18.html

DRAFT

NSI Nursing Solutions, Inc. (2025). *2025 NSI National Health Care Retention & RN Staffing Report.* https://www.nsinursingsolutions.com/documents/library/nsi_national_health_care_retention_report.pdf

Nunez, K. (2020). The signs of overexertion and how to protect yourself from injury and burnout. *Healthline.* https://www.healthline.com/health/overexertion

O'Connell, M., Manag, D. N., Barry, J., Hartigan, I., Conally, N., & Saab, M. M. (2024). The impact of electronic and self-rostering systems on healthcare organizations and healthcare workers: A mixed-method systematic review. *Journal of Clinical Nursing, 33*(7), 2374-2387. https://doi.org/10.1111/jocn.17114

Pérez, V., Menéndez-Crispín, E. J., Sarabia-Cobo, C., de Lorena, P., Fernández-Rodríguez, A., & González-Vaca, J. (2022). Mindfulness-based intervention for the reduction of Compassion Fatigue and burnout in nurse caregivers of institutionalized older persons with dementia: A randomized controlled trial. *International Journal of Environmental Research and Public Health*, *19*(18), 11441. https://doi.org/10.3390/ijerph191811441

Renggli, F. J., Gerlach, M., Bieri, J. S., Golz, C., & Sariyar, M. (2024). Integrating Nurse Preferences into AI-Based Scheduling Systems: Qualitative Study (Preprint). *JMIR Formative Research*. https://doi.org/10.2196/67747

Rogers, A. E., Hwang, W. T., Scott, L. D., Aiken, L. H., & Dinges, D. F. (2004). The working hours of hospital staff nurses and patient safety. *Health Affairs (Project Hope)*, *23*(4), 202–212. https://doi.org/10.1377/hlthaff.23.4.202

Ross, A., Geiger-Brown, J., Yang, L., Flynn, S., Cox, R., Wehrlen, L., & Lee, L. J. (2021). Acute and chronic fatigue in nurses providing direct patient care and in non-direct care roles: A cross-sectional analysis. *Nursing & Health Sciences*, *23*(3), 628–638. https://doi.org/10.1111/nhs.12862

Rubery, P. T., Ramirez, G., D'Agostino, C. R., Vasalos, K., & Thirukumaran, C. (2022). A Workplace Wellness Program at an academic health center influences employee health, Satisfaction, productivity and the rate of workplace injury. *International Archives of Occupational and Environmental Health*, *95*(7), 1603–1632. https://doi.org/10.1007/s00420-022-01865-5

Rudman, A., Frögéli, E., & Skyvell Nilsson, M. (2023). Gaining acceptance, insight and ability to act: A process evaluation of a preventive stress intervention as part of a transition-to-practice programme for newly graduated nurses. *Journal of Advanced Nursing*, *80*(2), 597–611. https://doi.org/10.1111/jan.15820

Rutledge, D. N., Douville, S., Winokur, E., Drake, D., & Niedziela, D. (2021). Impact of engagement factors on nurses' intention to leave hospital employment. *Journal of Nursing Management*, *29*(6), 1554–1564. https://doi.org/10.1111/jonm.13287

Ruvalcaba, C., Akdevelioglu, D., & Schroeder, J. (2022). Stakeholders as value creators: The role of multi-level networks in employee wellness programs. *Journal of Macromarketing*, *42*(3), 414–432. https://doi.org/10.1177/02761467221084626

Sabzi, Z., Jafari, H., Bakhshian, F. and Saadat Mehr, R. (2023). Factors associated with nurses' absenteeism in clinical settings: A narrative review. *Journal of Nursing Reports in Clinical Practice*, *2*(Issue 1), 27-31. doi: 10.32598/JNRCP.23.36

Sagherian, K., Cho, H., & Steege, L. M. (2024). The insomnia, fatigue, and psychological well-being of hospital nurses 18 months after the COVID-19 pandemic began: A cross-sectional study. *Journal of Clinical Nursing*, *33*(1), 273–287. https://doi.org/10.1111/jocn.16451

Sagherian, K., Clinton, M. E., Abu-Saad Huijer, H., & Geiger-Brown, J. (2017). Fatigue, work schedules, and perceived performance in bedside care nurses. *Workplace Health & Safety*, *65*(7), 304–312. https://doi.org/10.1177/2165079916665398

Salmond, S., Weaver, S., Marcus-Aiyeku, U., & Markiewicz, D. (2025). Working from Dusk to Dawn: A Joy or Nightmare*? Orthopaedic Nursing, 44*(1), 4-19. https://doi.org/10.1097/NOR.0000000000001087

Sanno, M., Epro, G., Brüggemann, G. P., & Willwacher, S. (2021). Running into fatigue: The effects of footwear on kinematics, kinetics, and energetics. *Medicine and Science in Sports and Exercise*, *53*(6), 1217–1227. https://doi.org/10.1249/MSS.0000000000002576

Schimmels, J., Groh, C., Neft, M., Wocial, L., Young, C., & Davidson, J. E. (2023). American Academy of Nursing Expert Panel Consensus Statement on leveraging equity in policy to improve recognition and treatment of mental health, substance use disorders, and nurse suicide. *Nursing outlook*, *71*(3), 101970. https://doi.org/10.1016/j.outlook.2023.101970

Scott-Marshall H. K. (2024). Safe limits on work hours for the nursing profession: a rapid evidence review. *Frontiers in global women's health*, *5*, 1455422. https://doi.org/10.3389/fgwh.2024.1455422

Shdaifat, E., Alolayyan, M., Rosario, A., & Ansari N. (2023). Absenteeism among nurses: costs, working conditions, and related factors. *International Journal of Productivity and Quality Management 38*(4):518 DOI:10.1504/IJPQM.2023.130186

Smith, A., Doe, J., & Johnson, L. (2023). The impact of union membership on nursing turnover and job satisfaction among registered nurses. *Journal of Nursing Administration*, *53*(2), 112–120. pubmed.ncbi.nlm.nih.gov

Søvold, L. E., Naslund, J. A., Kousoulis, A. A., Saxena, S., Qoronfleh, M. W., Grobler, C., & Münter, L. (2021). Prioritizing the mental health and well-being of healthcare workers: An urgent global public health priority. Frontiers in Public Health, 9, 679397. https://doi.org/10.3389/fpubh.2021.679397

Stiller, C. (2022). Stress management tools to place in your nursing toolbox. *MEDSURG Nursing*, *31*(3), 165. https://doi.org/10.62116/msj.2022.31.3.165

Stimpfel, A. W., Leep-Lazar, K., Mercer, M., & DeMarco, K. (2025). "Scheduling Is Everything": A Qualitative Descriptive Study of Job and Schedule Satisfaction of Staff Nurses and Nurse Managers. *Western journal of nursing research*, *47*(10), 912–923. https://doi.org/10.1177/01939459251330280

Stone, P. W., Du, Y., Cowell, R., Amsterdam, N., Helfrich, T. A., Linn, R. W., Gladstein, A., Walsh, M., & Mojica, L. A. (2006). Comparison of nurse, system and quality patient care outcomes in 8-hour and 12-hour shifts. *Medical Care*, *44*(12), 1099–1106. https://doi.org/10.1097/01.mlr.0000237180.72275.82

Suwartini, L. G., Tirtayasa, K., & Adiputra, L. M. S. H. (2020). The improvement of working posture and ergonomic workplace stretching decreased musculoskeletal complaint and fatigue and increased productivity of nurses. *The Indonesian Journal of Ergonomics. 6* (2), *14411-951.* doi: https://doi.org/10.24843/JEI.2020.v06.i02.p04

The Joint Commission (TJC). (2018). Sentinel Event Alert. *Health care worker fatigue and patient safety.* Issue 48. https://digitalassets.jointcommission.org/api/public/content/95c8f38fc71b4cc9ae52ffb5d51a3a53?v=0c35783a

Thompson, B. J. (2021). Fatigue and the female nurse: A narrative review of the current state of research and future directions. *Women's Health Reports, 2*(1), 53-61. DOI: 10.1089/whr.2020.0107. https://pubmed.ncbi.nlm.nih.gov/33786531/

Trinkoff, A. M., Baldwin, C. M., Chasens, E. R., Dunbar-Jacob, J., Geiger-Brown, J., Imes, C. C., Landis, C. A., Patrician, P. A., Redeker, N. S., Rogers, A. E., Scott, L. D., Todero, C. M., Tucker, S. J., Weinstein, S. M., & Fatigue Subgroup of the Health Behavior Expert Panel, American Academy of Nursing (2021). CE: Nurses are more exhausted than ever: What should we do about it? *The American Journal of Nursing, 121(*12), 18–28. https://doi.org/10.1097/01.NAJ.0000802688.16426.8d

Vannucci, M. and Holliday, M., (2025) Chapter 7. Mental Health Matters in Weinstein, S., Vannucci, M., Boston-Leary K. Leader's Workbook for Harmony by Design: Navigating Work and Life in Healthcare. Indianapolis: Sigma.

Wang, T., Li, J., Wang, Y., Dai, S., Shao, R., & Hao, L. (2022). Active interventions of dynamic lighting on human circadian rhythm and sleep quality in confined spaces. *Building and Environment,226*,109766, ISSN 0360-13, https://doi.org/10.1016/j.buildenv.2022.109766.

Weaver, S. H., Dimino, K., Fleming, K., Harvey, J., Manzella, M., O'Neill, P., Paliwal, M., Phillips, M., & Wurmser, T. A. (2024). Exploring Sleep and Fatigue of Clinical Nurses and Administrative Supervisors. *Nurse Leader, 22*(2), 203–210. https://doi.org/10.1016/j.mnl.2023.11.010

Webster, J., McLeod, K., O'Sullivan, J., & Bird, L. (2019). Eight-hour versus 12-h shifts in an ICU: Comparison of nursing responses and patient outcomes. *Australian critical care: official journal of the Confederation of Australian Critical Care Nurses*, *32*(5), 391–396. https://doi.org/10.1016/j.aucc.2018.08.004

Weinstein, S., Vannucci, M. J., & Boston-Leary, K. (2025). *Harmony by Design: Navigating Work and Life in Healthcare.* Chapter: Stress and the information age. Indianapolis: Sigma Marketplace.

Williamson, A., & Friswell, R. (2013). Fatigue in the workplace causes and countermeasures. *Fatigue: Biomedicine, Health, & Behavior, 1*(1-2), 81-98. https://doi.org/10.1080/21641846.2012.744581

Wilton, A. R., Sheffield, K., Wilkes, Q., Chesak, S., Pacyna, J., Sharp, R., Croarkin, P. E., Chauhan, M., Dyrbye, L. N., Bobo, W. V., & Athreya, A. P. (2024). The Burnout PRediction Using Wearable aNd ArtIficial IntelligEnce (BROWNIE) study: a decentralized digital health protocol to predict burnout in registered nurses. *BMC Nursing*, *23*(1). https://doi.org/10.1186/s12912-024-01711-8

Wirth, M. D., Meyer, J., Jessup, A., & Dawson, R. M. (2023). Barriers and facilitators of diet, physical activity levels, and sleep among nursing undergraduates and early-career nurses: A qualitative descriptive study. *American Journal of Health Promotion*, *37*(6), 821–829. https://doi.org/10.1177/08901171231179437

Witkoski Stimpfel, A. (2020, November 8). Shift work and sleep disruption: Implications for nurses' health. *American Nurse*. https://www.myamericannurse.com/shift-work-and-sleep-disruption-implications-for-nurses-health/

Wood, D. (2025). Alarm Fatigue and Challenges in Telemetry Travel Nursing. AMN Healthcare. https://www.amnhealthcare.com/blog/nursing/travel/alarm-fatigue-and-other-challenges-in-telemetry-nursing/.

Wu, C.-J., Huang, T.-Y., Ou, S.-F., Shiea, J.-T., & Lee, B.-O. (2022). Effects of lighting interventions to improve sleepiness in night-shift workers: A systematic review and meta-analysis. *Healthcare*, *10*(8), 1390. https://doi.org/10.3390/healthcare10081390

Zhou, N., Qin, W., Zhang, J. J., Wang, Y., Wen, J. S., & Lim, Y. M. (2024). Epidemiological exploration of the impact of Bluetooth headset usage on thyroid nodules using Shapley additive explanations method. Scientific reports, 14(1), 14354. https://doi.org/10.1038/s41598-024-63653-0

Zucker, Rebecca. (2023). How taking a vacation improves your well-being. Harvard Business Review. https://hbr.org/2023/07/how-taking-a-vacation-improves-your-well-being