Policy brief: Nurse fatigue, sleep, and health, and ensuring patient and public safety

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Executive Summary

Society needs critical nursing services around the clock and, as a result, nurses often work shift work and long work hours (SWLWH). These hours can prevent nurses from getting the seven or more hours of quality sleep each day that experts recommend (Watson, et al., 2015). Nurses on SWLWH are at risk for cardiovascular disease, gastrointestinal and psychological disorders, cancer, type 2 diabetes, injuries, musculoskeletal disorders, all-cause mortality, adverse reproductive outcomes, and difficulty managing chronic diseases (Caruso, et al., 2017; Caruso & Waters, 2008; Gan, et al. 2015; Gu, et al., 2015; DHHS, 2018; IARC Monographs Vol 124 Group, 2019; NIOSH, et al., 2015; Ramin, et al., 2014; Torquati, et al., 2017). Furthermore, tired nurses are at risk for making patient care errors and drowsy driving crashes (Bae & Fabry, 2014; Ftouni, et al., 2013; Geiger-Brown, et al., 2012; Geiger-Brown & Trinkoff, 2010; Lee, et al., 2016; Trinkoff, et al., 2011). The presence of SWLWH is also related to retention issues, including nurses expressing intention-to-leave or quitting the job (Hayes, et al., 2012; Moloney, et al., 2018). These conditions also have contributed to nursing shortages in certain specialties and practice locations (Marć, et al., 2018). Shortages are a grave concern, as the population is aging and the need for nurses is projected to strongly increase (Auerbach, Buerhaus, & Staiger, 2017). Thus, interventions to reduce nursing fatigue are sorely needed. The American Academy of Nursing (the Academy) supports efforts to reduce fatigue in nurses through education, workplace policies and management systems, and fatigue countermeasures. The Academy recommends that healthcare services and standard-setting organizations establish policies to address this pervasive workplace hazard, thereby promoting nurses' health and safety along with patient and public safety.

Background and Significance

Many nursing jobs require SWLWH due to the need for critical nursing services around the clock. Shift work is work hours that fall outside of Monday to Friday 7 a.m. to 6 p.m. (Caruso & Rosa, 2007). Long work hours are shifts with more than eight hours of work or more than 40 hours of work a week. Nurses on SWLWH are at risk for several chronic illnesses, injuries, and adverse reproductive outcomes (Caruso, et al. 2017; Caruso & Waters, 2008; Gan, et al., 2015; Gu, et al., 2015; DHHS, 2018; IARC Monographs Vol 124 Group, 2019; NIOSH, et al., 2015; Ramin, et al., 2015; Torquati, et al., 2018).

Evidence also indicates that SWLWH lead to greater burnout and poorer job satisfaction among nurses and

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contribute to the nursing shortage (Bae & Fabry, 2014; Geiger-Brown, et al., 2012; Geiger-Brown & Trinkoff, 2010; Trinkoff, et al., 2011). Researchers found that nurses working 10-hour or longer shifts were 2.5 times more likely to report burnout, job dissatisfaction, reduced well-being, as well as their intention to resign compared to nurses working shorter shifts (Stimpfel, Sloane, & Aiken, 2012). The SWLWH are likely an important factor that drive 43% of new registered nurses in hospitals to leave their jobs within three years (Goodman, 2016).

The Centers for Disease Control and Prevention (CDC) found that over 52% of healthcare night shift workers reported sleeping six hours or less a day (CDC, 2012), which is insufficient according to sleep experts (Watson, et al., 2015). Sleep deficiency adversely affects nurses' performance (Bae & Fabry, 2014; Caruso, et al., 2017). Studies report similar adverse performance effects for people awake over 17 hours to those with a blood alcohol concentration (BAC) of 0.05%, and after 24 hours awake with a BAC of 0.10% (Arnedt, et al., 2005; Dawson & Reid, 1997; Williamson & Feyer, 2000). Although, the legal BAC intoxication level for driving is 0.08% in the United States, some countries have set a BAC of 0.05% due to driving impairments (NHTSA, 2000). In addition, investigations of several well-known industrial disasters report worker fatigue to be one of the causal factors (Baker Panel, 2007; NTSB, 2004; NTSB, 2009; Rogers Commission, 1986). SWLWH are associated with greater patient dissatisfaction, patient care errors, and patient mortality (Geiger-Brown & Trinkoff, 2010; Olds & Clarke, 2010; Stimpfel, et al., 2012). The safety risks extend to the nurse's family, health care organizations, and the public when tired nurses make errors at work or home, or have vehicular crashes due to drowsy driving (Bae & Fabry, 2014; Ftouni, et al., 2013; Geiger-Brown, et al.,2012; Geiger-Brown & Trinkoff, 2010; Lee, et al., 2016; Olds & Clarke, 2010; Scott, et al., 2007; Stimpfel, Sloane, & Aiken, 2012; Swanson, Drake & Arnedt, 2012; Trinkoff, et al., 2011).

Currently, few state and federal laws exist in the United States that concern nurses' work hours. No federal laws limit the number of hours a nurse can work or specifies the design of their work schedules. Whereas in Europe, the European Union's Working Time Directive limits hours worked per week to 48 (European Union, 2003). One-third of states prohibit or restrict mandatory overtime in nurses (Ohio Nurses Association, 2018). These laws do not address nurses who volunteer to work overtime although nurses' health and safety as well as patient and public safety consequences are similar. Many of the existing overtime laws have emergency provisions that are loosely interpreted, allowing facilities to override the limits. Furthermore, many states have no laws that require employers to provide workers with meal and rest breaks during their workshifts (U.S. Department of Labor).

Nurses and managers in health care organizations may not fully understand the health and safety risks that are associated with sleep deficiency, fatigue, and SWLWH. They may also be unaware of the available evidence-based strategies to reduce these risks (Baldwin, Schultz, & Barrere, 2016; NIOSH, et al., 2015). Evidence shows, however, that it is possible to limit or modify the adverse impact of SWLWH by improving sleep and reducing fatigue.

The Academy's Position

The American Academy of Nursing recommends that health care service and standard-setting organizations implement policies that promote the sleep health (DHHS, 2010) of nurses. These policies are vital for promoting an alert, healthy workforce that is better able to provide excellent nursing care around the clock and support nurses' ability to maintain their own health and safety. The Academy supports efforts to reduce fatigue in nurses through education, workplace policies and management systems, and fatigue countermeasures. Health care managers and nurses share in the responsibility for making sleep health a priority in the management systems for organizing the work and the nurse's personal life.

Given nursing shortages and the increasing demand for nursing services, research is needed to test interventions that promote nurses' ability to provide care around the clock and to ensure that sufficient nurses are available to provide high-quality care and meet patient care needs. Moreover, the Academy supports funding to investigate nurse fatigue risk mitigation, and related provider wellness and patient safety issues.

Employer Recommendations

Work Schedule Design. Innovative designs for work schedules can help reduce fatigue. Managers should set limits on shift length, number of hours and shifts worked per week, and the number of consecutive shifts allowed. Since health and safety risks increase as work hours increase (Bae & Fabry, 2014), managers can avoid implementing shifts longer than 12 hours and use shorter shifts, especially during night hours when nurses have added challenges with sleep and maintaining alertness (Drake, et al., 2004; Pilcher, Lambert, & Huffcutt, 2000). If shift rotations are used, they should be "forward" (e.g. days to evenings, evenings to nights). Managers should identify and eliminate policies that encourage excessive overtime and set restrictions on how much and when nurses can work overtime. More specifically:

- Schedule night shifts of no longer than 8 hours because long night shifts have greater risk for patient care errors and adverse health and safety

outcomes for nurses (Bae & Fabry, 2014; Drake, et al., 2004; Geiger-Brown, et al., 2012; Geiger-Brown & Trinkoff, 2010; Fischer, et al., 2017; Pilcher, Lambert, & Huffcutt, 2000; Trinkoff, et al., 2011).

- Design work schedules with at least 10 or more continuous hours off each day so that nurses can obtain 7 or more hours of sleep per day as recommended for adults by experts (Watson, et al., 2015).
- Review nurses' future work schedules and intervene to prevent work schedule patterns with high risk for fatigue.

Fatigue Risk Management Systems (FRMS) (Lerman, et al., 2012). Employers can establish FRMS to provide a comprehensive approach to reduce risks from fatigue. FRMS contribute to a Just Culture (ANA, 2010) that recognizes flaws in workplace systems are often important causes of errors. FRMS include several elements: 1) instituting workplace polices to reduce risk for fatigue; 2) establishing procedures to protect tasks that are vulnerable to fatigue-related errors; 3) promoting education for managers and nurses; 4) including fatigue-related factors in incident investigation; 5) establishing anonymous near miss and incident reporting systems; 6) addressing sleep disorders; and 7) striving for continuous improvement.

Prevent Drowsy Driving. Evidence is growing that SWLWH, disruption to circadian rhythms, and sleep deficiency increase the risks for drowsy driving and vehicle crashes (Ftouni, et al., 2013; Lee, et al., 2016; Scott, et al., 2007; Swanson, Drake & Arnedt, 2012). Scott et al. emphasized the need to increase nurses' awareness and establish management systems to prevent drowsy driving for the nurse's and the public's safety (Scott, et al. 2007). Managers should organize education campaigns and establish procedures for transporting nurses who are too tired to drive home safely (NIOSH, et al., 2015). For example, managers can provide taxi service or call a family member to provide transportation. Another option is arranging sleeping rooms close to the worksite for tired nurses.

Systems for Emergencies. During environmental emergencies or other disasters, managers should establish management support systems to increase nurses' ability to continue working. These systems could include services that reduce non-work demands on nurses so they can devote their time off to rest and sleep. Some examples include providing onsite sleeping rooms, childcare, and laundering of uniforms. During these situations, managers should avoid pressuring nurses to work overtime since longer shifts are associated with increased errors and injuries as well as burnout.

Additional Recommendations

Education. Nurses and their managers need education about the health and safety risks associated with SWLWH and the evidence-based strategies that can reduce these risks. Free, comprehensive, online training is available from the National Institute for Occupational Safety and Health (NIOSH) entitled, *NIOSH training for nurses on shift work and long work hours* (NIOSH, et al., 2015). Another resource is the American Nurses Association Position Statement, *Addressing Nurse Fatigue to Promote Safety and Health: Joint Responsibilities of Registered Nurses and Employers to Reduce Risk* (ANA, 2014). Additionally, content on leading sleep disorders and their treatment, nurse's and patient's safety risks from fatigue related to sleep disorders and SWLWH, and strategies to reduce the risks should be included in associate, undergraduate, and graduate nursing curricula.

Countermeasures

These are strategies to reduce sleepiness and fatigue. They include short naps and rest breaks during the work shift, and judicious use of caffeine. Health care organizations should establish policies for 10 to 15 minute rest breaks during shifts every 2 hours and additional breaks for meals to reduce risk for fatigue, errors, and injuries (Fischer, et al., 2017). Managers can also create schedules with time for brief planned naps during work shifts: research supports that brief naps (15 to 30 minutes) increase alertness during work shifts (Geiger-Brown, et al., 2016; Scott, et al., 2010). Another well-supported countermeasure is the use of small amounts of carefully timed caffeine (NIOSH, et al., 2015). Additionally, employers should work to establish non-punitive procedures for nurses who are too fatigued to work such as a backup staffing plan. Finally, State Boards of Nursing incident investigations should include details about the work hours and sleep-related factors that occurred 3 or more days before the error to identify contributors to the incident (Lerman, et al., 2012).

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