Work Organization Factors Associated With Nurses' Stress, Sleep, and Performance: A Pre-pandemic Analysis

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Background: The COVID-19 pandemic put extreme stress on an already strained healthcare workforce. Suboptimal work organization, exacerbated by the pandemic, is associated with poor worker, patient, and organizational outcomes. However, there are limited qualitative studies exploring how the interconnections of work organization factors related to shift work, sleep, and work stress influence registered nurses and their work performance in the United States. **Purpose:** We sought to understand how nurses perceive work organization factors that impact their performance. Knowledge in this area could direct efforts to implement policies and design tailored interventions to support nurses in the post-pandemic period. **Methods:** We used a qualitative descriptive design with the *Work, Stress, and Health* framework as an overarching guide to understand the interconnectedness of work organization factors, work stress, and outcomes. Participants were randomly assigned to one of two anonymous, asynchronous virtual focus groups (i.e., threaded discussion boards) in 2019. Registered nurses (*N* = 23) working across the United States were recruited and engaged until data saturation was achieved. Directed content analysis was used to analyze the data. **Results**: Findings aligned with the *Work, Stress, and Health* framework and revealed three themes: (1) "Our Voice Should Matter" (nurses' desire to have their voices heard in staffing policies); (2) "Tired But Wired" (the harmful cycle of work stress, rumination, and poor sleep); and (3) "We're Only Human" (nurses' physical, emotional, and mental exhaustion linked to critical performance impairments). **Conclusion**: These findings underscore that high work stress and poor sleep were present before the pandemic and impacted nurses' perceptions of their performance. As leaders look forward to recovery and work redesign efforts, these findings can guide decision-making and resource allocation for optimal nurse, patient, and organization outcomes.

Registered nurses (simply referred to as nurses throughout this study) face high levels of work stress, often under conditions in which they cannot meet the demands of their jobs (Jennings, 2008). Chronic work stress can lead to burnout (i.e., a workplace syndrome characterized by feelings of emotional exhaustion, depersonalization, and reduced personal accomplishment), which have been associated with worse patient outcomes (National Academy of Medicine, 2021; Maslach & Jackson, 1981). Acutely ill patients, short lengths of stay, understaffing, and other organizational factors make the work environment highly physically and emotionally taxing (Aiken et al., 2013; Witkoski Stimpfel et al., 2012). During the past 2 years, the COVID-19 pandemic has launched a new level of strain upon an already stressed workforce that has been confronted with a lack of personal protective equipment, understaffing, and a fear of transmission of a novel and deadly disease (Kellogg et al., 2021). As a result of the additional pressure associated with the COVID-19 pandemic, nurses' work stress and burnout rates have risen in the United States and abroad (Guttormson et al., 2022; Magee et al., 2020).

Multiple factors have been studied to understand the antecedents of work stress and burnout in nurses, including personality traits, sociodemographics, and work characteristics (Cañadas-De la Fuente et al., 2015; Jennings, 2008). Shift work, long work hours, and overtime have been noted by nurses as significant work stressors and have been associated with burnout (Dall'Ora et al., 2015; Giorgi et al., 2018; Shah et al., 2021; Witkoski Stimpfel et al., 2012). Since 12-hour shifts have become the norm in many healthcare settings, nurses' opportunities for adequate sleep duration and quality may be compromised. Evidence suggests nurses' total sleep time between consecutive shifts generally falls between 5 and 7 hours (Geiger-Brown et al., 2012; Witkoski Stimpfel et al., 2020), which is less than the recommended 7 to 9 hours suggested by experts for healthy adults (National Sleep Foundation, 2015). Insufficient total sleep time and circadian misalignment, which often occur as a result of shift work (Caruso, 2014), are associated with significant impairments in performance that risk patient safety.

Relatively few studies have explored a priori the interconnections of work organization factors of sleep and shift work on nurses' work stress and work performance in the United States. Much of the body of research on this topic has been developed internationally (Deng et al., 2020; Rhéaume & Mullen, 2018) or has used quantitative research designs with administrative or survey data (Geiger-Brown et al., 2012; Gómez-García et al., 2016; Lee et al., 2020; Sagherian et al., 2017; Savic et al., 2019). While quantitative designs have advantages of larger sample sizes and potentially generalizable findings, these methods can restrict open discussion of complex relationships by limiting the types and ways participants can share information (e.g., multiple choice surveys or brief free-text survey responses). For example, quantitative research has demonstrated relationships between work hours and burnout (Park & Lake, 2005; Witkoski Stimpfel et al., 2012) and between sleep and work stress (Bjorvatn et al., 2012; Deng et al., 2020), but such research cannot fully explain the process by which these outcomes occur, limiting opportunities to intervene and improve work conditions for nurses. Thus, we used qualitative methods to gain deeper insights into the relationships between and across interrelated work organization domains of nurses' sleep, shift work, and work stress and performance in a sample of U.S. nurses.

Methods

Study Design

Given the purpose of our study, we chose a qualitative descriptive design. In qualitative descriptive studies, the researcher seeks to describe the experiences or events using everyday terms (Sandelowski, 2000) and typically uses semi-structured interviews or focus groups paired with content analysis, as we did in this study. Institutional review board approval was obtained prior to beginning the study.

Conceptual Framework

The *Work, Stress, and Health* framework (Figure 1) developed in the occupational health psychology literature served as an overarching guide to the study (Heaney, 2014). The framework posits that organizational work stressors (e.g., shift work, overtime) impact a worker's health depending on how the worker perceives and copes with the stressor. Potential organizational stressors include major acute events (e.g., electronic health record going offline), chronic conditions (e.g., understaffing), and daily hassles; they are likely to be perceived as harmful or threatening and/or result in a physiological response. The impact of the work stressor can be modified or buffered by individual (e.g., resilience, knowledge, coping skills) and organizational resources (e.g., workplace wellness programs, opportunities to participate in decision-making) (Heaney, 2014).

Participants and Sampling

The sampling frame included participants from a nationally representative quantitative study—The RN Work Project—which

FIGURE 1

Work, Stress, and Health Conceptual Framework Used to Guide the Study
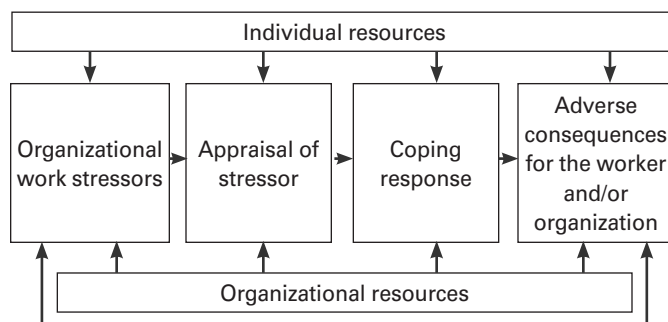
Adapted from Heaney, C.A. (2014). Worksite health interventions. In J. C. Quick & L.E. Tetrick. *Handbook of occupational health psychology 2nd ed.* (pp. 319-336). American Psychological Association.

focused on the work attitudes and attributes of newly licensed nurses and followed their career trajectories (Kovner et al., 2007). Inclusion criteria included being able to read and write in English, having access to the internet, and currently working as a nurse in the United States. Of all participants (*N* = 2,383), 892 provided email contact information and agreed to be contacted for future studies. In early 2019, we began recruitment for the present study. We randomly selected groups of 75 potential participants and recruited them via email by describing the study, inviting them to complete electronic informed consent, and following up by email 1 week later. Subsequent groups of 75 potential participants were invited approximately every 2 weeks until our target sample size of 20 participants per group was reached. In total, we sent 520 emails, of which 96 bounced back. We estimated our sample size according to previous research that used similar methods (Wettergren et al., 2016; Zwaanswijk & van Dulmen, 2014) to allow for engagement from all participants and to accommodate for expected attrition. Overall, 41 nurses consented to participate in our study and were randomly assigned to one of the two identical discussion boards (Board 1, *n* = 21; Board 2, *n* = 20). We kept the boards open until data saturation was reached at 3 weeks.

Data Collection

A research firm (20/20 Research) created a private, anonymous threaded discussion board for participants to engage in asynchronous virtual focus groups. These groups, which allow for continuing comments from participants over a fixed period, have been widely used in other populations and have been well-received by participants (Williams et al., 2012; Zwaanswijk & van Dulmen, 2014).

The Project Manager from the research firm invited participants to join the focus group discussion boards. Participants were anonymized by assigning each participant a unique identification code. All participant responses were visible to the entire group except for sociodemographic questions, which were asked at the

TABLE 1

Participant Sociodemographic and Work Characteristics (*N* = 23)[a]

Characteristics	*n* (%)
Sociodemographic	
Age, y	
18–29	8 (42.1)
30–39	9 (47.4)
≥40–49	2 (10.5)
Gender	
Female	17 (89.5)
Male	2 (10.5)
Race/ethnicity	
African American/Black	2 (10.5)
Asian	2 (10.5)
Latino/a or Hispanic	1 (5.3)
White	13 (68.4)
Mixed race	1 (5.3)
Marital status	
Never married/single	6 (31.6)
Married/partnered	11 (57.9)
Divorced/widowed/separated	2 (10.5)
Highest nursing degree	
Associate's degree	5 (26.3)
Bachelor's degree	13 (68.4)
Master's degree	1 (5.3)
Work	
Current role in primary job	
Staff nurse	15 (78.9)
Charge nurse	1 (5.3)
Case manager	2 (10.5)
Other	1 (5.3)
Shift length	
8 h	2 (10.5)
10 h	1 (5.3)
12 h	13 (68.4)
Other	3 (15.8)
Schedule	
Days	9 (47.4)
Evenings	3 (15.8)
Nights	5 (26.3)
Other	2 (10.5)
Years in current position	
<1	2 (10.5)
1–2	8 (42.1)
≥3	9 (47.4)

[a]Data were missing for 4 participants.

conclusion of the focus groups. The discussion boards focused on three main topics: sleep, work stress, and substance use. Each topic was the focal point of discussion during a discrete period. For this article, we focused our analysis on sleep, work stress, and performance because of the intersection of these topics in our findings. Questions were posed by topic in a staggered manner to achieve thick, rich data. Example focus group questions included, "Tell me about your experience or your colleagues' experience with your work schedule as a nurse" and "Tell me about a good day at your work." The researchers reviewed the discussion board once per day and provided additional probing questions and/or asked for clarification, as needed. When data saturation was reached for one topic, by consensus of the researchers, the discussion moved to the next topic. The project manager also monitored the discussion boards and was available for technical support (no support requests were raised). One reminder email was sent from the research firm to participants who had not logged into the focus group or had not participated in a topic. Participants were provided a $75 Amazon gift card at the conclusion of the study as an incentive to participate.

Data Analysis

Directed content analysis was used, which is a reflexive and interactive approach to data analysis. Initial analysis included a careful review of focus group transcripts by each researcher using ATLAS.ti 8.0. The three researchers were a PhD-prepared RN, a clinical psychologist with a background in qualitative data methods, and a master's-prepared research assistant with extensive qualitative data experience. To reduce bias, the research team was intentionally diverse in educational and professional backgrounds, and results were shared with other academic nurses not affiliated with the study to review our conclusions for conceptual fit.

An initial set of codes were developed based on domains of the conceptual framework. Additional codes were added by consensus of the researchers. Next, categories were developed from the codes. Finally, themes were developed based on the portions of narrative assigned to each category. The team maintained a codebook to ensure consistency and conceptual accuracy during the coding process and for reproducibility. When coding was complete, the researchers met to achieve consensus coding for each narrative segment of each transcript. These steps helped to ensure the rigor and trustworthiness of the qualitative data analysis process.

Results

Twenty-three nurses participated in the focus groups. Participants' sociodemographic and work characteristics are displayed in Table 1. Compared to the 2018 U.S. National Sample Survey of Registered Nurses, our sample was slightly more diverse (68.4% versus 73.3% white, non-Hispanic), with a similar proportion of male participants (~10%) (National Center for Health Workforce Analysis, 2019). Our sample was younger and had similar propor-

tions of baccalaureate education (68.4% versus 63.9%) compared to the national average. Most of our sample worked as a staff nurse in a 12-hour position. Our qualitative analyses resulted in the development of three key themes: "Our Voice Should Matter," "Tired but Wired," and "We're Only Human." Each theme is defined and described in the following paragraphs. Quotations from participants have been lightly edited for punctuation and grammar.

"Our Voice Should Matter"

Our first theme, "Our Voice Should Matter," brings together the nurses' collective desire to have a voice, or influence, in the organization of nursing care in their immediate work setting and more generally within the larger institution. We found a multifaceted narrative regarding staffing, overtime/on-call hours, and use of organizational resources and budget, in which nurses reported not always having input into how these issues were addressed. Overwhelmingly, participants wanted safe patient care that included their voice in staffing decision-making, because they are the workers at the bedside. There was an undercurrent of frustration when administrators who made staffing decisions were not nurses or were unfamiliar with the clinical challenges presented when understaffed. As one participant described,

> At my facility, nurses don't have a say, and most of the staffing decisions being made are by people who are not nurses. When nurses try to make suggestions, it seems like we're complaining and being "lazy." This increases the stress levels at work.

Similarly, another participant stated,

> I don't feel like we have a voice in staffing issues. The CNO {chief nursing officer} and other administrators are fully aware of the stress that we are under due to poor staffing. They are reminded of it at least every month during nursing forums. The solution would seem to be just to hire more nurses, but we have been told that it is not in the budget. It adds a sense of hopelessness because the administrators do not provide any solutions whatsoever.

Another participant explained a similar situation at her organization, linking the poor staffing to work stress. She said,

> We are frequently understaffed and management has been told several times. RNs do not have a say in staffing, even though the people who do the work will be the best ones to consult for staffing. Very stressful that this will not be changed.

Finally, one nurse emphasized how staff morale, stress, and job satisfaction can be directly impacted when nurses are not involved in staffing decision-making:

> I do not feel like we have a voice. I feel like the higher-ups keep us staffed low to save money without caring about our morale. I can honestly say, the ONLY time I say that I had a BAD day at work, it is because of low staffing. The only times I mutter "I hate my job" are the days when staffing is bad. Especially as the charge nurse, I'm expected to pick up that slack, and it's very stressful for me. I get 5 of the hardest patients, plus I'm expected to do all of the charge duties. Staffing is the ONLY reason I don't like my job sometimes.

Being asked to work overtime or take on additional cases was often met with mixed feelings. Some felt that they could decline overtime, which is a positive indicator about their work environment. However, others expressed a sense of guilt in declining overtime because they could empathize with their colleagues' working conditions. As one nurse described it,

> I feel like I can say no to the overtime, but I know what it is like to be at work and no one volunteers to work. You are on a sinking ship and {no} one is willing to help out and that stinks!!

When a bonus or overtime hourly rate was offered, the financial incentive was often not worth the added stress of working in an understaffed environment or on a scheduled day off. As one participant commented,

> Occasionally I will come in to help out on my day off for overtime. It is hard to do four 12-hour shifts in 1 week with all family duties and household chores. It does add stress. Sometimes money is not worth the added stress.

Similarly, two other participants portrayed a relatively neutral impact of money on having additional work. One described their situation as follows:

> We must have a really good reason to not take extra work, or help a coworker, or take a file. Depending on my day and the work, money or bonusing doesn't usually make a difference—it doesn't make a crappy or stressful day any better.

Another participant commented that when working overtime, "In my experience, the extra money has not made it any less stressful."

The first theme we developed was focused on staffing, overtime, and nurses' involvement in decision-making around these topics. Collectively, this theme reflects the nurses' core social contract, which is to provide patients and families with high quality care. Nurses noted that while they were often able to voice their concerns about adequacy of staffing, their input was not taken into consideration in practice. The sentiment that administrators were either unable or unwilling to use their financial discretion to allocate additional nursing staff was also pervasive. Despite budgetary constraints, nurses also reported administrators using financial incentives to mandate or request nurses to work additional shifts to fill staffing vacancies. Even with the incentive of

overtime pay, typically time and a half in the United States, most nurses weighed the stress of working as greater than the extra pay. This finding may be a signal of serious concerns in the work environment. However, it may be viewed positively in that at least some nurses are opting to preserve their well-being by not working extra shifts. In sum, this theme suggests that nurses want to be included in staffing decisions within their organizations and, moreover, want their clinical judgment and voice in these matters to be acknowledged.

"Tired but Wired"

Our second theme is "Tired but Wired," which describes how work stress and sleep problems intersect. Nurses identified the link between work stress, whether related to understaffing or difficult schedules, and sleep problems and how the two are connected in a vicious cycle at times. Participants detailed some of the physiological experiences of work stress and the impact on sleep. For example, one nurse described it as, "Your adrenaline pumps so much during a stressful shift that it's hard to wind down and go to sleep afterward. Sometimes I get no more than 4 hours of sleep due to this." Another nurse stated, "I feel like my quality of sleep is pretty poor. I wake up several times a night. I grind my teeth in my sleep, presumably due to stress, and have to wear a guard."

Ruminating about a stressful shift, or needing to "decompress" after a long shift, often resulted in difficulty falling asleep. Participants described these difficulties, especially during extended shifts.

> For me, the hard part is just having to get to work on time and then get everything charted before I leave. You are at work at least 15 hours a day and then you always need time to decompress after getting home, so after work I am lucky to get 6 hours of sleep.

> 12-hour days (which are really 13- to 14-hour days) can make it hard to wind down and get ready for the next shift. Working nights makes it especially tough to get business taken care of during normal business hours and also get enough sleep for work.

Nurses reported that a lack of sleep made working even more challenging the following day, creating an unhealthy cycle of disrupted sleep and work stress. This was illustrated well by one participant:

> As time has passed, I have found increasing difficulties sleeping after a difficult shift. I may be physically tired, but my mind can be so frazzled from the work day that I dwell on it while trying to sleep. I will try to meditate or deep breathe to relax my mind, but sometimes it is not successful.

Another participant underscored the work stress and disrupted sleep relationship:

> If I've had a stressful evening at work, I tend to have to "de-stress" and do something before going to bed to get my mind off the night, which is usually a TV show before going to bed, and that's probably one of the reasons why I have restless awakenings.

Our second theme reflects the physiologic experience of nurses expected to work long shifts, often consecutively, with little time for recovery in between shifts. The clearly defined cycle of sleep problems and work stress is concerning for nurses' well-being. The rumination that many nurses described after ending a shift and before falling asleep was commonly a result of a stressful work experience.

"We're Only Human"

Our third and final theme is titled "We're Only Human." This theme explores nurses' descriptions of what happens to them from several dimensions—physical, mental, and emotional—when they do not get adequate sleep. The nurses further detailed how their sleep problems can affect their clinical performance. First, the nurses described physical exhaustion from a grueling work schedule, long shifts, and/or a heavy workload. As one participant put it, "When I work several days in a row, I feel drained and almost hung over with exhaustion, but I do get as much sleep as I am able to. It just feels constantly like I need more."

Most participants worked a 12-hour shift, which was mentioned by participants as particularly grueling when worked back-to-back or more consecutive shifts. For example, one participant noted, "Working the three 12s [12-hour shifts] makes my sleeping erratic. I'm usually in various states of tired. Feeling well rested is not the norm." Another participant described their experience in greater detail:

> I started on night shift working 12 hours 3 days a week. I would work three shifts in a row so I didn't have to flip my sleep schedule as often. I worked this schedule for 3 years before transitioning to day shift. I now try to avoid working three in a row because it has become too mentally, physically, and emotionally draining for me. I started to work only 2 days in a row the last month and a half on night shift due to this. The past 6 months I've been working mostly weekends and one weekday, which I actually enjoy. I find that I am more productive on my off days now that I have a more "normal" schedule.

Next, nurses communicated the mental toll that insufficient sleep caused in their performance at work. The consequences for their cognitive processing, decision-making, and memory were notable. One participant brought up several significant changes to work performance when stressed and experiencing sleep problems. She said,

> Stress and poor sleep definitely alters work performance for me and my coworkers. It causes an inability to focus, forgetfulness, disorga-

nization, irritability, and a lot of other negatives. I notice that I'm not able to devote adequate time to my patients when I'm having to spend extra time scrambling to organize the next steps I need to take because I can't think clearly. Charting definitely becomes less detailed and is probably inaccurate by the time it gets filled in at the end of the day because there isn't time to chart as you go.

Another participant explained the effects of working night shifts on her ability to communicate:

When I worked night shifts, I had trouble word finding toward the end of my shifts, and during reporting I would always pray that I didn't forget anything. My reports always felt like word vomit and I would always be apologizing because my mind wouldn't follow a normal SBAR {situation, background, assessment, and recommendation} report. It kept jumping around.

One example of a serious patient safety event related to exhaustion was noted:

I've definitely forgotten things in reporting by the end of the day when I'm exhausted. Or I've felt like I was missing something that was happening with my patients due to fatigue. One time I was coming in on nights exhausted because I hadn't slept well during the day and I didn't reset the bed alarm for my patient when we left the room after bedside report. That patient fell out of bed 20 minutes later and had an injury that needed surgery. It was a horrible night and a reminder of how being tired can make me miss things.

Finally, participants acknowledged the emotional, mood, and interpersonal degradation associated with insufficient sleep. The nurses in our study described reduced patient engagement or having less patience with colleagues due to insufficient sleep. In practice, this may be reflected in reduced collaboration across the care team for important clinical activities like ambulating or repositioning patients. The participants described how their health and well-being were impacted when exhausted. One commented, "I become more forgetful and less motivated. Other coworkers become a little agitated, which can cause some tension at times." Another participant stated, "I don't feel as sharp when I don't sleep well. Generally I work with high energy, motivated people, but when they are tired, they don't go the 'extra mile.'"

Collectively, as found in our third theme, participants described cognitive impairments that correspond with results from laboratory-based sleep studies. Research has shown that on a cellular level, neurons slow and fire more weakly under sleep-deprived conditions (Nir et al., 2017). This translates into temporary mental lapses, impacting memory and visual perception, something consistently highlighted by participants in our study, especially related to communication. Change of shift and handover activities have been heavily studied as periods of vulnerability for patient safety; communication problems are routinely cited as key factors linked to patient safety errors (Raeisi et al., 2019). Nurses who do not get sufficient sleep may be especially at risk of making errors due to miscommunication during hand-offs at change of shift.

Discussion

In this qualitative descriptive study, we describe how work organization stressors, namely staffing and work hours, are related to nurses' well-being, sleep, and poor patient outcomes. While this relationship has been documented in the literature primarily through quantitative research (Aiken et al., 2013; Griffiths et al., 2014; Kane et al., 2007; Witkoski Stimpfel et al., 2012), our findings highlight the complex contextual dimensions that are often missing in quantitative designs. For example, our findings revealed how the neurobehavioral consequences of insufficient sleep combined with intense work stress influenced nurses' ability to function on the job. Participants underscored how they were unable to organize their thoughts and communicate with colleagues at shift change, and they identified providing poor documentation in patient medical records as well as having difficulty focusing on the task at hand as additional effects. These firsthand accounts extend our understanding of these dynamics by providing a window into the mechanism by which nurses' work stress and insufficient sleep can lead to poor patient outcomes. By better understanding these relationships and how they manifest in clinical care, we can move forward to design and develop policies, regulations, and interventions to support nurses' sleep and minimize stress.

Consistent with the *Work, Stress, and Health* framework, participants noted shift work, understaffing, and overtime as organizational-level stressors that resulted in rumination and poor sleep and affected performance and patient care. Participants also identified individual (e.g., declining extra shifts/overtime) and organizational (e.g., active involvement in staffing decision-making) resources that could mediate the effects of the organizational stressors on nurses' work stress and patient outcomes, as outlined in the framework. Considering the burden that the COVID-19 pandemic has placed on nurses' mental and physical health, efforts by organizations to buffer the effects of work stress are essential.

Implications for Policy, Regulation, and Research

Our study's results reinforce the importance of organizational-level strategies aimed at promoting healthy work design and healthy workers while providing an argument for enhancements to existing policies and regulation. First, organizational policies and procedures should reflect the growing evidence-base that shows the potentially harmful impacts of insufficient sleep and overly stressful work environments on nurses. Scheduling and staffing decisions must take this into account, such as following the Institute of Medicine Committee on the Work Environment for Nurses and Patient Safety (2004) recommendations of limiting shifts to 12 hours in a 24-hour period, limiting total work hours to 60 per 7-day period, and limiting the number of consecutive shifts.

Furthermore, mandatory overtime should be strictly limited to emergency use only, and voluntary overtime should be closely monitored by managers. Newer biomathematical modeling systems tested in nursing populations that evaluate cognitive performance over consecutive shifts (James et al., 2021), as part of Fatigue Risk Management Systems, and strategic use of light exposure/attenuation are also potential avenues to pursue in practice (Querstret et al., 2020).

Regulatory practices restricting excessive work hours and unsafe schedules in transportation, such as aviation and long-haul truck driving (Federal Motor Carrier Administration, 2021), and in nuclear power (U.S. Nuclear Regulatory Commission, 2017) have been instrumental in safeguarding worker health and the public's welfare for decades. Adoption of similar regulations in healthcare have been limited to resident physicians through the Accreditation Council for Graduate Medical Education. However, to date, there have been no such regulations adopted in nursing (Basner et al., 2019).

Our participants noted a lack of preparation in healthy coping strategies for shift work and work stress, specifically in the prelicensure period. Indeed, prelicensure nursing curricula do not routinely teach about work stress and shift work management in a formal manner (Meaklim et al., 2020; Ye & Smith, 2015). Similarly, postlicensure continuing education and/or workplace wellness programs, such as mindfulness-based meditation or resilience training, are not uniform across organizations (Centers for Disease Control and Prevention [CDC], 2020). In light of our findings that the rumination and feeling of being unable to "decompress" after a particularly stressful shift contributes to impaired sleep, mindfulness-based training (i.e., meditation, guided imagery, deep breathing) could be particularly useful (Ghawadra et al., 2019). Given the significance of work stress, the sustained rates of burnout across the nursing profession, and uneven education on coping with work stress, attention and targeted interventions could help workers manage this problematic cycle. Additional research is needed to evaluate the effects of specific interventions to promote mental health, resilience, and healthy coping among nurses. Further dissemination and uptake of many freely available educational materials and toolkits is warranted. For example, the Well-being Initiative from the American Nurses Association (n.d.) could be used by all stressed nurses to improve their mental health and resilience.

Additionally, responding to nurses' desires to have their voices heard is likely to result in a protective effect of organizational work stressors on outcomes. The development of solutions to these challenges are best generated from the experiences of frontline workers. Addressing these issues collaboratively may result in sustainable changes that increase nurses' quality of life and improve patient outcomes. Previous literature has established that hospitals with a professional practice model in which nurses' input is embedded in every level of the organization have been associated with better nurse and patient outcomes (American Nurses Credentialing Center, 2020). More specifically, nurses are often involved in both organizational-level and unit-level day-to-day staffing decision-making, contributing to better satisfaction with this aspect of their work.

Strengths and Limitations

There are limitations in this research. First, qualitative research is not meant to be generalized to an entire population. Our findings should be placed in the context of the wider literature, and follow-up studies using a prospective design are warranted. Nonetheless, the rich details of the data provide insight into several critical issues in the nursing profession, and our methods are novel for this group of healthcare providers. This methodology also enabled us to conduct a multi-state focus group, which would not have been possible with traditional face-to-face focus groups. Second, it is possible that there was social desirability bias in our study. Although we asked indirect questions about sensitive topics, participants were assured of anonymity, and the focus group was asynchronous (participants did not see one another), it is possible some information was withheld. Finally, although 41 nurses consented to participate in the focus groups, only 23 nurses fully participated. We purposely set our targeted sample size at 20 per focus group board, in part, due to known attrition among online focus group participants with sensitive topics (Wettergren et al., 2016) and nurses' last-minute schedule changes that may have influenced participation rates. Future research should be conducted to replicate these findings across other samples of nurses.

Conclusion

Our study used innovative virtual focus groups to facilitate discussions of suboptimal work organization that has historically been evaluated using quantitative designs. Our results illustrate the profound and potentially damaging impact that organizational stressors and poor management practices, such as understaffing and heavy workload, have on nurses' well-being and sleep, in particular. These results also show nurses' desire to be part of the decision-making process and to have a voice in addressing these working conditions to improve the quality of nurses' lives and the health and safety of their patients. Our data, along with previous research in this area, can help to support evidence-based decision-making around these issues.

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