

Occupational Stress among Hospital-Based Nurses in Hawai'i during the COVID-19 Pandemic: A Cross-Sectional Survey

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Abstract

The Coronavirus Disease 2019 (COVID-19) pandemic has caused unprecedented disruption in health care systems and may continue to do so. Nurses, the largest contingent of the nation's health care workforce, have borne the brunt of those disruptions, which have caused increased workload and resultant occupational stress. This study identified differences in nurses' occupational stress by practice specialty, time spent caring for patients with COVID-19, and nurses' demographic characteristics. A descriptive cross-sectional online survey of RNs and APRNs (N=328) was conducted at a Level 1 Trauma Center on the island of O'ahu, Hawai'i in September and October of 2021. Participants completed the 57-item Expanded Nursing Stress Scale (ENSS). Nurses reported an average overall stress score of 2.11 out of 4. The ENSS subscales of workload, patients and their families, inadequate preparation, and uncertainty concerning treatment all had higher mean scores than the total scale. Nurses working in perioperative/procedural areas and obstetrics reported lower overall occupational stress scores than nurses in other specialties. Nurses who spent > 50% of their time caring for patients with COVID-19 reported higher overall occupational stress scores than nurses who spent ≤ 50% of their time caring for patients with COVID-19 ($F = 8.21, P < .001$). Nurses over the age of 50 reported less stress than their younger counterparts ($F = 5.75, P = .004$). Understanding how occupational stress impacts acute care nurses can aid employers in allocating resources to address the problem, and thus improve workforce retention.

Keywords

COVID-19, hospital-based nurses, occupational stress, workload

Abbreviations

ANOVA = analysis of variance
APRN = advance practice registered nurse
COVID-19 = coronavirus disease 2019
ED = emergency department
ENSS = Expanded Nursing Stress Scale
ICU = intensive care unit
PPE = personal protective equipment
QR = quick response
RN = registered nurse

Introduction

Coronavirus Disease 2019 (COVID-19) continues to evolve and spread worldwide without a clear end. As of October 2022, the World Health Organization reported 625 million confirmed COVID-19 cases and 6.5 million deaths worldwide.¹ In the same timeframe, the Centers for Disease Control and Prevention reported 94.8 million confirmed cases of COVID-19 and over one million deaths in the United States.² The Hawai'i State

Department of Health reported 334 000³ confirmed cases of COVID-19 and more than 1600 deaths.⁴ The devastating impact of COVID-19 is widespread and has consequently caused tremendous strain on health care systems.⁵

With numerous surges leading to increased COVID-19 cases and hospitalizations, health care workers, especially hospital-based nurses, have had to practice in extremely challenging environments. Early in the COVID-19 pandemic, the full extent of the disease and mode of transmission were not clear and seemed to evolve by the day, which resulted in health care professionals' uncertainty about how to safely care for patients.^{6,7} Supplies of personal protective equipment (PPE) were quickly depleted and difficult to replenish due to global supply chain disruptions.⁸ The insufficient supply of PPE put nurses in a vulnerable position of potentially becoming infected and transmitting the virus to their patients, coworkers, and loved ones.

The pandemic also caused significant stress in other areas of the health care system. The early waves of COVID-19 caused many hospitalizations resulting in overflowing intensive care units (ICUs)⁹ and a shortage of medical oxygen.¹⁰ To preserve limited resources for the most critical patients, many elective surgeries were canceled and nurses working in procedural areas were often redeployed outside their specialty into unfamiliar settings or routines.¹¹⁻¹² Meanwhile, nurses in ICUs, designated COVID-19 units, and emergency departments (EDs) experienced higher than normal nurse-to-patient ratios and heavier workloads.¹³ Uncertainty, lack of adequate resources, heavy workload, and unfamiliar routines brought about by the pandemic all contributed to nurses' occupational stress.

The National Institute for Occupational Safety and Health defines occupational stress as job demands that exceed workers' capabilities, resources, or needs, which causes harmful physical and psychological responses.¹⁴ Excessive workloads combined with resource scarcity among hospital-based nurses can negatively impact their physical or psychological status and cause symptoms such as burnout, anxiety, depression, or insomnia.^{7,15,16} Effects of cumulative occupational stress¹⁷ can increase absenteeism and individuals' intention to leave their current job or profession.¹⁸ Fontenot et al¹⁹ suggested nursing shortages could happen in Hawai'i if stressors related to the COVID-19 pandemic cannot be managed or if interventions are not implemented to support hospital-based nurses.

The loss of nurses due to occupational stress could exacerbate a global nursing workforce shortage that predates the pandemic. In 2018, there was an estimated shortage of 5.9 million nurses worldwide.²⁰ In Hawai‘i, the nursing workforce shortage resulted in more than 1300 vacant nursing positions as of the end of October 2022.²¹ There are not enough nurses in the state to fill existing openings, yet the State of Hawai‘i Department of Labor and Industrial Relations projects that local employers will hire an estimated 740 nurses annually through 2030²² to account for retirements, job changes, and increased health care utilization stemming from an aging population.²³ If the issue of nurses’ occupational stress is not addressed, Hawai‘i could face a serious public health crisis. Local schools of nursing do not have the capacity to meet existing or forecasted workforce demand.²⁴ If the 24% of nurses who have contemplated leaving the nursing profession due to stress²⁵ leave the workforce, employers will be unable to hire the nurses they need to care for the population.

Given the need to understand the impact of occupational stress on the nursing workforce, this study examined occupational stress levels of hospital-based nurses at a trauma center in Hawai‘i during the COVID-19 pandemic. This study sought to identify differences in nurses’ occupational stress by practice specialty, time spent caring for patients with COVID-19, and demographic characteristics. By understanding how occupational stress impacts hospital-based nurses, employers can better allocate resources to address the problem, and thus retain the nursing workforce.

Methods

Study Design

A descriptive cross-sectional study was conducted via online survey at a 575-bed Level 1 Trauma Center on the island of O‘ahu in Hawai‘i.

Participants and Recruitment

Nurses were eligible to participate in the study if they were a registered nurse (RN) or an advanced practice registered nurse (APRN) working in a full- or part-time position at the hospital during the study period. Per diem and travel nurses were excluded from participation as their experience of occupational stress was likely to have been affected by other employment settings. The focus of the study was on nurses working in direct patient care roles, so nurses were excluded from the study if they self-reported spending less than 60% of their total weekly work hours providing direct patient care.

Nurses were recruited using a convenience sampling method. The principal investigator gave informational presentations, posted informational flyers, and distributed quick response (QR) codes that linked to the online survey throughout the hospital. If

a nurse chose to participate in the study, they could use the QR code or the link on an informational flyer to access the survey. Participation was voluntary and no compensation was offered.

The survey was hosted on the online survey platform Survey Monkey (Momentive.ai, Niskayuna, NY), a commonly used web-based survey data collection tool. The first page of the survey provided study information. Because the survey collected no personally identifying information, the study was approved with a waiver of signed consent. Participants indicated their consent to participate by advancing to the second page of the survey.

Prior to data collection, the principal investigator obtained permission to use the Expanded Nursing Stress Scale (ENSS) for this study. The study protocol was reviewed and approved by the Research & Institutional Review Committee at the Queen’s Medical Center (#RA 2021-042).

Measures

Demographics

The survey measured 8 demographic and employment variables including age, sex, job title (RN, APRN), specialty/department (eg, medical-surgical, critical care, emergency/crisis/trauma), number of years in the nursing profession, number of years in nursing at the study hospital, and time spent caring for patients with COVID-19 in a typical week between July 15 and September 27, 2021 (0%, 1-50%, 51-100%).

Expanded Nursing Stress Scale

The ENSS,²⁶ is a 9-factor scale comprising 57 items measured on a 5-point Likert-type scale ranging from 0 (does not apply) to 4 (always stressful). The ENSS was designed to measure sources and frequency of nurses’ occupational stress and is based on the Nursing Stress Scale developed by Gray-Toft & Anderson (1981).²⁷ As compared to the original Nursing Stress Scale, the ENSS has 23 additional items that ask about common stressors for nurses, has a slightly different factor structure, and was validated in a study with a larger sample that included nurses from a wider range of settings.²⁶ As the ENSS measures sources and frequency of stress but not magnitude or intensity, validation of the scale by French et al does not specify score ranges that correspond to low, medium, or high levels of stress. See **Figure 1** for ENSS subscales and questions.

Prior to analysis, the internal consistency of the overall ENSS scale and each subscale was calculated using Cronbach’s alpha. The overall ENSS and all subscales had reliability coefficients of 0.7 or higher making them suitable for use in statistical analysis. For all but 1 subscale, Cronbach’s alphas in the current study met or exceeded those reported by French et al.²⁶ Scale characteristics including subscales, descriptive statistics, and obtained Cronbach’s alphas are presented in **Table 1**.

<p>Death and Dying</p> <ul style="list-style-type: none"> Performing procedures that patients experience as painful. Feeling helpless in the case of a patient who fails to improve. Listening or talking to a patient about his/her approaching death. The death of a patient. The death of a patient with whom you have developed a close relationship. Physician not being present when a patient dies. Watching a patient suffer. <p>Conflict with Physicians</p> <ul style="list-style-type: none"> Criticism by a physician. Conflict with a physician. Disagreement concerning the treatment of a patient. Making a decision concerning a patient when the physician is unavailable. Having to organize physicians' work. <p>Inadequate Preparation</p> <ul style="list-style-type: none"> Feeling inadequately prepared to help with the emotional needs of a patient's family. Being asked a question by a patient for which I do not have a satisfactory answer. Feeling inadequately prepared to help with the emotional needs of the patient. <p>Problems with Peers</p> <ul style="list-style-type: none"> Lack of opportunity to talk openly with other unit personnel about problems in the work setting. Lack of opportunity to share experiences and feelings with other personnel in the work setting. Lack of opportunity to express to other personnel on the unit my negative feelings toward patients. Difficulty working with particular nurse(s) <u>outside</u> my immediate work setting. Difficulty working with particular nurse(s) in my immediate work setting. Difficulty working with nurses of the opposite sex. <p>Problems with Supervisors</p> <ul style="list-style-type: none"> Conflict with a supervisor. Lack of support from my immediate supervisor. Lack of support by nursing administrators. Lack of support by other health care administrators. Criticism by a supervisor. Being held accountable for things over which I have no control. Criticism from nursing administration. <p>Workload</p> <ul style="list-style-type: none"> Unpredictable staffing and scheduling. Too many non-nursing tasks required such as clerical work. Not enough time to provide emotional support to patients. Not enough time to complete all of my nursing tasks. Not enough staff to adequately cover the unit. Not having enough time to respond to the needs of patients' families. Demands of patient classification system. Having to work through breaks. Having to make decisions under pressure. <p>Uncertainty Concerning Treatment</p> <ul style="list-style-type: none"> Inadequate information from a physician regarding the medical condition of a patient. A physician ordering what appears to be inappropriate treatment for a patient. Fear of making a mistake in treating a patient. A physician not being present in a medical emergency. Not knowing what a patient or patient's family ought to be told about the patient's condition and treatment. Being exposed to health and safety hazards. Uncertainty regarding the operation and functioning of specialized equipment. Feeling inadequately trained for what I have to do. Being in charge with inadequate experience. <p>Patients and Their Families</p> <ul style="list-style-type: none"> Patients making unreasonable demands. Patients' families making unreasonable demands. Being blamed for anything that goes wrong. Being the one who has to deal with patients' families. Having to deal with violent patients. Having to deal with abusive patients. Having to deal with abuse from patients' families. Not knowing whether patients' families will report you for inadequate care.

Figure 1. Expanded Nursing Stress Scale²⁶ (Used with Permission)

Table 1. Descriptive Statistics and Internal Consistency for ENSS and Subscales				
Subscale	# Items	M	SD	Cronbach's Alpha
Death and Dying	7	1.98	0.94	0.87
Conflict with Physicians	5	1.95	0.88	0.76
Inadequate Preparation	3	2.25	0.81	0.79
Problems with Peers	6	1.74	0.77	0.79
Problems with Supervisors	7	2.06	0.99	0.89
Workload	9	2.53	0.73	0.86
Uncertainty Concerning Treatment	9	2.20	0.79	0.86
Patients and Their Families	8	2.41	0.94	0.89
Discrimination	3	1.06	1.11	0.80
Total ENSS	57	2.11	0.71	0.97

Abbreviations: ENSS, Expanded Nursing Stress Scale; M, mean; SD, standard deviation.

Statistical Analysis

Descriptive statistics are reported as frequency distributions for categorical variables and means and standard deviations for continuous variables. Mean comparisons were performed using one-way analysis of variance (ANOVA) tests. Mean differences are statistically significant at $P < .05$. Mean comparisons were calculated using composite ENSS scale and subscale scores. The composite scores for the ENSS subscales were computed as means to ensure consistent interpretability of scores across subscales with different numbers of items. The overall ENSS score was calculated as the mean of all items on the scale. All statistical analysis was conducted with IBM SPSS Statistics for Windows version 25, (IBM Corp., Armonk, NY).

Results

Sample Characteristics

All of the approximately 1300 RNs and APRNs employed at the study hospital during the survey period were invited to participate. Of these, 490 nurses accessed and answered at least 1 question on the survey. After excluding participants who did not meet the inclusion criteria or who did not respond to the ENSS items, the final study sample comprised 328 participants.

The majority of participants were female (83.2%), ≤ 50 years-old (74.4%), worked full-time at the study site (86.4%), and spent $\leq 50\%$ of their hours in an average week caring for COVID-19 patients (60.4%). The 4 most frequently reported practice specialties were Emergency/Crisis/Trauma (10.4%), Critical Care (14.6%), Medical-Surgical (16.5%), and Perioperative/Procedural Areas (19.5%). Descriptive statistics for demographic variables are presented in **Table 2**.

ENSS Subscale Scores

The overall mean score for the total ENSS instrument was 2.11. Of the 9 subscales, 4 produced means higher than that of the total ENSS. These included workload ($M = 2.53$), patients and their families ($M = 2.41$), inadequate preparation ($M = 2.25$) and uncertainty concerning treatment ($M = 2.20$).

Tests of Mean Differences

A one-way ANOVA indicated a statistically significant difference in nurses' overall ENSS scores by practice specialty ($F = 7.07$, $P < .001$). Examination of means indicates that nurses working in perioperative/procedural and obstetrics specialties reported lower overall occupational stress scores than nurses working in other specialties. No specialty had an average ENSS score above 2.37. Results are presented in **Table 3**.

A second one-way ANOVA indicated a statistically significant difference in overall ENSS scores by time spent caring for patients with COVID-19 ($F = 8.21$, $P < .001$). Means indicate that nurses who spent $> 50\%$ of their time caring for patients with COVID-19 reported higher overall occupational stress scores than nurses who spent $\leq 50\%$ of their time caring for patients with COVID-19 (**Table 3**).

The secondary objective explored whether nurses' reports of occupational stress varied by their demographic characteristics (**Table 3**). Results of one-way ANOVAs indicated no statistically significant differences in overall occupational stress for sex or full-time vs. part-time employment status. One-way ANOVAs did indicate statistically significant differences for age ($F = 5.75$, $P = .004$), the number of years in the nursing profession ($F = 5.61$, $P = .004$), and the number of years employed at the study site ($F = 3.59$, $P = .029$). Nurses > 50 years-old, nurses who have spent > 30 years in the nursing profession, and nurses who have worked at the study site for > 30 years reported the lowest levels of overall occupational stress.

Because age is a risk factor for severe symptoms and mortality from COVID-19, the investigators considered that older nurses may have requested to work on units that limited their exposure to patients with COVID-19. If older nurses were systematically less likely to work with COVID-19 patients, then age and time spent caring for patients with COVID-19 would be confounded

in the results. A post-hoc cross-tabulation indicated no significant relationship between age and time spent caring for patients with COVID-19 (chi-square = 1.847, $P = .397$, *data not shown*). Nurses > 50 years-old were statistically as likely as nurses under the age of 36 to have spent more than half their time caring for COVID-19 patients (39.3% vs 34.9%).

Demographic Characteristic	Categories	n	% of total (N=328)
License	RN	316	97.2
	APRN	9	2.8
Sex	Male	50	15.3
	Female	272	83.2
	Declined to Answer	5	1.5
Age	20-35 Years	106	32.3
	36-50 Years	138	42.1
	51 Years and Older	84	25.6
Specialty/Department	Emergency/Crisis/Trauma	34	10.4
	Critical Care	48	14.6
	Perioperative/Procedural	64	19.5
	Medical/Surgical	54	16.5
	Telemetry/Step-Down/Acuity Adaptable	55	16.8
	Oncology	13	4.0
	Obstetric	14	4.3
	Other	46	14.0
Average Scheduled Hours Per Week	20-35 (Part-Time)	44	13.6
	Over 35 (Full-Time)	280	86.4
Years Employed at Study Site	15 Years or Fewer	237	72.3
	16 – 30 Years	73	22.3
	More than 30 Years	18	5.5
Years in Nursing Profession	15 Years or Fewer	189	57.8
	16 – 30 Years	101	30.9
	More than 30 Years	37	11.3
Average Time per Week Spent Caring for Patients with COVID-19 (July to September 2021)	None	57	17.4
	1-50%	141	43.0
	51 – 100%	130	39.6

Abbreviations: n, cell size; N, total sample size; RN, registered nurse; APRN, advanced practice registered nurse.

Table 3. Comparisons of Overall ENSS Scores by Demographic and Practice Variables						
	M	SD	95% CI for Mean		F	P-value
			Lower Bound	Upper Bound		
Sex					0.581	.560
Male	2.16	0.75	1.94	2.37		
Female	2.10	0.70	2.01	2.18		
Decline to Answer	1.81	0.59	1.07	2.56		
Age					5.752	.004
20 - 35 Years	2.21	0.70	2.08	2.35		
36 - 50 Years	2.16	0.68	2.04	2.27		
51 Years and Over	1.89	0.70	1.73	2.04		
Employment Status					0.855	.356
Part-Time (20-35 hours/week)	2.01	0.65	1.81	2.21		
Full-Time (35+ hours/week)	2.12	0.71	2.03	2.20		
Length of Time Employed at Study Site					3.592	.029
0-15	2.16	0.71	2.07	2.25		
16-30	2.01	0.66	1.86	2.17		
Over 30	1.76	0.64	1.44	2.08		
Length of Time in Nursing Practice					5.614	.004
0-15	2.20	0.70	2.10	2.30		
16-30	2.02	0.69	1.88	2.16		
Over 30	1.82	0.66	1.60	2.05		
Practice Specialty/Department					7.074	<.001
Emergency/Crisis/Trauma	2.35	0.66	2.11	2.58		
Critical Care	2.36	0.62	2.18	2.54		
Perioperative/Procedural	1.84	0.77	1.64	2.03		
Medical/Surgical	2.25	0.64	2.07	2.43		
Telemetry/Step-Down/Acuity Adaptable	2.24	0.59	2.08	2.40		
Oncology	2.27	0.82	1.77	2.77		
Obstetric	1.41	0.53	1.11	1.72		
Other	1.85	0.62	1.67	2.04		
Time per Week Spent Providing Direct Care to Patients with COVID-19					8.214	<.001
None	1.85	0.63	1.68	2.02		
1-50%	2.05	0.68	1.94	2.17		
51-100%	2.27	0.71	2.15	2.40		

Abbreviations: ENSS, Expanded Nursing Stress Scale; M, mean; SD, standard deviation; CI, confidence interval; F, one-way analysis of variance.

Discussion

This study identified differences in nurses' occupational stress by practice specialty, time spent caring for patients with COVID-19, and nurses' demographic characteristics. The first research objective was to describe nurses' occupational stress by practice specialty. Findings suggest that nurses across all specialties reported similar levels of occupational stress except for nurses who work in perioperative/procedural and obstetric specialties who reported lower overall occupational stress scores. Nurses in both perioperative/procedural areas and obstetrics were less likely than nurses in other specialties to have spent >50% of their time providing direct care to patients with COVID-19. Given the statistical link between more time spent caring for patients with COVID-19 and higher occupational stress scores, it is not surprising that these nurses reported less stress than their colleagues in other specialties. Similarly, a 2022 study by the American Nurses Foundation, found that less than 50% of specialty nurses in perioperative/procedural, obstetric, and oncology reported having extremely stressful, disturbing, or traumatic experiences due to COVID-19. In comparison, over 65% of specialty nurses in ICU, emergency, and telemetry reported having had such experiences.²⁸

Though the findings indicate that some nurses experience stress more or less frequently than others, they do not clearly indicate the intensity of nurses' stress. Nurses had an average overall ENSS score of 2.11 out of 4. These scores roughly translate to each measured aspect of nursing practice being "occasionally stressful". These findings are challenging to interpret as, while they appear low, there is no published cut-off score by which to classify nurses as having "low" or "high" stress. A more comprehensive understanding of the issue would require information on both the frequency and intensity of nurses' experience of occupational stress.

The second research objective was to determine whether nurses' reports of occupational stress varied as a function of the amount of time they spent caring for patients with COVID-19. Findings from this study indicate that nurses who spent > 50% of their time caring for patients with COVID-19 reported higher stress scores than other nurses. These findings are consistent with previous research that suggests a positive association between occupational stress and having direct contact with patients with COVID-19 or other factors associated with caring for COVID-19 patients such as having to wear a mask at all times.²⁹ In another study, 75% of nurses working in a COVID-19 triage hospital experienced significantly higher stress levels vs 60.5% of nurses working in a non-COVID-19 hospital.³⁰

The last objective of the study was to determine whether nurses' reports of occupational stress varied as a function of one or more demographic characteristics. Findings indicate that 2 demographic variables, age and time in the nursing profession, were associated with nurses' occupational stress. Nurses who

were > 50 years-old and nurses who have practiced nursing for > 30 years reported less stress than other nurses. These findings are consistent with recent data that suggests that younger and more inexperienced nurses are more likely to report negative outcomes of work-related stress. Specifically, a 2022 American Nurses Foundation survey found that 30% of all nurses rated themselves as emotionally unhealthy.³¹ This percentage was higher for younger nurses, 46% of nurses under 25 years old compared to 19% of nurses \geq 55 years-old. The survey also found that nurses with <5 years of experience were more likely to report being emotionally unhealthy (40%) compared to nurses with more than 40 years of experience (13%). Additionally, younger nurses reported higher levels of anxiety (66%) and depression (43%) compared to their older counterparts (35% anxious and 21% depressed). The survey also revealed that two-thirds of nurses under 35 years old reported feeling burned out, which is concerning for the future of the nursing profession.

Hospital-based nurses' most frequent sources of occupational stress as identified by the ENSS subscales were workload, patients and their families, inadequate preparation, and uncertainty concerning treatment. Components that contribute to nursing workload include the amount of time spent providing direct and indirect patient care; complexity of that care; level of physical exertion; and level of nursing competency.³² The first 3 of these components increased due to the COVID-19 pandemic and level of nursing competency likely decreased due to uncertainty about how each new variant would affect patients and their response to treatment. Other studies have found that the COVID-19 pandemic increased nurses' workload.^{13,29,33,34} Increased workload is concerning not only in that it contributes to occupational stress but can also lead to negative outcomes such as burnout, which can compromise patient safety.³⁵

Another frequent source of occupational stress in this study was patients and their families. Because of the contagiousness of the disease, hospitals restricted visits from patients' family members. Frustrated relatives often made unreasonable demands, and in some cases, abused staff.³⁰ Hassan³⁶ similarly found that distressed patients and angry relatives resulted in suboptimal patient care and were significant stressors for all health care personnel.

The third and fourth most frequent stressors found in this study were inadequate preparation and uncertainty concerning treatment. By the time this study was conducted in autumn of 2021, the pandemic was in its second year. Although health care professionals had a better understanding of the virus by this point, the best available information about COVID-19's transmissibility, resistance to vaccines, likelihood of causing hospitalization, and responsiveness to treatment changed with the emergence of each new variant. The rapid emergence of the delta and omicron subvariants could have caused nurses to be persistently uncertain about how to provide quality care.

The findings from this study are consistent with other scholars' findings that inadequate preparation^{30,37} and uncertainty concerning treatment³⁰ are frequent sources of stress for nurses. Other scholars have found that death and dying is a frequent source of nursing stress,^{30,37} which was not the case in the current investigation. Hawai'i ranks 2nd lowest in the nation in COVID-19 deaths,³⁸ which may explain why death and dying was not a frequent stressor in this study.

Limitations

These findings should be viewed in light of study limitations. The principal investigator works in the perioperative/procedural specialty at the study hospital. This could have contributed to the overrepresentation of perioperative nurses in the sample. In addition to being more likely to participate in support of a colleague, participants from the perioperative/procedural areas may have been especially susceptible to a social desirability bias. The study was conducted at a single site and utilized a convenience sampling method, both of which limit the generalizability of the findings. The study is also limited by the cross-sectional design, limited racial diversity, limited specialty diversity, small sample size, and lack of reliable and valid published cut point for the ENSS. Finally, the timing of the study could have affected results as it was conducted at the end of the delta variant surge. However, this study is valuable in that it sheds light on an important national issue and provides much needed local data which health care leaders can act upon.

Conclusion

This study offers new insight about the work-related factors that most frequently contributed to hospital-based nurses' stress during the COVID-19 pandemic. The current findings suggest that hospital administrators should prioritize resources that can help nurses reduce their feelings of uncertainty and lack of preparedness to care for their patients. The data also indicate that facilities should implement policies that provide nurses with meaningful protection from the abusive conduct of some patients or their families. Hospital administrators should work to improve nurse-to-patient ratios, cross-train between specialties, and increase the number of new graduate hires to fill open positions to assist nurses with managing heavy workloads. Younger, less experienced nurses would also benefit from formal mentoring relationships or opportunities to interact informally with their more experienced counterparts to learn skills and strategies for managing potentially stressful situations at work.

Recent research suggests that managing the sources of nurses' occupational stress may decrease staff turnover, increase nurse satisfaction, and sustain the nursing workforce.²⁹ Nurse administrators are encouraged to establish supportive work environments and develop interventions to assist nurses in effectively preventing and managing stress. This can be achieved by implementing strategies to target specific sources of stress

and creating programs to promote nurses' overall wellbeing. Though further research focused on interventions to prevent and reduce occupational stress is needed, developing targeted interventions can help to reduce burnout and help retain the nursing workforce.

Conflict of Interest

None of the authors identify a conflict of interest.

Disclosures

The findings, conclusion (etc.) of this study do not necessarily represent the views of The Queen's Medical Center.

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