RESEARCH

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Factors Associated With Burnout in Trauma Nurses

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ABSTRACT

Background: Burnout is a psychological syndrome resulting from repeated stressors experienced in the workplace that centers on emotional exhaustion, detachment from the job, and a sense of ineffectiveness. It has been previously demonstrated that burnout exists in the health care workforce, but there has been limited investigation of burnout in nurses who primarily provide care for patients who have been traumatically injured. The purpose of this study was to explore factors associated with burnout reported by trauma nurses.

Methods: This was a secondary analysis of a cross-sectional survey distributed at a large, academic Level I trauma center that serves both adult and pediatric patients. For this analysis, only the Burnout subscale of the Professional Quality of Life scale Version 5 (ProQOL) was used. Multivariate hierarchical regression was used to determine factors associated with burnout reported by trauma nurses.

Results: Protective factors included being female, being married, and better quality of sleep. Risk factors included having a mental health diagnosis and working with adult populations.

Conclusions: These results provide an important contribution to the burnout risk profile for trauma nurses and may provide insight into future investigations as well as development and testing of tailored interventions to mitigate burnout in trauma nurses.

Key Words

Burnout, Trauma nursing, Trauma patients

Burnout is a multidimensional, psychological syndrome centered on interpersonal stressors experienced in the job setting. The three key dimensions of the burnout phenomenon are exhaustion, critical feelings toward and detachment from the job, and a sense of ineffectiveness and lack of accomplishment in the job role (Leiter & Maslach, 2009; Maslach, 1993; Maslach & Leiter, 2017). Although burnout has been observed in a variety of professional settings including banking, agriculture, and education, the prevalence of burnout in the health care setting remains a major concern due to the potential consequences for health care workers and subsequent effects on quality patient care and outcomes (Maslach & Leiter, 2017; Mojsa-Kaja, Golonka, & Marek, 2015; Truchot & Andela, 2018; Valente, Wang, & Menezes, 2018).

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The authors declare no conflicts of interest.

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Among health care workers, specifically physicians and nurses, rates of burnout remain astonishingly elevated, with reports of up to 50% of physicians-in-training and practicing physicians experiencing symptoms of burnout and nearly 37% of nurses reporting high levels of burnout (Cañadas-De la Fuente et al., 2015; West, Dyrbye, & Shanafelt, 2018). Moreover, such high rates of burnout in health care professionals have been linked to decreased emotional and physical well-being, increased medical errors, and decreased quality of care (Cimiotti, Aiken, Sloane, & Wu, 2012; Panagioti et al., 2018; Welp, Meier, & Manser, 2014). Considering the potentially dire effects that burnout may have on health care workers and their performance, it is crucial to elucidate further the phenomenon particularly among vulnerable workers.

It is estimated that the prevalence of burnout is higher in health care professionals caring for specialized populations such as those caring for the critically ill (50%), oncology (38%), palliative care (35%), and pediatric patients (31%–86%) (Potter et al., 2010; Pradas-Hernandez et al., 2018; Rizo-Baeza et al., 2018). However, there is little published data about burnout in health care professionals who care for patients after traumatic injury, particularly in trauma nurses (Hinderer et al., 2014; Missouridou, 2017; Wijdenes, Badger, & Sheppard, 2019). Despite the limited available data, there is consensus that caring for

traumatically injured patients creates a demanding, emotional, and high-intensity workplace (Cummings, Singer, Hisaka, & Benuto, 2018; Hinderer et al., 2014; Hockaday, 2017; Missouridou, 2017). Of all health care professionals, nurses spend the most direct time with patients and as such nurses caring for patients after traumatic injury may be at an increased risk for the development of burnout syndrome. This risk is especially true when such patients have difficult or complex dynamics of care, including the circumstances surrounding their injuries, diagnoses or prognoses, and family involvement. However, the factors associated with burnout that might affect nurses caring for patients after trauma have not been thoroughly explored.

PURPOSE

The purpose of this study was to explore factors related to burnout in nurses who provide care for patients admitted to the hospital following traumatic injury. Furthermore, we aimed to determine specific personal/behavioral and environmental/work factors that are associated with burnout in nurses caring for patients admitted to the hospital following traumatic injury.

ORGANIZING FRAMEWORK

This analysis was guided by the human response model ([HRM]; Heitkemper & Bond, 2003; Heitkemper & Shaver, 1989). This model describes phenomenon through highlighting contributing variables and the individual adaptations that elicit a response. Congruent to the original model, we proposed that in the variation of the HRM used to guide this analysis (Figure 1), personal and behavioral factors influence individual adaptation through the constructs of vulnerability and resiliency. In addition, environment and work-related factors describe risks or, perhaps, protective resources related to the workplace that may influence individual adaptation leading to or preventing burnout.

METHODS

Design, Setting, and Sample

This was a secondary data analysis of a cross-sectional survey distributed to health care workers at a large, academic and tertiary care center, which is a verified Level I trauma center by the American College of Surgeons for both adult and pediatric patients. The procedure surrounding the survey, as well as the inclusion and exclusion of participants in the parent study, has been previously described (Okoli et al., 2020). In short, this was an anonymous, voluntary, electronic survey distributed through institutional e-mail listserv with an invitation for health care professionals to participate. The survey took approximately 10 min to complete, and the link remained open from November 2018 to April 2019. During the period of survey response collection, the study institution employed more than 3,000 nurses. Only 358 nurses (12%) responded to the parent survey. For this secondary analysis, we aimed to include the nursing staff who would most likely care for patients admitted for traumatic injury; thus, we excluded the nursing staff who indicated oncology, psychiatric/behavioral health, specialty inpatient services (i.e., endoscopy, cardiac catheterization), and ambulatory or outpatient clinics as their area of employment. After exclusion, 77% (n = 274) of responses of nurses primarily from emergency, intensive care, or step-down services were retained for analysis.

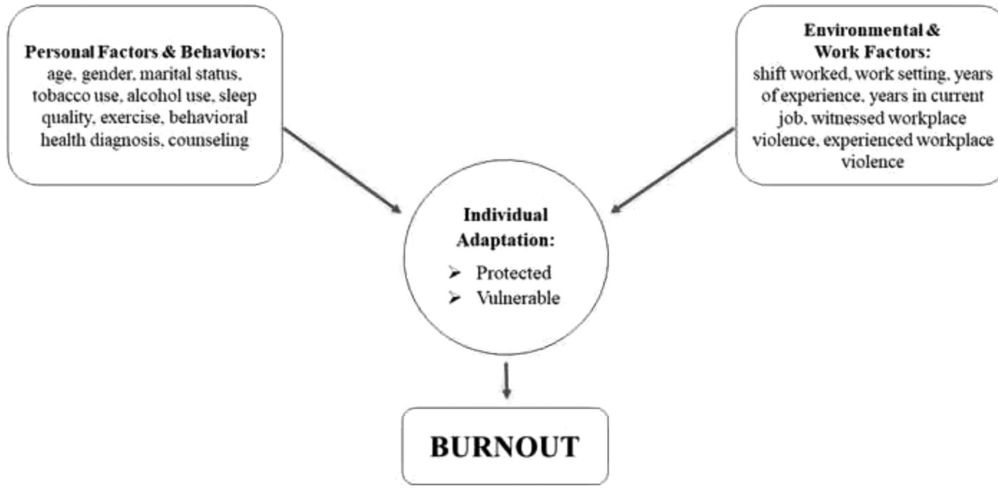

Figure 1. Conceptual framework of nursing burnout. From "Nursing Research Opportunities in Enteral Nutrition," by M. M. Heitkemper and J. F. Shaver, 1989, *Nursing Clinics of North America, 24,* pp. 415–426. Copyright © 1989 by Elsevier. Adapted with permission.

Measures

Personal and Behavioral Factors

Variables considered personal or behavioral factors included the following: gender (male/female), age range (18–25 years, 26–35 years, 36–50 years, and 51 years or older), marital status, frequency of exercise in the previous 7 days, alcohol use within the previous 7 days (yes/no), average quality of sleep (0–10 scale, with "'0" indicating worst possible), tobacco product use in the previous month (yes/no), experience (personal, family, or close friend) with behavioral health problem including mental health diagnosis, substance use disorder, drug use or addiction (yes/no), and receipt of professional treatment (i.e., medication, counseling, or combination) for past physical or psychological trauma (yes/no).

Environment and Workplace Factors

Variables considered environmental or workplace factors included the following: number of years practicing as a nurse; number of years practicing in current role/area; primary area of employment (i.e., emergency department [ED], intensive care unit [ICU], or step-down/general ward); population served (adult/pediatric); shift primarily worked (day/night); having witnessed any traumatic events at work including violence such as assault by a patient or family member, coworker bullying, or sexual assault (yes/no); and having experienced any traumatic events at work including violence such as assault by a patient or family member, coworker bullying, or sexual assault (yes/no).

Burnout

Burnout was the primary outcome variable in this secondary analysis and was assessed using the Burnout subscale of the Professional Quality of Life scale Version 5 [ProQOL]; Stamm, 2005, 2009). The Burnout subscale of the ProQOL has demonstrated acceptable reliability ($\alpha = .72$) as well as convergent and discriminant validity, indicating burnout is an independent construct within the ProQOL instrument as a whole. Higher scores on the Burnout subscale indicate an increased risk for burnout or more severe burnout present. Documented cut points include a score of 18 or below as a low risk for burnout, a score of 22–26 as an average risk for burnout, and a score of 27 or above indicates a high risk for burnout and may coincide with feelings of ineffectiveness, hopelessness, and difficulties dealing with work (Stamm, 2005, 2009).

Analysis

Descriptive statistics, including mean (standard deviation) and frequencies (percentage), were reported for the full sample. Multivariable hierarchical regression was performed to assess the personal/behavioral and environmental/workplace factor contributions to burnout score in nurses who provide care for patients hospitalized after trauma. In the model, personal/behavioral covariates were entered into the first block and environmental/workplace factors were entered into the second block. Decisions for block placement were based on conceptually derived definitions of personal and environmental factors (Heitkemper & Bond, 2003; Heitkemper & Shaver, 1989). Model fit was determined using adjusted R^2 (adj R^2) along with the F-statistic and p value. All analyses were conducted using IBM SPSS Statistics (Version 25).

RESULTS

Sample Characteristics

The sample was primarily female (91%) between the ages of 26 and 35 years (43%) (Table 1). Most participants indicated that they were married and living with a spouse or widowed (54%). One third of the participants indicated they had not exercised in the previous 7 days, and nearly half (46%) indicated they had used alcohol in the previous 7 days. Only 12% of participants endorsed using tobacco products in the previous 30 days. Sleep quality was rated slightly above average (5.7 ± 1.9 on a 0–10 scale), and half of the participants (50%) indicated at least 7 hr of sleep in a 24-hr period. One out of every five respondents (20%) indicated having been diagnosed with a behavioral health problem (i.e., mental health disorder, substance use disorder, or addiction) and had received treatment (counseling or medication) for their diagnosis.

The years of nursing experience among our sample was fairly distributed, with most (31%) participants indicating they had been in practice for 2–5 years, followed by 27% with 10 or more years of experience, 21% with 6–10 years of experience, 15% with 7 months to 1 year of experience, and the fewest (6%) reporting 6 months or less of nursing experience. When asked about longevity in their current unit, again, most (45%) reported they had 2–5 years of experience. Most of the respondents worked in the ICU (40%) or step-down/general ward (42%) with adult patients (60%) during the daytime shift (59%). More than half (54%) of the sample had endorsed witnessing workplace violence including bullying, sexual, or physical assault by a coworker, patient, or patient family member, and one third (33%) reported having been a victim of workplace violence by the same definition. In our sample, the mean burnout score of the ProQOL was 24.7 ± 6.0, which is within the average range of burnout.

Factors Associated With Burnout

Hierarchical multivariable regression was performed with a two-step model to examine the contributing relationship of personal and environmental factors to burnout scores in nurses caring for patients after trauma. Model diagnostics were performed, and all model assumptions

TABLE 1 Sample Characteristics

Characteristic	*n* (%)	*M* ± *SD*
Total	*N* = 274	
Female	250 (91)	
Age range		
18–25 years	60 (22)	
26–35 years	119 (43)	
36–50 years	68 (25)	
≥51 years	27 (10)	
Marital status		
Married and living with spouse or widowed	148 (54)	
Member of unmarried couple	38 (14)	
Divorced or separated	23 (8)	
Single and never married	65 (24)	
Exercise frequency (≥30 min) in the past week		
No days	89 (33)	
1 day	41 (15)	
2 days	47 (17)	
3 days	43 (16)	
4 days	27 (10)	
5 days	14 (5)	
6 days	7 (3)	
7 days	6 (2)	
Last time alcohol was used		
Within past 7 days	127 (46)	
Between 1 and 4 weeks	55 (20)	
Between 1 and 3 months	33 (12)	
>4 months	36 (13)	
Never	23 (8)	
Average sleep quality (0–10, where 0 is worst possible sleep)		5.7 ± 1.9
Average hours of sleep in a 24-hr period		
<7 hr	137 (50)	
≥7 hr	137 (50)	
Used tobacco products in the past 30 days	33 (12)	
Diagnosed with behavioral health problem	56 (20)	
Received treatment (counseling, medication) for trauma	55 (20)	
Number of years in practice		
<6 months	17 (6)	
7 months to 1 year	40 (15)	
2–5 years	85 (31)	
6–10 years	58 (21)	
>10 years	74 (27)	
Years in current role		
<6 months	29 (11)	
7 months to 1 year	45 (16)	
2–5 years	122 (45)	
6–10 years	30 (11)	
>10 years	48 (18)	
Area of employment		
Emergency department	49 (18)	
Intensive care unit	110 (40)	
General ward/step-down unit	115 (42)	
Population served		
Adult	163 (60)	
Pediatric	111 (40)	
Shift primarily worked		
Day	162 (59)	
Night	92 (34)	
Other (swing or mid-shifts)	20 (7)	
Witnessed workplace violence (i.e., patient or coworker bullying, sexual or physical assault)	149 (54)	
Experienced workplace violence (i.e., patient or coworker bullying, sexual or physical assault)	89 (33)	
ProQOL Burnout subscale score		24.7 ± 6.0

Note. ProQOL = Professional Quality of Life scale Version 5.

(continues)

were met. In the first step, personal factors were entered and included gender, age category, marital status, tobacco use, alcohol use, reported sleep quality, reported exercise frequency, history of behavioral health diagnoses, and history of behavioral health treatment. Introduction of personal factors produced a statistically significant model that explained 12% of the variance in burnout scores, $F(11, 262) = 4.3$, $p < .001$, adj $R^2 = .12$ (Table 2). Personal factors that were significantly associated with lower

burnout scores included being female, being married and living with a spouse or widowed, and reporting better average quality of sleep. Being diagnosed with a behavioral health problem was associated with an increased burnout score.

The second step of the model introduced environmental and workplace factors producing a final model that was significant and explained an additional 8% of the total variance in burnout score, $F(19, 254) = 4.5$, $p < .001$, adj $R^2 = .20$ (Table 2). Factors included in the second step were shift primarily worked, work setting (i.e., ED, ICU, step-down/floor), years of experience, years in current role, and witness and experience of workplace violence. The only significant environment workplace factor was working with adult patients, which was associated with an increased burnout score.

DISCUSSION

Through this secondary analysis, we were able to determine that registered nurses caring for patients receiving care for traumatic injury may be at an average risk for burnout (mean ProQOL burnout score = 24.7 ± 6.0). In addition, we identified factors that were associated with burnout. Specifically, our model showed that being female, being married and living with a spouse or widowed, and having better quality sleep were potentially protective factors associated with decreased burnout scores whereas having a diagnosis of a behavioral health problem and working with adults were correlated with increased burnout scores.

There is limited data surrounding burnout prevalence and severity in nurses who primarily care for patients with complaints of traumatic injury. Wijdenes et al. (2019) surveyed nurses at a large, urban trauma center and found that burnout scores were below the average (21.9 ± 6) threshold on the ProQOL; however, this investigation included a mixed sample of nurses at the designated trauma center—not solely trauma nurses. Similarly, in a 2014 examination of nurses who specifically provide trauma-related care, Hinderer et al. (2014) reported a below average ProQOL burnout score (20.6 ± 6.3). The differences in the observed mean burnout score between this investigation and ours could be due to a variety of variables. For example, the mean years of experience in Hinderer et al.'s investigation was 12, with nearly 9 of those years spent in trauma nursing, whereas our sample had a majority (31%) within the 2- to 5-year range of work experience and nearly half (45%) spending the same amount of time (2–5 years) in their current role providing care to patients after trauma. Other factors that might explain the difference in mean burnout score include staffing models and nurse to patient ratios; case-mix indices that reflect the diversity, clinical complexity, and resource needs; and the culture of nursing unique to each institution. A future multicenter evaluation of nurses providing care for trauma patients is warranted to better describe burnout in this unique population.

In our investigation, being female was protective against burnout among nurses caring for trauma patients. This finding is congruent with other investigators who found that being male was associated with increased burnout scores compared with their female counterparts (Cañadas-De la Fuente et al., 2015, 2018; Geuens, Van Bogaert, & Franck, 2017). For example, in a recent meta-analysis of 78 studies, Cañadas-De la Fuente et al. (2018) found that males demonstrated a higher degree of burnout. It was found that the relationship between gender and depersonalization was moderated by longevity in the workplace—Specifically, men who had been in their job less than 10 years experienced higher levels of burnout, which is in line with our sample participants who reported just over 3 years in their current roles (Cañadas-De la Fuente et al., 2018). In a separate study, Cañadas-De la Fuente et al. (2015) found that being male contributed significantly to the predictive model of burnout scores, specifically in the dimension of depersonalization. Of note, these investigations were not conducted with nurses providing care primarily for trauma patients; thus, the adoption of the notion that male nurses experience higher degrees of burnout while caring for trauma patients should be considered cautiously.

A potential reason for male nurses providing care to trauma patients reporting a higher degree of burnout could be, in part, related to gender bias in nursing and utilization of trait masculinity (Andela & Truchot, 2017; Arif & Khokhar, 2017; Evans, 2004). For example, male nurses may be given patient assignments based on their gender, stature, or perceived strength, which may include providing care to aggressive or violent patients, especially considering injured patients with drug use or withdrawal or traumatic brain injuries. Repetitive exposure to these types of interactions can affect job satisfaction and increase burnout through emotional dissonance from the patient and care being provided (Andela & Truchot, 2017).

Marital status was also associated with lower burnout scores. Specifically, we found that being married and living with a spouse or being widowed decreased burnout scores in nurses who care for trauma patients. Other investigators who examined burnout in nurses found that single or divorced nurses reported higher degrees of burnout (Cañadas-De la Fuente et al., 2015, 2018; Wang et al., 2019). Prior investigators suggested that married nurses are protected against burnout because the security and support provided from a spouse or partner away from the workplace allow for decompression in safe space and prevent the development of negative attitudes toward the workplace (Cañadas-De la Fuente et al., 2018). This type of decompression would certainly be important for

TABLE 2 Burnout Factors Hierarchical Multivariate Regression Analysis

	B	β	95% Confidence Interval	*p*
Personal factors				
Female (male referent)	−3.6	−.17	[−6.1, −1.1]	.005
Married, living with spouse/widowed (single referent)	−1.8	−.15	[−3.4, −0.2]	.025
Quality of sleep (1–10 scale)	−0.9	−.27	[−1.2, −0.5]	<.001
Experience with behavioral health diagnosis ("No" referent)	1.9	.13	[0.06, 3.7]	.04
Work environment factors				
Adult population (pediatric referent)	3.1	.25	[1.5, 4.6]	<.001

nurses caring for trauma patients who have complex care needs, problematic social or familial circumstances, and difficult diagnoses and prognoses. However, other investigators who studied nurses caring for trauma patients did not find that marital status contributed to the severity of burnout (Hinderer et al., 2014; Wijdenes et al., 2019), suggesting a need for further exploration of this relationship.

Congruent with other investigators, we found that nurses who reported better sleep had lower burnout scores (Chin, Guo, Hung, Yang, & Shiao, 2015; Giorgi, Mattei, Notarnicola, Petrucci, & Lancia, 2018; Okoli et al., 2020; Vidotti, Ribeiro, Galdino, & Martins, 2018). For example, Vidotti et al. (2018) found that nurses who reported they were dissatisfied with their sleep were 2 times more likely to be emotionally exhausted with their work regardless of the shift (i.e., day or night) worked (odds ratio [OR] = 2.2; 95% confidence interval [CI] [1.31, 3.72]; $p < .01$). In agreement with Vidotti et al., other investigators found that subjective sleep quality was associated with burnout (Giorgi et al., 2018; Wang et al., 2019). In addition, Chin et al. (2015) reported that nurses who slept 6 hr or less per working day were 3.4 times more likely to have work-related burnout than their colleagues who reported 7 hr or more of sleep (OR = 3.4; 95% CI [2.0, 6.0]; $p < .001$). These findings suggest that satisfaction with sleep, quality of sleep, and duration of sleep are important contributors to the degree in which sleep is related to burnout experienced by nurses; thus, promotion of sleep hygiene and interventions to enhance sleep should be explored and disseminated.

In addition, having a behavioral or mental health diagnosis, including substance use disorders or addiction, contributed to increased burnout scores in nurses providing care for trauma patients, a finding that has been supported in the literature by previous investigators. For example, Hyman et al. (2017) determined in anesthesia providers that poorer mental health status was associated with worsening burnout; however, substance use did not affect burnout score. Similarly, Card et al. (2019) examined associated factors with burnout in perianesthesia nurses and found that poorer mental health contributed significantly to worsening burnout as did alcohol use. There is sparse data surrounding mental health status and burnout in nurses who provide care for traumatically injured patients; thus, further exploration of this relationship is warranted (Hinderer et al., 2014; Wijdenes et al., 2019).

Finally, our analysis revealed that nurses caring for adult patients after trauma had more severe burnout than nurses who cared for pediatric trauma patients. There is a body of literature that reports burnout among pediatric nurses and attributes the prevalence to feelings of guilt and grief among nurses caring for pediatric patients with major illnesses or injury, especially when patients experience extreme suffering or die at a young age (Adwan, 2014; Davis, Lind, & Sorensen, 2013; Pradas-Hernandez et al., 2018). Conversely, other investigators have reported no difference in burnout when comparing nurses who work with primarily adults versus pediatric patients (Colville et al., 2017; Rushton, Batcheller, Schroeder, & Donohue, 2015). The contribution of burnout in nurses caring for adult trauma patients might be unique to our sample. Hypotheses for why nurses caring for injured adults could, in part, be due to the prevalence of adult trauma patients with violent behavior or nature of the injury, such as a motor vehicle collision resulting from driving under the influence; however, further investigation into this relationship is warranted.

Limitations

There are limitations to this study. First, this was a secondary analysis of a parent study done at a single center. Because the parent study was exploratory in nature, a priori power analyses were not conducted (Okoli et al., 2020). Furthermore, our data were collected via voluntary electronic survey at a single center; thus, the results may not be generalizable to all nurses who care for trauma patients.

Our response rate for all nurses employed at the study institution was 12%; thus, there was a generous number of potential nurse participants not included in our analysis that we were unable to account for or describe. The limited response rate may hold biases related to the responses captured and the profile of burnout syndrome composed.

In addition, there may have been variables in our survey that were not captured that contributed to the overall model of burnout severity. For example, previous investigators have extensively reported the impact of resiliency on burnout, but we did not include items to capture nurses self-report of resiliency (Arrogante & Aparicio-Zaldivar, 2017; Guo et al., 2018; Magtibay, Chesak, Coughlin, & Sood, 2017; Rushton et al., 2015). Despite these limitations, the results presented in this analysis are important contributions to the sparse literature surrounding burnout in nurses who provide care for traumatically injured patients, and they may provide a basis for future investigations that will further develop the risk profile of burnout and test interventions to mitigate the development or progression of burnout in trauma nurses.

CONCLUSION

Burnout is a prevalent syndrome experienced in the health care setting in which caregivers develop feelings of detachment, ineffectiveness, and emotional exhaustion related to their jobs. Particularly, nurses who provide care for trauma patients may be particularly susceptible to develop burnout due to the inherent nature of the population they are caring for. In this investigation, we found that being female, being married or widowed, and reporting better quality sleep were protective factors against burnout, and, conversely, that having a mental health diagnosis and working with adult populations were associated with increased burnout scores in nurses who care for trauma patients.

These findings may serve as a basis for further investigation to confirm the risk factor profile of nurses who provide care for trauma patients and allow for investigators to develop and test tailored interventions to mitigate and potentially prevent burnout in nurses caring for this unique patient population.

KEY POINTS

- Trauma nurses may experience higher than average burnout.
- Burnout protective factors include being female, married, and having a higher quality of sleep.
- Burnout risk factors include having a mental health diagnosis and working with adults.
- Future research should target interventions to mitigate burnout in trauma nurses.

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