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Prevalence and Predictors of Secondary Traumatic Stress in a National Sample of Emergency Nurses: A Cross-Sectional Study

Christian Paige Owen

PREVALENCE AND PREDICTORS OF SECONDARY TRAUMATIC STRESS IN A NATIONAL SAMPLE OF EMERGENCY NURSES: A CROSS-SECTIONAL STUDY

A DISSERTATION

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN NURSING

THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT HOUSTON

CIZIK SCHOOL OF NURSING

BY

CHRISTIAN PAIGE OWEN, PhD(c), MSN, RN, CEN

MAY 2024

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The University of Texas
Health Science Center at Houston

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School of Nursing

Approval Form D-3

February 15, 2024
Date

To the Dean of the Cizik School of Nursing:

I am submitting a dissertation written by Christian Paige Owen and entitled " Prevalence and Predictors of Secondary Traumatic Stress in a National Sample of Emergency Nurses: A Cross-Sectional Study." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Nursing.

Maja Djukic PhD, Committee Chair

We have read this dissertation
and recommend its acceptance: Accepted

Accepted

Dean of the Cizik School of Nursing

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Prevalence and Predictors of Secondary Traumatic Stress in a National Sample of Emergency Nurses: A Cross-Sectional Study

Christian Paige Owen, PhD(c), MSN, RN, CEN

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Abstract

Background: Emergency nurses experience traumatic situations as part of their professional role, leaving them vulnerable to secondary traumatic stress (STS). The distressing behaviors and symptoms of STS negatively impacts their well-being and ability to provide high quality care. Studies report that emergency nurses experience high levels of STS but less is known about how STS is influenced by their coping strategies and work-related factors. Further evidence is needed to better understand predictors of STS in order to support strategic efforts to improve the well-being and retention of nurses working in trauma-prone environments.

Aims: The specific aims of this study sought to: (1) describe the levels of STS and use of coping strategies among emergency nurses, (2) examine associations between STS and demographics, coping strategies, and work-related factors, and (3) identify key predictors of STS in emergency nurses.

Methods: This study used a descriptive, cross-sectional design using an online questionnaire to measure STS, demographics, coping strategies, and work-related factors. Data was collected from a convenience sample of emergency nurses (n=216) between June-August 2023. Descriptive statistics and correlation analyses were used to describe study variables and assess relationships between STS scores, as a continuous dependent variable, and independent study variables related to demographics, coping strategies, and

work factors. Significant independent variables were examined using standard multiple regression to determine predictors of STS.

Results: Of the emergency nurses in this sample, 79.6% scored at or above clinical cutoff score of 39 for STS, and 60.6% fell into the category of "severe STS". Problem-focused and emotion-focused strategies were the most commonly used coping strategies. However, STS scores were significantly higher for nurses who more frequently used avoidant strategies. The multiple regression model was significant and yielded key modifiable predictors of STS, including specialty and facility retention, shift schedule, substance use, other avoidant coping strategies, and perception of the work environment's impact on emergency nurses' practice.

Conclusion: Overall, emergency nurses in this sample reported severe levels of STS and used a variety of strategies to cope. Demographics of this sample, explored in the descriptive analysis, were similar to recent emergency nursing workforce studies. Additional studies with larger samples are needed to expand these findings but key predictors in the model significantly predicted STS scores and can guide the strategic design and testing of interventions aimed to mitigate and prevent STS in emergency nurses.

Key words: secondary traumatic stress, emergency nurses, nurse coping, organizational stress, work life quality

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Summary of Study

Emergency nurses are at high risk of developing secondary traumatic stress (STS) due to their frequent exposure and engagement with traumatic patient experiences. However, limited studies exist on the prevalence and predictors of STS, specifically as they relate to use of coping strategies and work-related factors. Therefore, the primary aims of this study sought to describe the levels of STS and use of coping strategies among emergency nurses, examine associations between STS and demographics, coping strategies, and work-related factors, and identify key predictors of STS in emergency nurses. A descriptive, cross-sectional approach was utilized to achieve the aims, using an online quantitative questionnaire.

This dissertation contains the research proposal, approved by the Dissertation Committee in October 2022. The manuscript, "Prevalence and Predictors of Secondary Traumatic Stress in Emergency Nurses: A Cross-Sectional Study," contains the findings and implications of the proposed study. The research protocol for this study was approved by the UTHealth Committee for the Protection of Human Subjects on April 27, 2023.

Recruitment and data collection took place from June to August 2023, yielding 216 eligible survey responses for inclusion in the study. Data was collected and securely stored in the online REDCap® repository until the recruitment period was closed. There were no deviations to the study protocol, except that a lower sample size was obtained than originally estimated in the power analysis. Statistical analysis of the quantitative data was completed using SPSS. Major findings indicated that emergency nurses in the sample experienced high levels of STS and utilized a variety of strategies to cope.

Additionally, STS scores were significantly higher for nurses who used avoidant and certain emotion-focused coping strategies. The multiple regression model was significant and yielded several predictors of STS. Key modifiable predictors of STS included use of employer-based assistance, substance use, self-distraction, self-blame, and perception of the work environment's impact on emergency nurses' practice. Tables 1-10 include demographic characteristics, correlational analyses, and multiple regression findings of the study sample. Appendices include eligibility screening questions, demographic questionnaire, survey instruments, consent form, IRB approval, and recruitment flyer.

Two additional manuscripts were written prior to the above study, to examine existing literature as related to the topic of study. The first unpublished review entitled "A Systematic Review of Stress and Coping in Hospital Nurses during the COVID-19 pandemic," was completed in December 2021. The second, entitled "Factors of Maladaptive Coping in Emergency Healthcare Professionals: A Systematic Review," was completed during candidacy and accepted for publication in the Journal of Nursing Scholarship in March 2023. Both manuscripts highlight the sparce amount of literature available surrounding STS and coping among emergency nurses.

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Study Proposal: Prevalence and Predictors of Secondary Traumatic Stress in a National Sample of Emergency Nurses: A Cross-Sectional Study

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Prevalence and Predictors of Secondary Traumatic Stress in a National Sample of Emergency Nurses: A Cross-Sectional Study

Nurses working in the emergency department (ED) experience complex challenges while taking care of patients affected by illness, trauma, and violence (Hunsaker et al., 2015). Consequently, they are vulnerable to occupational hazards that impact their well-being and ability to provide quality nursing care (Johnston et al., 2016; Bock, et al., 2020). Secondary traumatic stress (STS) is one such hazard, resulting from direct care of traumatized patients, and is frequently experienced by emergency nurses (EN) with rates as high as 85% to 94% (Dominguez-Gomez & Rutledge, 2009; Duffy et al., 2015; Ratrout & Hamdan-Mansour, 2020). Nurses experiencing STS have reported significantly higher levels of depression, anxiety, and work strain and lower levels of work ability (Bock et al., 2020), all of which negatively affect clinician well-being – a current national priority (American Nurses Association, 2020; National Academy of Medicine, 2022; Dr. Lorna Breen Health Care Provider Protection Act, 2022).

To better meet demands to improve clinician well-being, a more comprehensive approach to predict and manage STS is imperative. Current research has examined how demographic and work-related factors influence STS, but little is known about how EN coping strategies impact STS. Literature exploring how EN cope with work stressors has yielded a variety of findings that reflect both adaptive and maladaptive strategies (Ratung et al, 2021). How nurses cope with work stressors can help predict negative mental health and work-related outcomes, yet it is unclear why some nurses cope effectively in the workplace, while others do not (Wazquar et al., 2017). By identifying coping strategies

and work factors associated with STS in EN, efforts can be made to recognize and intervene earlier, prior to sustained negative mental health impact. Findings of this study will not only bridge this known research gap, but empirically support strategic efforts to improve well-being for nurses working in high-stress environments.

Specific Aims

The long-term goal of this program of research is to develop effective and empirically based work-based interventions that reduce STS, promote effective coping, and improve the work environment for EN. The ***overall objective*** in this study, which is essential to meeting the long-term goal, is to measure STS and holistically examine associations of demographics, work factors, and coping use with STS in a national sample of EN working in hospitals across the United States.

The following specific aims will support this objective:

Aim 1: Describe the level of STS and use of coping strategies among a national sample of EN.

Aim 2: Examine relationships between STS and demographics, work factors, and coping strategy use in a national sample of EN.

Aim 3: Identify predictors of STS by examining multivariate correlations with work factors and coping strategy use, controlling for demographic variables, in a national sample of EN.

At the completion of the proposed research, the expected outcomes of these aims will provide empirical evidence to create targeted work-based interventions that reduce

STS and support healthy coping among EN. Implications for research and healthcare policy include identifying work factors that impact EN well-being. Improving hospital systems to support clinician well-being is critically necessary for this high-risk nursing population as well as the patients they serve.

Background & Significance

It is widely known that the United States (US) is experiencing a nationwide shortage of nurses. Emergency nursing is not immune to these effects and is plagued by high levels of turnover, attributed to challenges related to the ED work environment like exposure to traumatic incidents and workplace violence (McDermid et al., 2020). Furthermore, emergency nursing demands a high-level skillset requiring extensive training and orientation, thus limiting the ability to rapidly recruit and train EN during disaster or public health emergencies (Castner et al., 2021). The Covid-19 pandemic highlighted major deficits in the emergency nursing workforce as hospital EDs responded to increased patient volumes and employee absenteeism due to viral transmission and illness (Binder et al, 2021; Castner et al., 2021). Consequently, EN faced increased demands and workloads, with fewer staff and resources, further escalating existing levels of anxiety, burnout, and traumatic stress (Rodriguez et al., 2021). Occupational stressors from the pandemic have contributed to global increases in psychological distress among healthcare providers (Muller et al., 2020), but has predisposed nurses to higher rates of depression, anxiety, substance use, and suicide (Kelsey et al., 2021; Ariapooran, Ahadi & Khezeli, 2022).

EN are in a unique position as the first hospital personnel to come into contact with trauma victims. Their profession requires detailed and intimate knowledge of trauma, while being indirectly exposed to it themselves. The growing concern for indirect exposure to trauma was justified by the most recent edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), where the etiology of traumatic stress disorder was extended to include indirect exposure to traumatic events (APA, 2013). Charles Figley (1999) defined STS as the consequent behaviors and emotions reflective of the stress that results from helping individuals experiencing trauma. Daily exposure to human suffering, patient deaths, and the emotional and often difficult conversations required between patients and family members contribute to the risk of STS in EN (Oginska-Bulik et al., 2021). Symptoms of STS mimic the same symptoms found in posttraumatic stress disorder (PTSD), including intrusion, avoidance, negative cognitions and mood, and alterations in arousal or reactivity (APA, 2013). STS is considered a professional risk factor, specifically for EN, confirmed by multiple studies (Hooper et al., 2010; Duffy, Avalos & Dowling, 2015; Morison & Joy, 2016; Ratrout & Hamdan-Mansour, 2020).

Effective coping strategies to deal with trauma and occupational stressors is a necessary skill for EN. However, stress is a dynamic and subjective process, making it difficult to predict individual coping behavior (Abbas et al., 2013). Coping is defined as the cognitive and behavioral efforts exerted by an individual to manage a perceived threat that exceeds one's own resources (Carver, 2011). Overcoming the stressor involves a complex process, influenced by an individual's perceived ability or available resources to either solve a problem or manage one's emotions (Lazarus & Folkman, 1987). Available

literature reports that EN use a variety of both adaptive and maladaptive strategies to cope with work stressors (Rantung et al., 2021). Furthermore, studies have attempted to explain the relationships between nurses' coping strategies and sociodemographic factors (Ribeiro et al., 2015; Isa et al., 2019), work environment (Xu et al., 2019), retention (Wu et al., 2019), moral distress (Zavotsky & Chan, 2016), burnout (Howlett et al., 2015), and occupational stress (Lala et al., 2016; Lu et al., 2015; Ibrahim et al., 2020). To date, no studies have been identified that examine the relationship between coping strategy use and STS in EN in the U.S.

It is clear that the wellbeing and mental health of ED nurses have been seriously impacted by the Covid-19 outbreak, emphasizing the need for effective coping (Hesselink et al., 2021). Given the extensive challenges faced by those on the frontlines care, understanding and addressing the issues that interfere with the ability to recruit and retain EN is significantly important and will remain so in the future. Exploring how demographics, work factors, and coping strategy use relate to STS will increase the scarcity of knowledge regarding EN in the United States. By achieving the aims of this study, findings will drive empirically supported work-based interventions that support the EN workforce.

Secondary Traumatic Stress in ED Nurses

Studies examining STS in EN have produced inconsistent findings in respect to the frequency and prevalence of STS. It is appropriate to assume that the COVID-19 pandemic has impacted and potentially increased rates and severity of STS among EN. Furthermore, few studies have been conducted in the United States using a valid and

reliable scale to directly measure STS. In California, 33% of EN (n=67) were found to have STS using Bride's (2014) STS Scale (Dominguez-Gomez & Rutledge, 2009). Additional studies using the STS Scale (Bride et al, 2014) found that 39% of EN (n=80) in Scotland suffered from STS (Morrison & Joy, 2016) and an Irish study found 64% of EN (n=117) reported STS (Duffy, Avalos & Dowling, 2015). The highest levels of STS was found in a Jordanian study where 75% (n=202) of EN reported a moderate to severe level of STS (Ratrout & Hamdan-Mansour, 2019).

Limitations exist in each of the related studies due to cross-sectional design (Duffy, Avalos & Dowling, 2015), missing data or low response rates (Morrison & Joy, 2016; Ratrout & Hamdan-Mansour, 2019), and potential for bias due to small sample size and sampling method (Dominguez-Gomez & Rutledge, 2009). Current studies are limited due to inability to generalize findings, particularly when determining frequency of STS among EN in the United States. This study will address limitations in determining the current levels of STS in EN working in the United States through the first aim. Careful study design, estimation of sample size, and use of the STS Scale, a valid and reliable tool to directly measure STS, will optimize adequacy and generalizability of findings. The goal is to contribute to extant literature and build current knowledge of the state of STS among EN working in the U.S.

Demographics Characteristics

Existing literature has identified a number of demographic characteristics that potentially associate with STS in EN. Personal factors including age, gender, marital status, caring for dependents, education level, years of experience, shift work, personal

trauma history, and intent to leave have all been reported in the literature but with conflicting findings. Dominguez-Gomez & Rutledge (2009) found age to be positively associated with STS in EN (r=0.78), while Adriaenssens and team (2012) and Duffy, Avalos, and Dowling (2015) found no significant association. Gender association with STS has yielded similar contradictions with need for cautious interpretation due a disproportionate number of females compared to males in the EN profession (Ratrout & Hamdan-Mansour, 2017).

Marital status has also been identified as a factor of STS with single nurses having higher levels of STS than those who are married (Ariapooran & Raziani, 2019; Ariapooran, Ahadi & Khezeli, 2022). Social support is known to reduce STS in nurses (Ariapooran, 2013; Hamama et al., 2019), leading to plausibility that marriage may increase social support through the spouse. While several studies have included dependent children as a demographic variable, none have found significant associations with STS (Zakeri et al., 2020; Lykins et al., 2021; Lopez, Bindler & Lee, 2022).

Educational level in relation to STS has not been thoroughly explored in nurses, but a recent study by Ariapooran, Ahadi & Khezeli (2022) found that Iranian EN holding a bachelor's degree were significantly more likely to experience STS than those with a master's degree. The higher educational level is attributed to higher organizational positions, social status, and higher income which may mitigate STS (Ariapooran, Ahadi & Khezeli, 2022). Association of experience levels to STS have also varied in the literature with two studies finding no association (Dominguez-Gomez & Rutledge, 2009; Mairean et al., 2014) and Morrison and Joy (2016) finding a negative association between STS and years of experience. Aspects of shift work has also been correlated to

STS in some studies. Hinderer et al. (2014) reported that number of hours worked per shift was associated with greater STS. Additionally, Lopez et al. (2022) found that midshift nurses had significantly higher mean scores of STS when compared to day shift.

Personal history of trauma has been associated with higher levels of STS in EN (Hensel et al., 2015). Furthermore, repeated trauma exposure has been frequently associated with STS (Dominguez-Gomez & Rutledge, 2009; Mealer & Jones, 2013; Mairean et al., 2014; Wolf et al., 2020) but cautious interpretation is needed given the assumption that years of experience may result in cumulative trauma exposure. Still, concerns about the cumulative impact of trauma remain, particularly in respect to work absenteeism and commitment. Ratrout & Hamdan-Mansour (2019) found positive associations between STS and absenteeism and sick leaves, suggesting that nurses with higher levels of STS have more work-related absenteeism and sick days. Studies by Mealer and Jones (2013) and Duffy et al. (2015) also found STS associated with higher nurse intentions to change their work area or even their career.

Despite several associations noted across studies, the extent to which demographic factors influence levels of STS is still poorly understood, warranting further inquiry. This study's second aim will identify demographic and facility characteristics as factors associated with STS among a national sample of EN.

Work Factors

A number of work-related factors have been associated with STS in EN. Studies have consistently reported higher levels of STS in EN compared to other nursing specialties (Beck & Gable, 2012; Mangoulia et al., 2015; Morrison & Joy, 2016; Lykins

et al., 2021). In addition to the stress of providing care to trauma patients, EN take on active roles in resuscitating and providing care for patients who die, precipitating the development of STS (Morrison & Joy, 2016; Missouridou, 2017). STS has also been associated with reduced work flow, described as being ill-informed or equipped to provide care (Bock et al., 2020) and reduced work productivity, described as the ability to provide safe, compassionate care to patients and families (Gillespie, Gates & Succop, 2010; Jobe, Gillespie & Schwytzer, 2021). These findings highlight concerns that STS may jeopardize EN ability to provide safe patient care.

Social support has been discussed across multiple studies as both a personal and work-related factor and is associated with lower levels of STS (Adriaenssens et al., 2011; Adriaenssens et al., 2012; Ariapooran, 2013; Morrison & Joy, 2016; Hamama et al., 2019), particularly in respect to supervisor social support (Wijn & van der Doef, 2020) and organizational support (Duffy, Avalos & Dowling, 2015; Von Rueden et al., 2010; Hunsaker et al., 2015). Additional work factors associated with STS include heavy workload (Yoder, 2010; Adriaenssens et al., 2012), critical incident and traumatic event exposure (de Boer et al., 2011; Morrison & Joy, 2016). Most recent studies have associated STS with experiences involving interprofessional conflict, discrimination, and workplace violence (Alomari et al., 2021; Higgins et al., 2020; Lykins et al., 2021). Finally, work satisfaction has been reported as one of the strongest predictors of STS, with high satisfaction playing a protective role in alleviating negative STS symptoms (Oginska-Bulik, 2021). Despite the number of associations with STS found across studies, additional research is needed to validate the findings among EN. Correlations between work factors and STS will be explored in the second aim of this study.

Coping

Coping has been discussed as a predictor of STS among EN in several studies (Von Rueden et al., 2010; Buurman et al., 2011; Adriaenssens et al., 2012; Duffy, Avalos & Dowling, 2015; Ratrout & Hamdan-Mansour, 2020). However, recognition of coping strategies that predispose EN to STS require further investigation. Effective coping has been established in trauma workers as a way to develop resistance to STS and build factors that promote well-being through self-care, detachment, self-satisfaction, and social support (Ludick & Figley, 2017). However, the extent to which coping strategies are used among EN to deal with traumatic stress remains largely unknown.

A variety of methods to measure coping has been observed in the literature ranging from author developed surveys, focus group questions, and validated instruments (Ratrout & Hamdan-Mansour et al., 2020; Rantung et al., 2021). Both positive and negative coping methods used by EN have been reported in the literature, suggesting coping that coping strategies may serve as a predictor for STS (Adriaenssens et al. 2012). Using focus groups, EN identified poor coping mechanisms in response to secondary trauma including suicidality, alcohol and drug use, sleep, sexual behaviors, intent to leave, and social venting to numb the effects of STS (Wolf, et al., 2020). Lavoie et al. (2011) concluded that peer support, psych-education, and ED simulations were perceived as the most essential and satisfying interventions following traumatic events. The perceived importance of the timing of these interventions indicates a preference for "within hours" after the event to help support early recognition of PTSD symptoms (Lavoie et al., 2011). Still, despite awareness of various coping strategies used, conflicting findings exist on the relationship between coping strategies and the

development of STS. Hinderer and team (2014) found that increased use of coping strategies had a protective effect against development of STS. However, positive associations between coping and STS were found by Ratrout and Hamdan-Mansour (2020) suggesting that EN with greater coping capacity develop increased STS.

It is clear from current research that clarification on the role of coping and its relationship to STS requires further examination. This study's third aim will explore coping strategies used by EN and their relationship to STS in the context of demographic and work factors in the ED.

Theoretical framework

The theoretical framework that will guide this study is the Transactional Model of stress and coping (Lazarus & Folkman, 1987). The framework ascribes that stress response is a cognitive process centered around the person-environment relationship and heavily influenced by the individual's primary and secondary appraisal of the stressor. When confronted with a stressor in the environment, the individual determines the potential threat (primary appraisal) as well as their available resources to overcome the stress (secondary appraisal). These appraisals are believed to influence an individual's coping strategies, resulting in stress response outcomes that either positively or negatively impact psychological well-being (Lazarus & Folkman, 1987). Concepts derived from the Transactional Model and explored in this study include work factors perceived as potential stressors, personal and facility characteristics, coping strategies, and the outcome of STS (*Figure 1*).

Work factors will be examined as stressors in relation to Lazarus and Folkman's (1987) definition of stress, a complex transaction between the individual and the environment. In this study, the transaction will be explored through EN perceptions of working in a hospital ED while providing direct patient care. Primary stress appraisal can lead EN to potentially perceive occupational stressors as a threat, followed by secondary appraisal where they determine their ability to cope, using available internal (knowledge, skills, experience) or external (supplies, staff, support) resources. Coping is defined by the strategies used by EN in response to occupational stressors. Lazarus and Folkman (1987) indicate that coping strategies can be classified as either problem-focused or emotion-focused coping. However, clarity in how EN use coping strategies is needed to determine their effectiveness in preventing STS. Finally, STS will be examined as a negative psychological outcome experienced by the EN, likely influenced by their stress appraisal and coping strategies.

When applied to EN caring for patients in a stress-prone environment, the Transactional Model (Lazarus & Folkman, 1987) can help hypothesize relationships between work factors (stressors), coping strategy use, and STS. Understanding these relationships can help facilitate interventions that foster improved work outcomes and effective coping strategies among EN, resulting in direct and long-range outcomes related to nurses' psychological outcomes and employee retention.

Innovation

This study is innovative because it represents a departure from the attention of previous studies and targets a distinct focus on the relationships among work factors,

coping strategy use, and levels of STS among EN in the United States. EN experience significantly high levels of STS, derived from a number of factors and influenced by chronic trauma exposure as part of their daily work (Ratrout & Hamdan-Mansour, 2017). Despite the current contributions made by several studies in regard to the prevalence and understanding of STS, significant limitations exist due to inconsistencies in measuring STS, limited studies conducted within the U.S., and inability to generalize findings across the EN population. Additionally, overlap of studies evaluating compassion fatigue, burnout, and moral distress among EN fail to provide a comprehensive understanding of the impact of STS on the EN workforce (Hunsaker et al., 2014; Li, Cheng & Zhu, 2018; Munnangi et al., 2018). Finally, there is a lack of research evaluating work-related influences on STS and ENs' ability to cope with organizational stressors (Ratrout & Hamdan-Mansour, 2017).

Guided by the theoretical framework of Lazarus and Folkman's Transactional Model of stress and coping (1986), EN coping strategies can be evaluated as predictors of psychological outcomes, namely STS, within the ED environment to help promote understanding of EN well-being and functional employee status (Folkman et al., 1986). This novel and distinct approach toward examining associations with STS is expected to overcome current limitations and serve as a post-Covid baseline on which to build future studies. The findings expect to provide empirical support to recognize and mitigate STS among EN, thus opening new horizons for tailored and organizationally relevant approaches that improve nurse and patient care outcomes, ultimately supporting and retaining a healthy EN workforce.

Research Design and Setting

The study will follow a descriptive, cross-sectional design to explore relationships between demographics, work factors, coping strategy use, and secondary traumatic stress among EN. This design is best suited for studies' whose aim is to observe, describe, and document phenomenon, particularly when literature surrounding the chosen topic is limited (Polit & Beck, 2017). An electronic survey, administered through REDCap, will be used to collect data for the study. REDCap (Research Electronic Data Capture) is a secure, web-based software platform designed to support data capture and management for research studies (Harris et al., 2009). Participants will be able to complete the online survey in any location and on any computer or mobile device with access to the internet.

Population and Sample

The target population for the proposed study is registered nurses actively working in hospital-based EDs in the United States. According to the most recent workforce survey conducted by Taylor et al. (2019), there are approximately 124,000 direct care providers that identify as EN in the United States. Compared to the overall nursing workforce, nurses in the emergency/trauma/transport workforce are more likely to be male, white, and younger than the general nursing population (Taylor et al., 2019). Most recent reports indicate the largest proportions of emergency nursing workforce are female (78.8%), White (87.4%), and 30-39 years old (33.5%) with a mean age between 40-42 (Taylor et al., 2019).

To be eligible to participate in the study, the registered nurse must: (a) possess a valid, active license to practice, (b) be employed full-time in their position, (c) currently

work in a hospital-based ED, and (d) have at least 6 months of nursing experience within the ED. Exclusion criteria will pertain to registered nurses (a) employed as advanced practice nurses, nurse managers, or nurse educators, (b) working in the ED less than 30 hours per week, (c) with less than 6 months of nursing experience in the ED, or (d) working outside a hospital-based ED (free-standing ED, urgent care setting). This study excludes EN with less than 6 months of experience to avoid potential for skewed data due to limited bedside experience and/or unclear expectations and added stress of the newly acquired role. Additionally, exclusion of ED nurses working in a free-standing ED or urgent care setting was determined as work factors may vary from those within the hospital.

A convenience sampling approach will be implemented to recruit eligible participants for the study. A digital flyer that includes the study purpose, survey link, and P.I. contact information will be utilized during recruitment efforts. A study-specific social media account that includes the digital flyer and pertinent details will be developed and promoted through social media platforms (Twitter, Facebook, LinkedIn). Each social media platform will be used to actively recruit participants by sharing the study account and/or digital flyer to accounts and groups particularly relevant to EN. Additionally, snowball recruitment will be used as EN will be encouraged to pass along the study account and/or digital flyer to other potentially eligible participants.

Estimation of the minimum sample size was calculated based on the correlational design and number of independent variables (IV) explored in this study. For Pearson Correlational analysis, Guilford (1954, p. 533) indicates an absolute minimum of 200 samples. However, for multivariate analysis, Roscoe (1975) recommends a sample size

10 times greater than the number of variables. In this study, the total number of independent variables is 38, positing a need for a sample size of 380. Given the large difference between these two recommendations, Green's (1991) procedures were used to determine sample size needed for multiple correlation, given the number of IV. The following formula: $N \geq 50 + 8m$, where *m* indicates the number of IV (Green, 1991), yielded a minimum sample size of 354. To account for incomplete data, the sample size proposed for this study is 370. The required sample size also depends on power, significance, and effect sizes so a power analysis using G*Power was conducted. Based on a sample size of n=370, a multiple linear regression will have 80% power (alpha of 0.05) when the effect size for a variable in the model is R-squared = 0.02 (f2, small effect).

Variables and Measurement

Demographics characteristics

A demographic questionnaire of items known to be associated with STS was developed by the author to obtain demographic characteristics from each participant. A total of 20 items will measure the following: age, sex, ethnic origin, marital status, dependents, level of education, specialty certification, years of experience as a nurse, years of experience in the ED setting, aspects related to shift work and facility, history of personal trauma, previous assistance for work-related stress, and current consideration to change specialty or organization. The demographic questionnaire can be found in Appendix B.

Secondary Traumatic Stress Scale

The Secondary Traumatic Stress Scale (STSS), developed by Bride et al. (2004) is the only known scale that exclusively measures STS. The self-report instrument consists of 17 items that evaluate the frequency of symptoms among three subscales: intrusion (5 items), avoidance (7 items), and arousal (5 items). The scale was developed to measure items that correspond with criteria B (re-experiencing), C (avoidance), and D (hyperarousal) in the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) necessary for a diagnosis of post-traumatic stress disorder (PTSD). Using a Likert scale ranging from 1 (never) to 5 (very often), participants are asked to rank how often they've experienced each item during the past 7 days. A score of less than 28 indicates little or no STS; a score of 28-37 indicates mild STS; 38-43 indicates moderate STS; 44-48 indicates high STS; and 49 or greater indicates severe STS (Bride, 2007). Additionally, Bride (2007) has established a recommended cutoff score of 38 on the STSS, demonstrating high sensitivity and specificity, where those scoring 38 or higher are considered to have STS. Bride et al. (2004) intended for the scale to measure current, rather than cumulative, exposure to traumatized patients.

The psychometric properties of the STSS have been demonstrated in several studies, including social workers, mental health workers, and nurses (Bride, 2007; Ting et al., 2005; Dominguez-Gomez & Rutledge, 2009; Duffy et al., 2014). Internal consistency for the total scale has been indicated as excellent in nurses with Cronbach α coefficients

ranging between 0.91 and 0.94 (Dominguez-Gomez & Rutledge, 2009; Beck & Gable, 2012). The STSS can be found in Appendix C.

Brief COPE Scale

Coping will be measured by the Brief COPE scale, an abbreviated version of the original Coping Orientation to Problems Experienced (COPE) inventory. The original 60-item COPE was problematic due to redundancy and length leading to the development of the shorter item set based on factor analysis and clarity from previous studies (Carver, 1997). The Brief COPE is a 28-item self-report scale described as a multidimensional coping inventory to assess various ways individuals respond to stress (Carver, 1997). It contains 14 subscales composed of 2 items each, representing various coping strategies including: Active coping, use of informational support, positive reframing, Planning, Emotional support, venting, humor, acceptance, religious coping, self-blame, self-distraction, denial, substance use, and behavioral disengagement. Using a 4-pt Likert scale, from 1 (I haven't been doing this at all) to 4 (I've been doing this a lot), respondents are asked to rate the frequency of use for each coping strategy. There is no overall composite score, only the total score for each subscale. Higher scores represents greater frequency of use of the specific coping strategy represented by the scale. Carver (1997) showed acceptable reliability estimates ranging from a= 0.50 (venting) to 0.90 (substance abuse).

Carver (1997) recommends that subscales not be combined into aggregate categories, like emotion-focus versus problem-focused, nor does he advocate an overall score for combined subscales. Instead, analysis of all 14 subscales is recommended using

the researchers own data to determine association with the sample (Carver, 1997). Several studies have narrowed coping subscales into various categories of coping styles. Meyer (2001) categorized subscales into "adaptive" versus "maladaptive" coping strategies while Cooper et al. (2006) used a 3-factor approach with "emotion-focused," "problem-focused," and "dysfunctional" coping strategies. The Brief COPE has been used extensively in healthcare professionals to examine traumatic event stressors and corresponding coping behaviors with internal reliability estimates between 0.60 and 0.86 (Beck et al., 2008; Shimizutani et al., 2008; Jones et al., 2011; Wallbank & Robertson, 2013). As recommended by Carver, data from all 14 subscales in this proposed study sample will be examined to determine associations with STS. The Brief COPE scale is found in Appendix D.

Brooks' Quality of Nursing Work Life Survey

Work factors will be measured using the Brooks' Quality of Nursing Work Life Survey (BQNWLS), which was developed by Beth Brooks (2001) to assess nurses' quality of work life. The survey consists of 42 items and 4 subscales (Worklife-Homelife, Work Design, Work Context, and Work World). Using a 6-point Likert scale, from 1 (strongly disagree) to 6 (strongly agree), respondents are asked to rate their level of agreement for each item. A total score from all 42 items is summed, indicating the respondent's perception of their nursing work life. Higher scores indicate a more positive perception of nursing work life, while lower scores indicate poor perception of nursing work life (Brooks, 2000).

In addition to total score, each subscale can be scored independently. The Worklife-Homelife subscale (7 items, score ranging from 7-42) assesses the interface between the nurse's work and home life, including aspects that impact family needs. The Work Design subscale (10 items, score ranging from 10-60) describes the actual work nurses do including workload, staffing, and autonomy. The Work Context subscale (20 items, score ranging from 20-120) assesses the impact of the work environment on both nurse and patient systems, including communication with leadership, resource availability, teamwork, career development opportunities, safety, and respect. Finally, the Work World subscale (5 items, score ranging from 5-30) describes the effect of societal influences and change within nursing practice, including society's image of nursing and job security (Brooks, 2000).

The psychometric properties of the BQNWLS have been demonstrated in several nurse-focused studies (Brooks, 2001; Brooks & Anderson, 2005; Brooks et al., 2007; Suleiman, et al., 2019; Alreshidi & Alsharari, 2021). Good internal consistency for the total scale has been reported in nurses with Cronbach α coefficients ranging between 0.83 and 0.90 (Brooks, 2001; Alreshidi & Alsharari, 2021). Brooks (2001) reported the internal consistencies for each subscale as 0.56 (Worklife-Homelife), 0.58 (Work Design), 0.60 (Work World), and 0.88 (Work Context). High test-retest reliability ($r = 0.90$, $p < 0.001$) was found when administered to 53 nurses over a two-week interval (Brooks & Anderson, 2005). The BQNWLS can be found in Appendix E.

Data Collection Procedures

Permission and approval from the University of Texas Institutional Review Board, Committee for the Protection of Human Subjects (CPHS), will be obtained prior to beginning recruitment and data collection. Data will be collected using electronic versions of the demographic questionnaire(Appendix B), Secondary Traumatic Stress Scale, (Appendix C), Brief Cope Inventory (Appendix D), and Brooks' Quality of Nursing Worklife Survey (Appendix E) using the Research Electronic Data Capture (REDCap) software. REDCap is a secure, web-based application for building and managing online surveys and databases (Harris et al., 2009).

Data collection will be conducted over a three-month period. The P.I. will monitor the number of completed surveys while the study remains open. Participants will be introduced to the study through social media platforms (Facebook, LinkedIn, or Twitter). Participants responding to the online study advertisement will access the study questionnaire through either the online link or QR code provided on the digital flyer. Both access methods will direct participants to the online questionnaire. An automatically generated study ID will be assigned to the participant upon entering the survey link. After clicking on the study link, participants will be presented with a brief study description that includes the study's purpose, participant eligibility, and P.I. contact information. Additionally, participants will be notified that the survey will take 25-30 minutes to complete, can only be taken once, and will remain anonymous.

If participants consent to the study, they will click the "continue" button which will then display eligibility screening questions (Appendix A). Should participants not

meet inclusion criteria, they will be determined an inactive participant and automatically directed to a questionnaire exit screen. A message prompt will thank them for their time and notify them that they do not meet the screening criteria for the study.

Participants meeting eligibility will advance to the demographic information form and study questionnaire items (Appendix B-E). After completion of the online survey, participants will be provided the voluntary opportunity to enter their email address to obtain a small participatory incentive ($10 gift card) upon submission of the survey. No further action will be required by the study participant. As data is collected into REDCap, information will automatically populate into a secured online spreadsheet that will be managed by the PI. Data from the demographic questionnaire, STSS, Brief COPE, and BQNWLS collected through REDCap will then be exported directly into IBM SPSS version 28 for statistical data analysis. The statistical data and output of statistical analysis will be securely stored in digital hosting provided by Cizik School of Nursing.

Data Analysis Plan

Descriptive statistics and correlation analysis will be conducted with all variables included in this study. In accordance with the study aims, appropriate statistical analyses will be used to examine relationships and identify predictors of STS. All analysis will be conducted using IBM SPSS version 28. A table of all study variables and corresponding analysis methods can be found in Appendix F.

Aim 1: Describe the level of secondary traumatic stress and use of coping strategies among a national sample of ED nurses.

Descriptive statistics will be used to report sample demographics, work factors, level of STS, and use of coping strategies. Frequencies, means and standard deviations will be calculated for all study variables (demographics, work factors, coping strategy use, STS levels) and displayed in three tables. The first table will report the frequencies, means, and standard deviations (SD) of demographic and work factors of the sample. A second table will display the frequencies, means, and SD for the 14 subscales of the Brief COPE, reflecting the frequency of use for each of the 14 coping strategies. The third table will display the frequency, mean, and SD of STS among the sample reflected by the total STSS score and then categorized as no STS, mild STS, moderate STS, and high/severe STS. The reliability (Cronbach's alpha) will be reported for the STSS, BQNWLS, and the Brief COPE instruments.

Aim 2: Examine relationships between STS and demographics, work factors, and coping strategy use in a national sample of ED nurses.

Bivariate analysis will be used to examine relationships between STS and the independent study variables (demographics, work factors, coping strategy use). STS will be examined as a continuous dependent variable, with potential consideration of Bride's (2007) recommended cutoff score of 38, indicating presence of STS. Three separate analysis will be conducted to examine correlations with STS. First, relationships between STS and demographics will be examined using Pearson's correlation, t test for independent samples, or one-way ANOVA depending on the variable. Categorical variables will be coded numerically for analysis (see Appendix B). Second, correlations will be examined between STS and work factors using Pearson's correlation for each of the four continuous work factor variables. Third, correlations will be examined between

STS the use of 14 coping strategies using Pearson's correlation. Multicollinearity will be assessed during each analysis and variables that significantly correlate with STS ($p < 0.10$) will be further examined as possible predictors in the third aim.

Aim 3: Identify predictors of STS by examining multivariate correlations of demographic, work factors, coping strategies, with STS in a national sample of ED nurses.

Multivariate analysis will be used to determine predictors of STS. Multiple linear regression will be used to analyze correlations between STS (DV) and statistically significant predictor variables from aim 2. The R-squared value of the model summary will be reported to estimate the overall variance of the group of predictors and determine strength of the model. Coping strategies and work factors will then be examined as independent predictors of STS, while controlling for statistically significant demographic characteristics found in Aim 2.

Potential Limitations

There are several potential limitations in this study. It is possible that the convenience sampling technique may result in sampling bias, potentially yielding a non-representative sample of the study population. The demographics of the sample will be reported along with most current available workforce statistics of the EN population. The use of self-report instruments for data collection may result in reporting and response bias, therefore reliability will be assessed for each instrument used in the study. Despite careful consideration to limit survey length, some submissions may result in missing data that will need to be managed appropriately during data analysis. Finally, while the cross-

sectional design may limit generalizability, data from this study will help to inform future studies with more robust designs and larger samples of EN.

Human Subject Protection

Permission to conduct the proposed study will be obtained from the Committee for the Protection of Human Subjects (CPHS) at UTHealth Houston. Human subjects' procedures will include the recruitment procedure, the eligibility screening process, and completion of study questionnaires. Participants will receive information regarding the voluntary nature of their participation, risks, confidentiality of responses and the use of gathered information. In general, the anticipated risks associated with participation in the study are low. Given that some questions in the study relate to traumatic stress, national resources from the American Nurses Foundation's Well-Being Initiative will be included at the end of the survey and for all study participants. To maintain participant confidentiality, survey responses will be tracked and identified using a survey ID instead of personal identifiers. Survey responses will be secured using password-protected software (REDCap) designed for research data collection. Participants will be advised to complete the survey in a private environment, free of distraction, to ensure survey responses remain private.

CPHS approval will be obtained prior to any recruitment or communication with participants in the study. The researcher will uphold participant's rights, confidentiality, and anonymity. Subjects who meet the inclusion criteria and are willing to participate in the study will be enrolled. Informed electronic consent will be obtained from participants prior to completing survey questions. Participants will also be informed that should they

no longer wish to participate; they may withdraw from the study at any time. Study participants will receive no direct benefits from participating in the study, however, findings will contribute to the extant literature to better understand the associations of coping, demographics, and occupational characteristics on STS in EN.

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MANUSCRIPT

PREVALENCE AND PREDICTORS OF SECONDARY TRAUMATIC STRESS IN A NATIONAL SAMPLE OF EMERGENCY NURSES: A CROSS-SECTIONAL STUDY

A DISSERTATION MANUSCRIPT
SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
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THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT HOUSTON
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Prevalence and Predictors of Secondary Traumatic Stress in a National Sample of Emergency Nurses: A Cross-Sectional Study

Nurses working in the emergency department (ED) are the first hospital personnel to come into contact and provide direct care to patients affected by trauma (Hunsaker et al., 2015). Traumatic events in the ED can include shocking, violent, or emotionally disturbing experiences requiring nursing care (e.g., sudden infant death or physical/sexual assault of a child) that, due to their intensity, can threaten the nurse's ability to effectively cope (Dominguez-Gomez & Rutledge, 2009; Adriaenssens et al., 2012; Duffy et al., 2015; Morrison & Joy, 2016; Campillo-Cruz et al., 2021). Furthermore, their professional role requires detailed knowledge and understanding of the traumatic event, predisposing them to occupational hazards that can impact their well-being and ability to provide quality nursing care (Johnston et al., 2016; Bock, et al., 2020; Trudgill et al., 2020).

Secondary traumatic stress (STS) is one such hazard. STS is characterized by stress-related thoughts, emotions, and behaviors originating from providing direct care to traumatized or suffering persons (Beck, 2011; Figley, 1995; Bride, 2007). Although STS has been extensively studied (Bride et al., 2004; Ting et al., 2005; Bride, 2007), it wasn't until 2013 that secondary trauma exposure became formally recognized as a distinct criteria of posttraumatic stress in the *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition (Criterion A.4, APA, 2013). The addition of indirect trauma exposure as part of the diagnostic criteria for posttraumatic stress acknowledges the destructive symptoms originating from work-related trauma exposure that negatively affect clinician well-being – a current national healthcare priority (American Nurses

Association, 2020; National Academy of Medicine, 2022; Dr. Lorna Breen Health Care Provider Protection Act, 2022).

Multiple studies have examined the prevalence of STS in emergency nurses, showing consistently high rates of STS both globally and in the United States. Of the few American studies conducted, between 50% (n=67) to 76% (n=125) of emergency nurses sampled met clinical criteria for STS (Dominguez-Gomez & Rutledge, 2009; Wolf et al., 2020). Symptoms of STS mirror that of post-traumatic stress disorder (PTSD) including intrusive re-occurring thoughts of trauma, avoidance of associated trauma stimuli, negative changes in cognition or mood, and increased reactivity or arousal symptoms (APA, 2013, pp. 271-272). Nurses experiencing STS have reported debilitating effects of STS, including increased absenteeism due to illness, burnout, anxiety, depression, work strain and decreased ability to meet the cognitive demands of patient care (Bride & Kintzle, 2011; Duffy et al., 2015; Cocker & Joss, 2016; Bock et al., 2020). In comparison to other healthcare groups, emergency nurses are estimated to have a two-fold greater prevalence of traumatic stress than physicians (Trudgill, Gorey & Donnely, 2020). Additionally, emergency nurses face are known to face higher work stress and posttraumatic stress compared to nurses in other departments during public health emergencies (Hsiao et al., 2019; Peterson et al., 2019; Horesh & Brown, 2020; Qian et al., 2023).

STS also negatively impacts organizations and has been associated with increased job turnover and absenteeism (Burlison et al, 2021), exacerbating care delivery concerns in the emergency department due to staffing shortages, overcrowding, and excessive wait times in the emergency department (Janke et al., 2022). Emergency nursing demands a

high-level skillset and extensive training and orientation, thus limiting the ability to rapidly recruit and train emergency nurses during disaster or public health emergencies (Castner et al., 2021). The Covid-19 pandemic highlighted major deficits in the emergency nursing workforce as hospital emergency departments responded to increased patient volumes and employee absenteeism due to viral transmission and illness (Binder et al, 2021; Castner et al., 2021). Consequently, emergency nurses faced increased demands and workloads, with fewer staff and resources, and reported symptoms of emotional exhaustion, anxiety, burnout, and traumatic stress (Rodriguez et al., 2021).

Research recommendations to understand STS highlight the need to examine both individual and organizational perspectives on the psychological sequalae of work-related trauma, including examination of associated risk and protective factors (Molnar et al., 2017; Olff et al., 2019). Certain demographic and work-related factors have been shown to correlate with levels of STS, yet the extent and commonality of these relationships in the context of emergency nurses remains largely unknown (Ratrout & Hamdan-Mansour, 2017). In terms of demographics, several studies have found that female nurses are more susceptible to STS (Dominguez-Gomez & Rutledge, 2009: Mooney et al., 2017; Maddigan et al., 2023), although Petleski (2013) found male nurses more likely to experience STS. Younger age, being unmarried, having less education, and fewer years of experience have also been identified as predictors for STS (Gates et al, 2008; Lavoie et al, 2011; Cho et al., 2014; Hensel et al., 2015; Hunsaker et al., 2015; Kim et al., 2016). However, other studies have found no significant associations between STS and these personal factors (Hensel et al., 2015; Dworkin et al., 2016).

Effective coping strategies are necessary for emergency nurses in dealing with traumatic experiences, but little is known about their association with STS. Stress is a dynamic and subjective process, making it difficult to predict individual coping behavior (Abbas et al., 2013). However, literature reports that emergency nurses use a variety of both adaptive and maladaptive strategies to cope with work stressors (Rantung et al., 2021). Studies have attempted to explain the relationships between nurses' coping strategies and sociodemographic factors (Ribeiro et al., 2015; Isa et al., 2019), work environment (Xu et al., 2018), retention (Wu et al., 2019), moral distress (Zavotsky & Chan, 2016), and burnout (Howlett et al., 2015). However, additional research is necessary to clarify how emergency nurses choose to cope with traumatic events and how this may contribute to the development of STS (Vang, 2023).

Current literature supports a continued need to understand the relationship between STS and demographics, coping strategies, and work-related factors in emergency nurses. Therefore, the aims of this study sought to: (1) describe the levels of STS and use of coping strategies among emergency nurses, (2) examine associations between STS and demographics, coping strategies, and work-related factors, and (3) identify key predictors of STS in emergency nurses working in hospital-based emergency departments across the United States.

Theoretical Framework

The Transactional Model of stress and coping by Lazarus & Folkman (1987) guided this study. The framework ascribes that stress response is a cognitive process centered around the person-environment relationship. When confronted with a stressor in

the environment, the individual appraises the potential threat and their available resources to overcome the stress. These appraisals are believed to influence an individual's coping strategies, resulting in stress response outcomes that either positively or negatively impact psychological well-being (Lazarus & Folkman, 1987). Concepts derived from the Transactional Model and explored in this study include personal and facility characteristics, coping strategies, work factors, and the outcome of STS (Figure 1).

When applied to emergency nurses caring for patients in a trauma and stress-prone environment, the Transactional Model (Lazarus & Folkman, 1987) help hypothesize that demographics, work factors and coping strategies relate to and are likely to influence levels of STS. Understanding these relationships can help facilitate interventions that foster improved work outcomes and effective coping strategies among emergency nurses, ultimately resulting in reduced STS.

Methods

Study design and participants

A cross-sectional, descriptive study was conducted to survey a sample of nurses (n = 216) working in hospital-based emergency departments across the United States between June and August 2023. Study participation was limited to completing a one-time online survey, with no further action required by the participant. To be eligible, all participants were required to hold an active registered nurse license and be employed full-time with at least 6 months of nursing experience in the ED. Advanced practice nurses, nurse managers, nurse educators, or registered nurses working outside the setting of a hospital-based ED (free-standing, urgent care) were excluded. This study was

granted Institutional Review Board (IRB) approval from the Center for the Protection of Human Subjects at the University of Texas Health Science Center at Houston (HSC-SN-23-0161) and completed under the supervision of faculty at the Cizik School of Nursing at UTHealth. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist was used to report the findings of this study (von Elm et al., 2007).

Recruitment and sample size

A social media snowball sampling strategy was used to recruit eligible participants for the study. A social media profile was created exclusively for the promotion of the study which featured the digital recruitment flyer that included the study description and purpose, online link to the study site, and Primary Investigator contact information (Figure 2). Similar to the method described by Leighton et al. (2021), the researcher identified social media sites on Facebook, Twitter, and LinkedIn that catered to the target population of emergency nurses. Site administrators were contacted by the researcher through the social media profile requesting approval to post the study recruitment flyer on their site in efforts to reach online followers and eligible participants. Participants were encouraged to share the digital flyer with fellow emergency nurse colleagues. Using G*Power (v. 3.1.9.7), a statistical power analysis was conducted for a multiple linear regression to evaluate sample size estimation (Faul et al., 2007). With an $\alpha = .05$ and power = .80, the projected sample size needed for a medium effect size ($f2 = 0.15$) was $n = 209$.

Data Collection

An electronic survey via an online link to REDCap® (Harris et al., 2019) was used to collect quantitative data from potentially eligible participants. Participants were able to anonymously complete the online survey using any device with access to the internet. After accessing the online survey, participants received detailed information about the purpose and description of the study. Informed consent was implied by the participant upon pressing the continue button and progressing to the screening questionnaire to determine eligibility (Appendix C). Participants remained anonymous during the study, identified only by an assigned study ID number. Eligible participants then completed the instruments used to measure study variables. After submission of the study survey, participants were provided a voluntary opportunity to enter their email address in a separate survey to receive a small participatory incentive ($10 e-gift card). All data collected from study participants was securely stored in the online REDCap® repository until the recruitment period was closed. An overview of the study flow diagram can be found in Figure 3.

Variables and instruments

Four instruments were used to examine the dependent variable (secondary traumatic stress) and the demographics, coping strategy use, and work-related information of the participants. Instruments used to collect participant data can be found in Appendix C.

Demographic Characteristics

The researcher developed a 20-item questionnaire to obtain participants' demographic data and facility characteristics. Items included in the demographic questionnaire were based on reported associations with STS from existing literature. Personal demographic items included age, sex, race/ethnicity, marital status, cohabiting dependents, education level, specialty certification, nursing experience, and history of personal trauma. Organizational items included geographic region, trauma designation, number of ED beds, shift type, shift length, weekly hours worked, use of employer-based assistance for work related stress, intent to change nursing specialty, and intent to change facility/organization. Depending on the item, the nurse was asked to enter a numerical response, select "yes" or "no," or select from a list of provided options that best described them.

Secondary Traumatic Stress

The 20-item Secondary Traumatic Stress Scale – DSM5 (STSS-DSM5) developed by Bride (2013) was used to measure self-reported symptoms of STS in four domains (intrusion, avoidance, arousal, and negative mood and cognition) among emergency nurses in the sample. The STSS-DSM5 is a revised version of the original 17-item scale (Bride et al., 2004) based on DSM-IV diagnostic criteria of Posttraumatic Stress Disorder (PTSD). Unlike other instruments used to measure STS, items in the STSS-DSM5 were designed to measure STS from exposure to patients/clients. Using a five-point Likert scale ranging from 1 (never) to 5 (very often), participants were asked to rank how frequently they experienced each item during the past 7 days.

Item responses were summed for subscales and total score, with higher scores indicating a higher level of STS experienced by the emergency nurse. The clinical cutoff score used in other studies to indicate moderate STS is 39 (Wolf et al., 2020). The psychometric properties of the original STS Scale have been demonstrated in several studies showing excellent internal consistency (α coefficients between .91 – .94) in nurses (Dominguez-Gomez & Rutledge, 2009; Beck & Gable, 2012; Duffy et al., 2014). The inclusion of additional items in the STSS-DSM5 demonstrates face validity with the current DSM-5 criteria with similar internal consistency (α coefficients between .91 - .96) reported as the original scale (Rakestraw, 2020; Sprang & Garcia, 2022).

Coping Strategies

The Brief COPE scale (Carver, 1997) measured the use of coping strategies employed by emergency nurses. Using a 4-point Likert scale from 1 (I haven't been doing this at all) to 4 (I've been doing this a lot), nurses were asked to rate their frequency of use across 28-items that represent 14 different coping subscales. There is no overall composite score for the Brief COPE scale. Instead, the 2 items in each subscale were summed, yielding a total score for each coping strategy represented by its respective subscale. A higher score indicates greater frequency of use for each coping strategy. The Brief COPE has been used extensively in healthcare professionals to examine coping behaviors, yielding good internal consistency (α = .60 to .86); (Beck, 2008; Shimizutani et al., 2008; Jones et al., 2011; Wallbank & Robertson, 2013).

Work-Related Factors

The Brooks' Quality of Nursing Work Life Survey (BQNWLS) is a 42-item scale used assess the work life of emergency nurses across four different dimensions (Brooks, 2001). Author permission was obtained for use and can be found in Appendix C. Using a 6-point Likert scale, from 1 (strongly disagree) to 6 (strongly agree), nurses in the study were asked to rate their level of agreement for each item. The total score for the BQNWLS is obtained by adding all item scores for a range of 42 to 252; with a higher score indicating higher perceived quality of work life (QWL). Brooks (2001) recommended the following cut-points for total scores when interpreting levels of QWL: low (42-112), moderate (113-182), and high (183-252).

Work-related factors were explored in emergency nurses, as represented by the four dimensions of the BQNWLS: Work life-Home life; Work Design, Work Context, and Work World. The Work life-Home life subscale was measured using 7-items and represents the intersection between the nurses' work and home life. The Work Design subscale was measured by 10-items and represents the actual work and nursing duties performed by the emergency nurse. The Work Context subscale was measured using 20-items and focuses on the practice setting of the nurse and the perceived impact of the work environment on both nurse and patient systems. Lastly, the Work World subscale was measured using 5-items and represents effects and changes on the practice of nursing resulting from broad societal influences. Similar to the total score, responses to items within each subscale were summed, providing a total score for each of the four work-related factors examined in the study. Higher scores indicate a more positive perception

of factors relating to emergency nurses' work life, with lower scores indicating poor perception by the emergency nurse.

The psychometric properties of the BQNWLS have been demonstrated in several nurse-focused studies (Brooks, 2001; Brooks & Anderson, 2005; Brooks et al., 2007; Suleiman, et al., 2019; Alreshidi & Alsharari, 2021). Good internal consistency for the total scale has been reported in nurses with Cronbach α coefficients ranging between 0.83 and 0.90 (Brooks, 2001; Alreshidi & Alsharari, 2021).

Statistical Analysis

Demographic characteristics were analyzed descriptively to explore summary data (total, sample %, mean) among the study participants. Descriptive statistics (total number, mean scores, standard deviations) were also used to estimate the prevalence of STS, use of coping strategies, and perception of work factors among emergency nurses in the sample. For each scale, Cronbach's alpha was performed to determine internal reliability. The STSS-DSM5 (α = .93), Brief COPE scale (α = .78), and BQNWLS (α = .93) all met acceptable reliability, as determined by a priori coefficient alpha ≥ .70 (DeVellis, 2012). Results corresponding to items on each of the instruments used in the study (STSS-DSM5, Brief COPE, BQNWLS) were collated and scored according to their respective guidelines (Bride, 2013; Carver, 1997; Brooks, 2001).

Correlation analyses were conducted to detect relationships between STS scores, as a continuous dependent variable, and the independent study variables. All statistical analysis conducted used an alpha of < .05 as the cutoff for significance and continuous variables were assessed for normal distribution. Independent variables were continuous,

ordinal, dichotomous, and categorical in nature. Therefore, correlational analysis was conducted using the test most appropriate for the variable type, including Pearson, Spearman, t-test for independent samples, and one-way ANOVA. Correlation coefficients were examined to determine which independent variables significantly correlated to STS.

Next, a standard multiple regression analysis was conducted using significant independent variables as predictor variables and STS as the outcome variable. Assumptions were tested by assessing normal probability plots and scatterplots of residuals. Multicollinearity was assessed by examining variance inflation factor (VIF) values. The model was then examined to determine proportion of variance (R^2) explained by the predictors and their significance (p- value). Data collected from the surveys were downloaded and analyzed using IBM SPSS Statistics for Windows, Version 28 (*IBM Corp, 2022*). Missing data was addressed by evaluating the effect on the total sample size and considering imputation method, using mean values, to address missing responses.

Results

Of the total responses received, 298 were determined potentially eligible for inclusion. Of those, 82 responses were excluded for leaving one or more instruments in the online survey largely incomplete, resulting in 216 responses that were included in the analysis. See Figure 4 for participant results flow diagram.

Descriptive Findings

Descriptive data for both personal and occupational characteristics of study participants are found in Table 1. Personal demographics indicated that emergency nurses in the sample (n=216) were mostly female (73%), White (71%), and had a mean age of

36.4 (SD = 6.86) years. The majority were married or in a domestic partnership (81%), had dependent children living with them (78%), and 37% lived with a dependent adult. Over half (61%) of nurses in the sample reported experiencing a history of personal trauma.

Most nurses in the sample were bachelor's prepared (62%), held a specialty certification (90%), and had an average of 9.51 years of total RN experience (SD=5.19, n=213) and 6.13 years of nursing experience in the emergency department (SD=4.77, n=213). Nurses reported working primarily 8-hour shifts (59%), for an average of 39 hours per week (SD= 5.60, n=210), and the most common shift type was rotating shifts (52%) followed by dayshift (25%), then nightshift (17%). Nearly three-quarters of nurses (74.5%) report having sought employer-based assistance for work related stress. Finally, 29% of nurses reported intent to change their specialty (other than emergency nursing) and 22% reported intent to change to a different facility.

Examination of scores from the STSS-DSM5 helped to determine the prevalence and severity of STS among the sample. The high majority of nurses (79.6%) fell at or above the “moderate STS” cutoff score of 39 and the mean total score for the sample was 52.19 (SD=13.5). Based on a cutoff score of 52 used by Wolf et al. (2020), the mean total score for this sample met the level for “severe STS”. Of all scores, a concerning 60.6% (n=131) met the range for “Severe STS.” Additional details and subscales scores are shown in Table 2.

Mean scores for the Brief COPE inventory determined frequency of coping strategies used by emergency nurses in the sample. Nurses reported problem-focused

strategies as the most frequently used coping method. Mean scores for all strategies were between 4.20 (SD=1.58) and 5.39 (SD=1.29) and are detailed in Table 3.

Lastly, scores from the BQNWL were examined to determine how respondents perceived the quality of their work life as an emergency nurse. The mean total score of the sample was 157.26 (SD=26.6), indicating nurses report a moderate quality of work life. Subscale mean scores were 28.76 (Home Life/Work Life), 35.30 (Work Design), 74.98 (Work Context), and 18.23 (Work World). Additional details are found in Table 4.

Bivariate Correlations

Following descriptive statistics, correlation analyses were conducted to examine mean differences and associations between STS score and independent variables. Using independent t-test, significant differences in mean STS scores were found between groups of nurses in regards to marital status ($t(210) = 1.18$, p .024), living with or without a dependent adult ($t(214) = 5.487$, $p < .001$), personal trauma history ($t(213) = 3.023$, $p < .001$), use of employer-based assistance ($t(214) = .175$, $p < .001$), and intent to change specialty ($t(214) = 6.271$, $p < .001$) and facility ($t(214) = 6.317$, p .005). For additional details, see Table 5.

One-way ANOVA indicated significant differences in STS score across the categories within shift length ($F = 3.346$, df = 2,213, p .037, $eta^2 = .030$), shift type length ($F = 5.053$, df = 3,211, p .002, $eta^2 = .067$), and facility trauma designation length ($F = 4.692$, df = 5,210, p .001, $eta^2 = .10$). After inspecting for normality of variable data, correlations of remaining personal demographic variables was assessed using Spearman's Rank-Order Correlation. No significant correlations were found between STS score and

the following personal demographic variables: age, weekly hours worked, years of nursing experience, and years of ED experience (Table 7).

Correlations between STS scores and use of coping strategies were assessed using Pearson. No significant associations were found for problem-focused coping strategies, typically considered to be helpful. However, STS scores were significantly higher for nurses who more frequently used avoidant strategies like self-distraction ($r(214) = .145$, $p < .034$), denial ($r(214) = .487$, $p < .001$), substance use ($r(214) = .583$, $p < .001$), behavioral disengagement ($r(214) = .456$, $p < .001$); and emotion-focused strategies like venting ($r(214) = .475$, $p < .001$), humor ($r(214) = .467$, $p < .001$), religion ($r(214) = .407$, $p < .001$), and self-blame ($r(214) = .535$, $p < .001$). See Table 8 for additional details.

Lastly, correlations between STS scores and scores of the BQNWL subscales were assessed using Pearson. Significant negative relationships were found between STS scores and all 4 subscales (Table 9). Higher STS scores were associated with lower subscale scores for Home-Work Life ($r(214) = -.260$, $p<.001$), Work Design ($r(214) = -.204$, p .003), Work Context ($r(214) = -.505$, $p<.001$), and Work World ($r(214) = -.236$, $p<.001$).

Multiple Regression Analysis

After completion of all bivariate analyses, a total of 28 statistically significant independent variables were identified for further analysis. A standard multiple regression model was performed between the dependent variable, STS score, and the independent variables. Analysis was performed using SPSS Regression. Assumptions were tested by examining the normal probability plot of residuals and scatterplot of residuals versus

predicted residuals. No violations of normality, linearity, or homoscedasticity were identified. Multicollinearity was assessed by examining for variance inflation factors over 5, of which there were none.

Regression analysis including the 28 independent variables revealed that the model significantly predicted STS scores ($F(28,210) = 15.266$, $p < .001$), explaining 70.1% of the variation in STS scores between the variables ($R^2 = .701$, adjusted $R^2 = .655$). Table 10 displays the model summary and details for each predictor variable.

Within the model, significant individual relationships were found among ten of the independent variables and STS scores. Significant negative predictors of STS scores included rotating shift type (B = -3.151, t = -2.032, p = .044) and Work Context (B = -.187, t = -2.416, p = .017). Significant positive predictors of STS scores included intent to change specialty (B = 3.681, t = 2.099, p .037), intent to change facility (B = 4.223, t = 2.172, p .031), Level I trauma designation (B = 7.722, t = 2.143, p .033), use of self-distraction (B = .1641, t = 3.341, p = <.001), denial (B = 1.163, t = 2.239, p = .026), substance use (B = 1.861, t = 3.229, p = <.001), behavioral disengagement (B = 1.039, t = 2.036, p = .043), and venting (B = 1.177, t = 2.195, p = .029). Together, these 10 variables contributed 31.4% in shared variability in the model.

Discussion

This study, using quantitative methods, sought to examine three primary aims among hospital-based emergency nurses in the United States. 1.) Describe current levels of STS and use of coping strategies in hospital-based emergency nurses in the United States; 2.) Identify significant associations between STS and factors related to personal

and organizational demographics, coping strategies, and work-related factors; and 3.) Discover predictors of STS specifically among emergency nurses. The findings of this study contribute to and further illuminate findings from the small body of literature that currently exists on coping and work-related associations with STS in emergency nurses working in the United States.

In accordance with the original aims of the study, key findings indicate that the majority of nurses working in hospital-based emergency departments report high levels of STS. The total mean STS score for this sample was 52.19 (SD = 13.50), with 81% of emergency nurses scoring above the "moderate STS" cutoff score of 39. This is similar to recently reported results by Wolf (2020), that emergency nurses reported high rates of STS with a mean total score of 49.75 (n=125). Much higher rates of STS were found in the present study (81%) when compared to the 33% of emergency nurses suffering from STS reported by Dominguez-Gomez and Rutledge (2009). Studies outside the U.S. found higher rates of STS in emergency nurses, including an Irish study by Duffy et al. (2015) reporting 64% (n= 117) and a Jordanian study by Ratrout & Hamdan-Mansour (2019) reporting 75% experiencing STS. A possible explanation for the increase could be that this study took place post-pandemic, after known global increases in psychological distress were reported among healthcare providers (Muller et al., 2020).

This study also identified that emergency nurses use a variety of coping strategies to deal with work-related stress, including problem-focused, emotion-focused, and avoidant coping methods. This is in line with previous reports of the variety in coping methods used among emergency nurses (Adriaenssens et al., 2012). It remains unclear which coping strategies are preferred by emergency nurses, but in this study, the most

frequently used were problem-focused strategies (Table 3). Hinderer and team (2014) found that increased use of coping strategies, like engaging in hobbies, had a protective effect against the development of STS. Unfortunately, studies have also identified that emergency nurses may choose to numb the effects of STS through alcohol and drug use, sleep, sexual behaviors, and social venting (Wolf et al., 2020).

Recognition of coping strategies that predispose emergency nurses to STS requires further investigation. However, this study contributes to extant literature by identifying several avoidant and emotion-focused coping strategies that were found within the study model to positively predict STS. By recognizing coping strategies known to associate to higher levels STS, support can be provided early on to mitigate the development of STS. Effective coping has been established in trauma workers as a way to develop resistance to STS and build factors that promote well-being (Ludick & Figley, 2017).

The examination of the associations with STS in this study yielded interesting findings. Consistent with other studies, both personal and organizational factors were initially associated with STS as shown in Table 5. Personal factors including age, gender, marital status, dependent care, personal trauma history have all reported in the STS literature, but findings have been inconsistent (Dominguez-Gomez & Rutledge, 2009; Duffy et al., 2015; Ratrout & Hamdan-Mansour, 2017). Surprisingly, there were few significant associations with STS found in the current study for personal demographic variables and none were identified as key predictors in the model. Marital status was associated with STS, indicating that married nurses have lower STS scores when compared to nurses who are single. This is consistent with findings from Ariapooran et

al., (2022). This study also identified differences in STS scores for nurses living with a dependent adult. To the best of our knowledge, no other study has identified living with a dependent adult as having a significant association with STS among emergency nurses. While several studies have included dependent children as a demographic variable, none have found significant associations with STS (Zakeri et al., 2021; Lykins et al., 2021; Lopez, Bindler & Lee, 2022).

Personal trauma history has been associated with higher levels of STS in emergency nurses (Hensel et al., 2015) and is consistent with the findings of this study. It was surprising however, that the model did not find significance for personal trauma history as a key predictor of STS in this study. Additional research is necessary to clarify the relationship between personal trauma history, coping, and STS in emergency nurses.

The multiple regression model developed in this study explained a high amount of variance, contributing to STS scores. Several key predictors of STS were found significant in Table 10 and accounted for over 30% of the shared variance within the model. Key predictors included several avoidant coping strategies, including self-distraction, denial, behavioral disengagement, venting, and substance use. It is not surprising that these variables positively predict high STS scores and are supported by literature findings discussed above.

Other key predictors were focused on organizational factors, many of which have been found to relate to STS in other studies. Aspects of shift work has been correlated to STS in some studies and support findings in this study that working rotating shifts was a predictor of STS. However, what was surprising is that when compared to day shift,

nurses working rotating shifts were associated with lower STS scores. Although not significant, this study also showed that nurses working night shift and mid-shift in the sample associated with higher STS scores in comparison to day shift. Lopez et al. (2022) also found that mid-shift nurses had significantly higher mean scores of STS when compared to day shift. In regard to rotating shifts, additional research is needed to shift differences that may precipitate STS.

Working in a Level I trauma facility, compared to a non-designated trauma facility was also identified as a significant predictor of increased STS. Although not specifically reported in existing studies, this may be attributed to the increased volume of trauma patients given that the highest trauma level designation predisposes staff to repeated trauma exposure, which has been frequently associated with STS (Mealer & Jones, 2013; Wolf et al., 2020).

Finally, emergency nurses' desire to change nursing specialty and facility were both identified as significantly positive predictors of STS. Studies by Mealer and Jones (2013) as well as Duffy et al. (2015) found STS associated with higher nurse intentions to change their work area or career. Additionally, a key predictor in the model indicated that increased perceived quality of nurses' resources and practice capability within their work environment is associated with decreased STS. This is not surprising as work satisfaction has been reported as one of the strongest predictors of STS, with high satisfaction playing a protective role in alleviating negative STS symptoms (Oginska-Bulik, 2021). Given the existing concerns regarding retention of emergency nurses, efforts to address negative perceptions of emergency nurses' work environment may help not only mitigate STS but

also mitigate attrition from organizations and from the emergency nursing specialty as a whole.

Limitations

Despite its positive contributions, a number of limitations may have influenced the results of this study. The first is that convenience sampling limits the generalizability of findings. Efforts were made to address this. While few studies have been conducted to understand the emergency nursing workforce as a whole, demographic characteristics of the sample were compared with the workforce profile from the Emergency/Trauma/Transport Nursing Workforce Study (ETTS). Conducted in 2019, it is the first and only comprehensive analysis of the emergency nursing workforce in the United States (Taylor et al., 2019). While the personal demographics of nurses in this sample closely mirror the workforce profile from the ETTS as predominantly white, female, and with a mean age in the mid-30s, cautious interpretation is necessary as this sample may not fully represent the population of emergency nurses in the U.S.

The web-based and self-report surveys are other limitations that have potential for bias and may limit those without access to internet from participating in the study. Given that most nurses with the U.S. have access to Internet either personally or through their workplace, we did not consider this a significant limitation for this study. Self-report surveys are known introduce potential response bias and sampling bias among respondents. While it's possible that respondents were attracted to the study based on their own experience, the self-report surveys included in the study allowed for privacy and anonymization to promote truthful responses.

Additionally, this was a cross-sectional study using a scale measuring STS within the previous seven days, thus limiting the study scope. A longitudinal study would likely allow for better measurement of STS across time, further increasing understanding of the strength and directionality of variables and their association with STS in emergency nurses.

Finally, a history of mental illness is a known risk factor for STS. While research is warranted to expand understanding of the relationships between STS and other mental health problems, mental illness was not measured or controlled for in the current study. Mental illness-related stigma is well known to exist among health care providers (Knaak et al., 2017), and despite efforts to ensure privacy and anonymity of respondents in the current study, questions related to mental health diagnoses were not included in the current study to promote honest responses and avoid concerns related to disclosure of a mental health diagnosis.

Conclusion

The findings of this study identify that emergency nurses experience alarmingly high rates of STS and are predisposed to this condition due to their professional duties. While emergency nurses utilize various coping strategies to deal with traumatic stress, frequent use of avoidant coping strategies may predispose them to increased levels of STS. Furthermore, work-related predictors that increase trauma exposure and decrease perception of the work environment are likely to contribute to both STS and attrition. There remains a need to prioritize work-related trauma research involving emergency nurses in order to aid healthcare institutions and policymakers in developing

interventions to alleviate the negative consequences of STS. Addressing modifiable predictors highlighted in this study can support efforts to recognize risk factors for STS and intervene earlier, prior to negative clinician and organizational impact.

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Table 1

Demographic Characteristics of Emergency Nurses (N=216)

Personal		*N=216*	%
Age, years Mean = 36.4 years *(SD = 6.86; n=212)*	Less than 30 years 30-39 years 40-49 years 50+ years Missing	25 135 38 14 4	11.5% 62.5% 17.5% 6.5% 2%
Sex	Female Male Missing	157 57 2	73% 26% 1%
Race/Ethnicity	White Black Hispanic Asian/Pacific Islander American Indian/Alaska Native/Multi-Race/Other	154 18 6 22 16	71.3% 8.3% 2.8% 10.2% 7.4%
Marital Status	Married/Domestic Partnership Single Divorced/Separated Missing	174 20 18 4	81% 9% 8% 2%
Dependent Children living at home	Yes No	168 48	78% 22%
Dependent Adults living at home	Yes No	80 136	37% 63%
Education Level	Associate degree Bachelor's Degree Graduate Degree	24 135 57	11% 62% 27%
Specialty Certification	Yes No Missing	194 16 6	90% 7% 3%
Years of RN Experience Mean = 9.51 years *(SD = 5.19; n=213)*	Less than 5 years 5-9 years 10-15 years 16 + years Missing	43 111 39 20 3	20% 52% 18% 9% 1%
Years of ED Experience Mean = 6.13 years *(SD = 4.77; n=213)*	Less than 5 years 5-10 years 11-15 years 16+ years Missing	93 102 10 8 3	43% 47% 5% 4% 1%
History of Personal Trauma	Yes No Missing	132 83 1	61% 38.5% 0.5%
Organizational		*N=216*	%
Sought Employer-based Assistance	Yes No	161 55	74.5% 25.5%

Intent to change Specialty	Yes	63	29%
	No	153	71%
Intent to change Facility/Organization	Yes	47	22%
	No	169	78%
Geographic region	Northeast	45	21%
	Midwest	45	21%
	South	68	31.5%
	West	57	26%
	Missing	1	0.5%
Trauma designation	Level I	19	9%
	Level II	55	25%
	Level III	62	29%
	Level IV	33	15%
	Level V	8	4%
	Non-designated	39	18%
Shift Length	8 hour shift	128	59%
	10 hour shift	47	22%
	12 hour shift	41	19%
Shift Type	Day shift	54	25%
	Night shift	36	17%
	Mid-shift	14	6.5%
	Rotating shifts	111	52%
	Missing	1	0.5%
Hours worked/week Mean = 38.8 hours *(SD = 5.60; n=210)*	Less than 36 hours/wk	32	15%
	36-40 hours/wk	152	70%
	Greater than 40 hours/wk	26	12%
	Missing	6	3%
Sought Employer-based Assistance	Yes	161	74.5%
	No	55	25.5%
Intent to change Specialty	Yes	63	29%
	No	153	71%
Intent to change Facility/Organization	Yes	47	22%
	No	169	78%

Table 2

Mean scores for STSS-DSM5

	Score Range	Mean (SD)	N
Total STSS-DSM5 score	***(20 – 100)***	***52.19 (13.50)***	***216***
No/Low STS	*(20-38)**		*41 (19%)*
Moderate STS	*(39-47)**		*28 (13%)*
High STS	*(48-51)**		*16 (7.4%)*
Severe STS	*(51-100)**		*131 (60.6%)*
Intrusion Subscale score	(5 – 25)	13.25 (3.58)	216
Avoidance Subscale score	(2 – 10)	5.60 (1.84)	216
Negative Cognitions & Mood Subscale score	(7 – 35)	18.25 (5.11)	216
Arousal Subscale score	(6 – 30)	15.09 (4.62)	216
Total STSS score (original version)	*(17 – 85)*	*44.80 (11.6)*	*216*

Note. STSS-DSM5 cutoff scores

Table 3

Mean scores for Brief COPE

	Score Range	Mean (SD)	N
Problem-focused			
Active Coping	(2 – 8)	5.25 (1.43)	216
Use of Instrumental Support	(2 – 8)	5.19 (1.44)	216
Positive Reframing	(2 – 8)	5.39 (1.29)	216
Planning	(2 – 8)	5.33 (1.34)	216
Emotion-focused			
Use of Emotional Support	(2 – 8)	5.20 (1.28)	216
Venting	(2 – 8)	4.66 (1.30)	216
Humor	(2 – 8)	4.66 (1.38)	216
Acceptance	(2 – 8)	5.00 (1.25)	216
Religion	(2 – 8)	4.56 (1.47)	216
Self-blame	(2 – 8)	4.49 (1.40)	216
Avoidant			
Self-distraction	(2 – 8)	4.86 (1.24)	216
Denial	(2 – 8)	4.41 (1.47)	216
Substance Use	(2 – 8)	4.20 (1.58)	216
Behavioral Disengagement	(2 – 8)	4.55 (1.45)	216

Table 4

Mean scores for BQNWL

	Score Range	Mean (SD)	N
Total score	***(42 - 252)***	***157.26 (26.6)***	***216***
Low quality work life	*(42-112)**		*11 (5.1%)*
Moderate quality work life	*(113-182)**		*161 (74.5%)*
High quality work life	*(183-252)**		*44 (20.4%)*
Home Life/Work Life Subscale score	(7 - 42)	28.76 (4.32)	216
Work Design Subscale score	(10 - 60)	35.30 (5.37)	216
Work Context Subscale score	(21 - 120)	74.98 (16.4)	216
Work World Subscale score	(5 - 30)	18.23 (3.66)	216

Note. BQNWL total score cutoff ranges.

Table 5

Differences in STSS between Demographic Variables Using Independent T-Test

		Levene's Test for Equality of Variances				t-test for Equality of Means						
		Mean	SD	F	Sig.	t	df	Sig. (2-sided)	Mean Difference	Std. Error Difference	95% CI of the Difference	
											Lower	Upper
STSS	Male	52.07	12.78	.649	.421	-.073	212	.942	-.153	2.102	-4.297	3.991
	Female**	52.22	13.88									
STSS	White	53.08	12.78	3.788	.053	1.520	214	.130	3.078	2.025	-.914	7.386
	Non-Whit*	50.00	15.05									
STSS	Married	52.57	52.57	5.183	**.024****	1.180	210	.242	2.338	1.981	-1.611	6.287
	Not Marr*	50.24	10.24									
STSS	No to DC	54.44	16.07	2.396	.123	1.307	214	.193	2.884	2.207	-1.465	7.233
	Yes to DC*	51.55	12.66									
STSS	No to DA*	48.91	14.56	28.52	**<0.001**	5.487	214	<0.001	8.863	1.615	5.679	12.047
	Yes to DA	57.78	9.168									
STSS	No to SC*	53.50	11.76	.728	.395	.403	208	.687	1.433	3.551	-5.569	8.435
	Yes to SC	52.07	13.79									
STSS	No to PT*	48.41	15.89	21.97	**<0.001**	3.023	213	0.003	6.037	1.997	2.087	9.988
	Yes to PT	54.45	11.18									
STSS	No to EBA*	51.87	16.85	14.81	**<0.001**	.175	214	.862	.432	2.468	-4.486	5.349
	Yes to EBA	52.30	12.21									
STSS	No to ICS*	49.19	13.76	17.00	**<0.001**	6.271	214	<0.001	10.303	1.643	7.058	13.547
	Yes to ICS	59.49	9.600									
STSS	No to ICF*	49.68	13.21	8.231	**.005****	6.317	214	<0.001	11.554	1.829	7.921	15.186
	Yes to ICF	61.23	10.43									

Note. This table demonstrates the differences in STSS between demographic variable groups. Abbreviations for variable groups are as follows: STSS: Secondary Traumatic Stress Score; DC: Dependent Children; DA: Dependent Adult; SC: Specialty Certification; PT: Personal Trauma; EBA: Employer-Based Assistance; ICS: Intent to Change Specialty; ICF: Intent to Change Facility

*Indicates the Reference Category

**Indicates significance at the .05 level.

Table 6

Means, Standard Deviations, and One-Way ANOVA for STSS, Shift Length, and Shift Type

	STSS						
Variable	N	Mean	SD	F	df	*p*	*eta*^{2}
Shift Length				3.346	2, 213	**.037***	.030
8-hour shift	128	51.26	12.795				
10-hour shift	47	56.57	11.732				
12-hour shift	41	50.10	16.503				
Shift Type				5.053	3, 211	**.002***	.067
Dayshift	54	51.91	12.135				
Nightshift	36	58.25	11.139				
Mid-shift	14	58.36	9.621				
Rotating	111	49.56	14.528				
Trauma Designation				4.692	5, 210	**.001****	.100
Level I	8	60.50	18.586				
Level II	33	55.15	12.814				
Level III	62	52.74	12.989				
Level IV	55	54.95	10.095				
Level V	19	50.63	15.229				
Non-Designated	39	44.00	14.168				

Note. This table demonstrates means, standard deviations, and one-way analysis of variance of STSS among variables within demographic variable groups.

*Correlation is significant at the 0.05 level (2-tailed)

**Correlation is significant at the .01 level (2-tailed)

Table 7

Spearman's Correlations between STSS and Demographic Predictor variables

		STSS	Age	Wkly Hrs	RN Exp	ED Exp
1. STSS		1.00	.110	-.116	-.013	-.127
	Sig.		.112	.094	.854	.063
	N	216	212	210	213	213

Note. Correlation was performed using Spearman's Correlation. A P-value of <0.05 was regarded as significant. Abbreviations for variables include: STSS: Secondary Traumatic Stress Score; Wkly Hrs: Reported hours worked weekly; RN Exp: Total Nursing Experience in years; ED Exp: Total Emergency Department nursing experience in in years; ED beds: Number of Emergency Department beds at facility

*Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Table 8

Pearson's Correlations between STSS and Brief COPE subscales (N=216)

	Total STSS
Problem-focused	
Active Coping	-.051 (p < .453)
Instrumental Support	-.063 (p < .354)
Positive Reframing	-.130 (p < .057)
Planning	-.050 (p < .468)
Emotion-focused	
Emotional Support	-.124 (p < .068)
Venting	**.475**** (p <.001)
Humor	**.467**** (p <.001)
Acceptance	.113 (p < .098)
Religion	**.407**** (p <.001)
Self-Blame	**.535**** (p <.001)
Avoidant	
Self-Distraction	**.145*** (p < .034)
Denial	**.487**** (p <.001)
Substance Use	**.583**** (p <.001)
Behavioral Disengagement	**.456**** (p <.001)

Note. A P-value of <0.05 was regarded as significant.

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Table 9

Pearson correlations between STSS and Work Life Quality (N=216)

	STSS	Home-Work Life	Work Design	Work Context	Work World
1. STSS	1.00	**-.260****	**-.204****	**-.505****	**-.236****
Sig.		<.001	.003	<.001	<.001

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Table 10

Multiple Regression Analysis between STSS and Significant Predictor Variables

Model	Dependent variable	R^2	Adj-R^2	F	df	p-value	Partial Eta^2	
1	STSS	.701	.655	15.266	28	<.001**	.701	
Model	Independent variable	B	Std.Error	t	p-value	95% CI Lower	95% CI Upper	Partial Eta^2
1								
	Marital Status ***^Not Married***	-2.241	1.563	-1.434	.153	-5.325	.843	.011
	Dept Adults ***^No to DA***	.483	1.505	.321	.749	-2.487	3.452	.001
	Personal Trauma ***^No to PT***	1.804	1.388	1.299	.195	-.935	4.542	.009
	Empl-Based Asst ***^No to EBA***	2.413	1.540	1.567	.119	-.626	5.453	.013
	Change Specialty ***^No to ICS***	3.681	1.753	2.099	**.037***	.221	7.140	.024
	Change Facility ***^No to ICF***	4.223	1.945	2.172	**.031***	.386	8.060	.025
	Shift Length							
	8hr shift	1.537	1.710	.899	.370	-1.837	4.911	.004
	10hr shift	1.497	1.981	.756	.451	-2.411	5.405	.003
	^12hr shift							
	Shift Type							
	Rotating shifts	-3.151	1.551	-2.032	**.044***	-6.210	-.092	.022
	Night shift	2.733	1.856	1.473	.143	-.929	6.395	.012
	Mid-shift	.966	2.559	.377	.706	-4.083	6.015	.001
	^Day shift							
	Trauma Level							
	Level I	7.722	3.603	2.143	**.033***	.613	14.831	.025
	Level II	1.496	2.262	.662	.509	-2.966	5.959	.002
	Level III	-1.110	2.008	-.553	.581	-5.072	2.853	.002
	Level IV	3.228	1.979	1.631	.105	-.677	7.133	.014
	Level V	.532	2.437	.218	.828	-4.277	5.340	.000
	^Non-Designated							
	Self-Distraction	1.641	.491	3.341	**.001****	.672	2.610	.058
	Denial	1.163	.520	2.239	**.026***	.138	2.188	.027
	Substance Use	1.861	.576	3.229	**.001****	.724	2.998	.054
	Behav Disengage	1.039	.510	2.036	**.043***	.032	2.047	.022
	Venting	1.177	.536	2.195	**.029***	.119	2.235	.026

	Humor	.689	.517	1.334	.184	-.330	1.708	.010
	Religion	.539	.492	1.095	.275	-.432	1.509	.007
	Self-Blame	.970	.529	1.836	.068	-.073	2.013	.018
	Home-Work Life	.071	.196	.364	.716	-.315	.457	.001
	Work Design	.058	.173	.335	.738	-.283	.398	.001
	Work Context	-.187	.077	-2.416	**.017***	-.339	-.034	.031
	Work World	.159	.266	.597	.551	-.366	.683	.002

Note. This table demonstrates findings of the multiple regression analysis and significant predictor variables of STSS

a. Dependent Variable: Secondary Traumatic Stress Score (STSS)

b. Predictors: Marital Status, Dependent Adults, Personal Trauma, Employer-Based Assistance, Specialty Change Intent, Facility Change Intent, Shift Length, Shift Type, Trauma Level DesignationSelf-Distraction, Denial, Substance Use, Behavioral Disengagement, Venting, Humor, Religion, Self-Blame, Home-Work Life, Work Design, Work Context, Work World

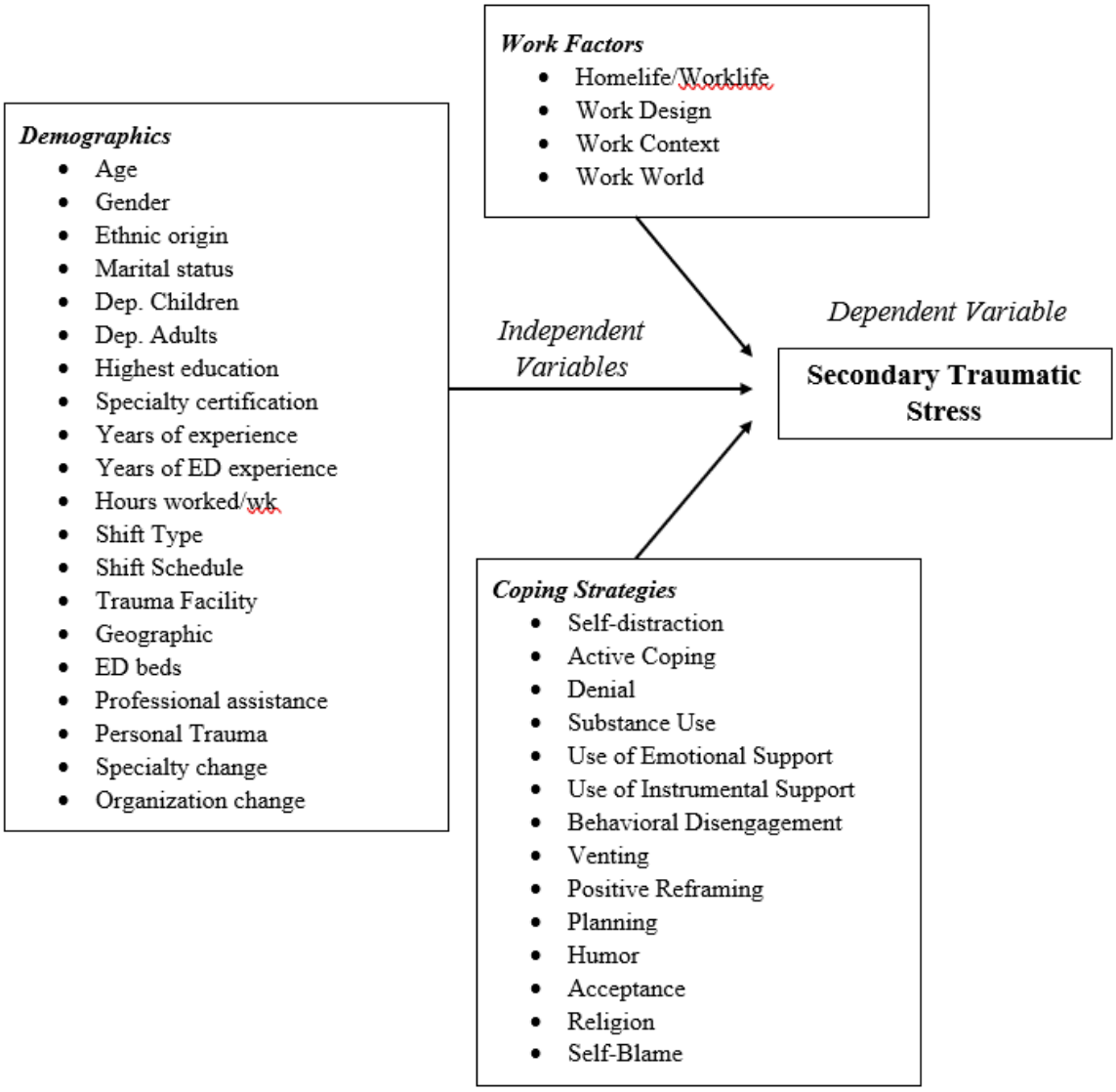
c. ^reference category designated for analysis

*Significance at .05 level.

**Significance at the .01 level

Figure 1

Theoretical Framework



Note. Variables to be explored as predictors of STS in this study were obtained from the literature and guided by the Transactional Model of Stress and Coping (Lazarus & Folkman, 1987).

Figure 2

Study Recruitment Flyer

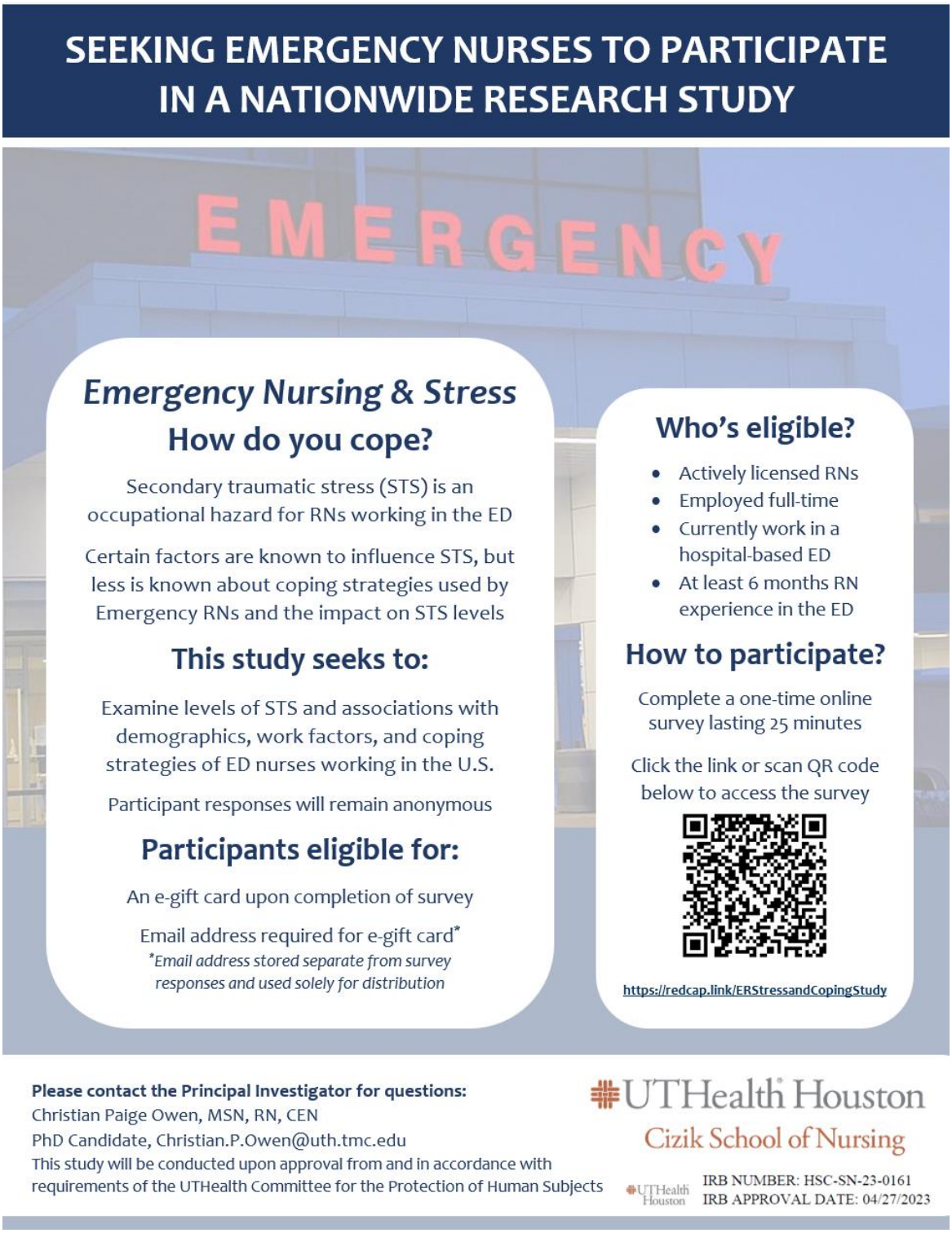


Figure 3

Study Flow Diagram

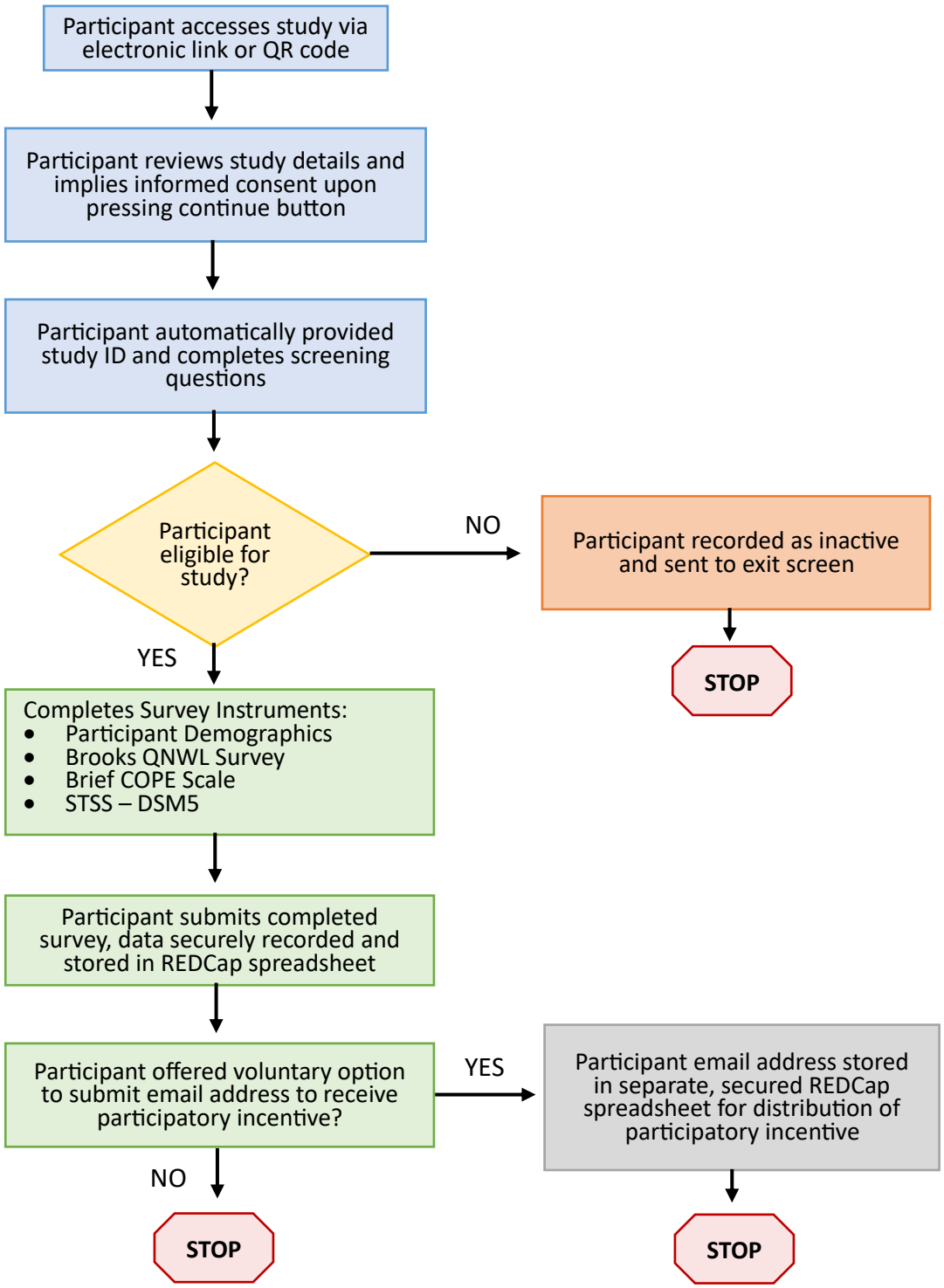
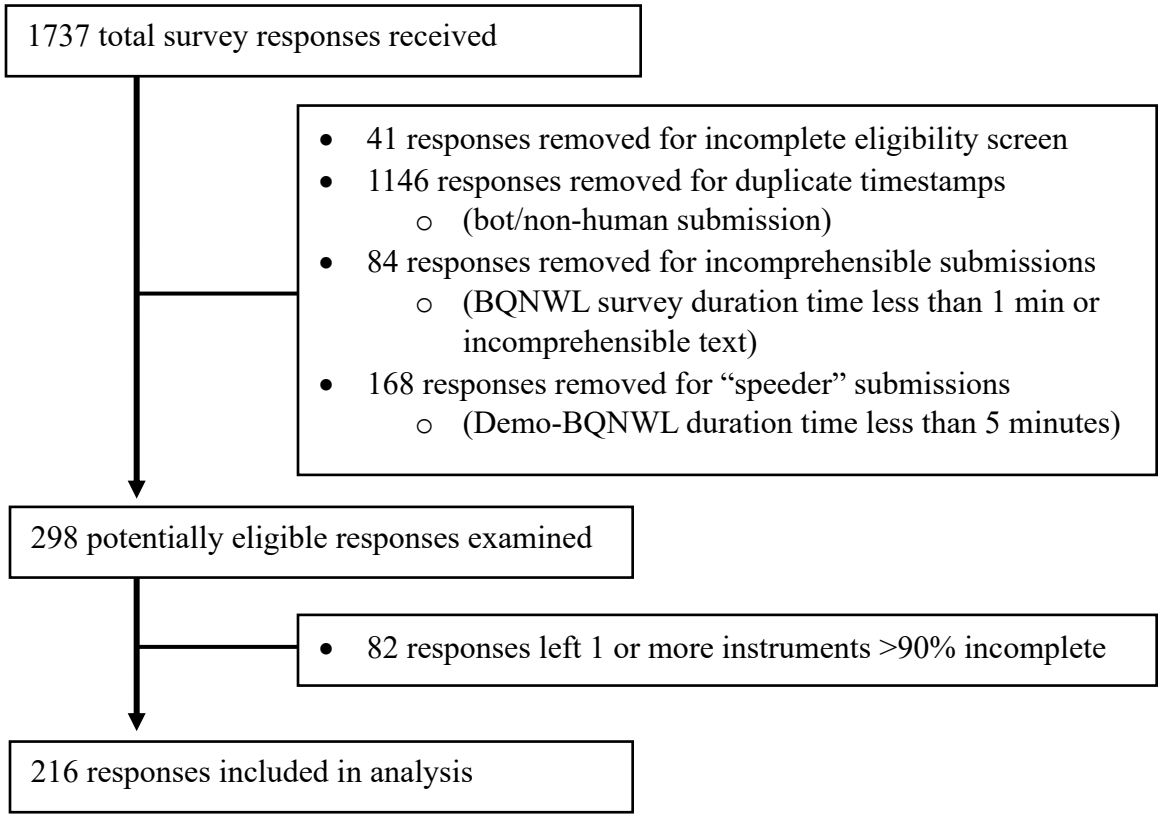


Figure 4

Participant Results Flow Diagram



Appendix A

UTHealth Houston

Committee for the Protection of Human Subjects

7000 Fannin Street, Suite 1870
Houston, Texas 77030

Christian Paige Owen, MSN, RN, CEN
UT-H - SN - Nursing Undergraduate Studies

NOTICE OF APPROVAL TO BEGIN RESEARCH April 27, 2023

HSC-SN-23-0161 - Secondary Traumatic Stress and Associations with Coping Use, Work Factors, and Demographics in a National Sample of Emergency Nurses: A Cross-Sectional Study

Number of Subjects Approved: Target: 370 **/Screen: 500**

PROVISIONS: This approval relates to the research to be conducted under the above referenced title and/or to any associated materials considered by the Committee for the Protection of Human Subjects, e.g. study documents, informed consent, etc.

APPROVED: By Expedited Review and Approval

REVIEW DATE: 04/27/2023

APPROVAL DATE: 04/27/2023

L. Maximilian Buja

CHAIRPERSON: L. Maximilian Buja, MD

Subject to any provisions noted above, you may now begin this research.

PLEASE NOTE: Due to revisions to the common rule that went into effect July 19, 2018, this study that was approved under expedited approval no longer needs to submit for continuing review. Changes to the study, adverse events, protocol deviations, personnel changes, and all other types of reporting must still be submitted to CPHS for review and approval. When this study is complete, the PI must submit a study closure report to CPHS.

CHANGES: The principal investigator (PI) must receive approval from the CPHS before initiating any changes, including those required by the sponsor, which would affect human subjects, e.g. changes in methods or procedures, numbers or kinds of human subjects, or revisions to the informed consent document or procedures. The addition of co-investigators must also receive approval from the CPHS. **ALL PROTOCOL REVISIONS MUST BE SUBMITTED TO THE SPONSOR OF THE RESEARCH.**

INFORMED CONSENT DETERMINATION:

Appendix B

UTHealth Houston

LETTER OF INFORMATION
TO TAKE PART IN RESEARCH

Study Title: Secondary traumatic stress and associations with coping use, work factors, and demographics in a national sample of emergency nurses: A cross-sectional study

Principal Investigator: Christian Paige Owen, MSN, RN, CEN
PhD Candidate, Cizik School of Nursing at UTHealth

IRB Number: HSC-SN-23-0161

The purpose of this study is to assess current levels of secondary traumatic stress (STS) among U.S. emergency nurses and examine associations between STS and demographic characteristics, work factors, and use of coping strategies. You are invited to take part in this study because you are an experienced Registered Nurse working full-time in a hospital-based emergency department. This study will help us better understand levels and predictors of STS as well as coping strategies used by emergency nurses, to inform strategies to improve mental health, care delivery, and retention of the emergency nursing workforce.

If you agree to participate, you will be asked to complete a one-time online survey lasting approximately 25 minutes.

The risks to participating in this study are expected to be minimal but may include feelings of stress or psychological discomfort while completing the study questionnaire. At the end of the survey, all participants will be provided resources for mental health services regardless of survey responses. These support resources are provided should you be experiencing stress, anxiety, and/or depression. You may not receive any benefits from participating in this study. However, you will be eligible to receive a $10 e-gift card from the study site upon completion of the survey if you provide your email address. Your email address will be only used for e-gift card distribution purposes and will be collected and stored separately from your survey responses to ensure anonymity.

There are no costs to you and you will not be paid to take part in this study. You will not be personally identified in any reports or publications that may result from this study. Any personal information about you that is gathered during this study will remain confidential to the extent of the law.

You can refuse to answer any questions asked or written on any forms. Your participation in this study is voluntary. A decision not to take part in this study will not change the services available to you from the PI or study staff.

If you have any questions about this study, please contact Christian Paige Owen at (713) 714-6881.

This research project has been reviewed by the Committee for the Protection of Human Subjects (CPHS) of the University of Texas Health Science Center at Houston, HSC-SN-23-0161. For any questions about your rights as a research subject, please call CPHS at (713) 500-7943.

UTHealth Houston IRB NUMBER: HSC-SN-23-0161
IRB APPROVAL DATE: 04/27/2023

Appendix C

Eligibility Screening Questions

Please answer the questions below to determine eligibility for the study:

1. Please identify your professional role:

Registered Nurse (bedside) Advanced Practice Nurse Nurse Leader/Manager

2. In what facility is your primary place of work?

Hospital-based ED Free-standing ED Urgent Care Non-hospital setting
Other

3. How many hours per week do you work:

0-9 10-19 20-29 30-40+

4. How long have your worked in the ED?

Less than 6 months 6 months or more

If participants answer the above questions according to the underlined responses, they will be considered eligible for the study and move forward to complete the full survey with study instruments.

Participant Demographic Questionnaire

Please provide an answer or choose the appropriate response best describing you for each question.

1. Age:
____ (please enter your current age)

2. Gender:
Male (1) Female (2) Other (3)

3. Ethnic origin:
White (1) Hispanic or Latino (2) Black or African American(3) Asian (4) Other (5)

4. Marital Status:
Single (1) Married/Domestic partnership (2) Divorced /Separated (3) Widowed (4)

5. Dependent children:

Yes (1) No (2)

6. Dependent adults:
Yes (1) No (2)

7. Highest Education completed:
Associate Degree (1) Bachelor's Degree (2) Master's Degree (3) Doctorate Degree (4)

8. Specialty Certification (CEN, CPEN, TCRN, etc.):
Yes (1) No (2)

9. Years of experience as a nurse:
_____ (please enter nursing experience in number of years)

10. Years of experience in the ED:

_____ (please enter ED experience in number of years)

11. Hours worked per week:

_____ (please enter average number of hours worked per week)

12. Shift type:

8 hour shift (1) 10 hour shift (2) 12 hour shift (3) 16 hour shift (4)

13. Primary shift schedule:

Dayshift (1) Nightshift (2) Midshift (3) Rotating Shifts (4)

14. Facility Trauma Designation:

Non-designated (0) Level I (1) Level II (2) Level III (3) Level IV (4) Level V (5)

15. Geographic Region of hospital: (select one)
Northeast (PA, NY, NJ, CT, VT, MA, RI, NH, ME) (1)

Midwest (ND, SD, NE, KS, MN, IA, MO, WI, IL, IN, MI, OH) (2)

South (TX, OK, AR, LA, MS, AL, TN, KY, WV, MD, DE, DC, VA, NC, SC, GA, FL) (3)

West (AK, HI, WA, OR, CA, NV, ID, MT, WY, UT, CO, AZ, NM) (4)

16. **Number of ED beds in your facility:**
_____ (please enter total number of emergency care beds in your ED)

17. **Have you ever sought employer-based or professional assistance for work-related stress**?

Yes (1) No (2)

18. **Have you ever been directly impacted by a personal traumatic event in your lifetime?**

Yes (1) No (2)

19. **Are you currently considering a job change to a different nursing specialty?**

Yes (1) No (2)

20. **Are you currently considering a job change to a different facility?**

Yes (1) No (2)

SECONDARY TRAUMATIC STRESS SCALE – DSM 5

The following is a list of statements made by persons who have been impacted by their work with traumatized clients. Read each statement then indicate how frequently the statement was true for you in the past **seven (7) days** by circling the corresponding number next to the statement.

NOTE: *"Client" is used to indicate persons with whom you have been engaged in a helping relationship. You may substitute another noun that better represents your work such as consumer, patient, recipient, etc.*

	Never	Rarely	Occasionally	Often	Very Often
1. I felt emotionally numb	1	2	3	4	5
2. My heart started pounding when I thought about my work with clients	1	2	3	4	5
3. It seemed as if I was reliving the trauma(s) experienced by my client(s)	1	2	3	4	5
4. I had trouble sleeping	1	2	3	4	5
5. I felt discouraged about the future	1	2	3	4	5
6. Reminders of my work with clients upset me	1	2	3	4	5
7. I had little interest in being around others	1	2	3	4	5
8. I felt jumpy	1	2	3	4	5
9. I was less active than usual	1	2	3	4	5
10. I thought about my work with clients when I didn't intend to	1	2	3	4	5
11. I had trouble concentrating	1	2	3	4	5
12. I avoided people, places, or things that reminded me of my work with clients	1	2	3	4	5
13. I had disturbing dreams about my work with clients	1	2	3	4	5
14. I wanted to avoid working with some clients	1	2	3	4	5
15. I was easily annoyed	1	2	3	4	5
16. I expected something bad to happen	1	2	3	4	5
17. I noticed gaps in my memory about client sessions	1	2	3	4	5
18. I experienced negative emotions	1	2	3	4	5
19. I engaged in reckless or self-destructive behavior	1	2	3	4	5
20. I unrealistically blamed others for the cause or consequences of the trauma(s) experienced by my client(s)	1	2	3	4	5
21. I had negative expectations about myself, others, or the world	1	2	3	4	5

Citation: Bride, B.E. (2013). The Secondary Traumatic Stress Scale, DSM 5 Revision. Unpublished Manuscript.

The Brief COPE Inventory

(Carver, 1997)

These items deal with ways you've been coping with the stress in your life related to your work as an emergency nurse. Obviously, different people deal with things in different ways, but I'm interested in how you've tried to deal with it. Each item says something about a particular way of coping. I want to know to what extent you've been doing what the item says. How much or how frequently. Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it. Use the response choices on the scale below. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

Scale: 1 = I haven't been doing this at all; 2 = I've been doing this a little bit; 3 = I've been doing this a medium amount; 4 = I've been doing this a lot

Questions:

_____ 1. I've been turning to work or other activities to take my mind off things.
_____ 2. I've been concentrating my efforts on doing something about the situation I'm in.
_____ 3. I've been saying to myself "this isn't real.".
_____ 4. I've been using alcohol or other drugs to make myself feel better.
_____ 5. I've been getting emotional support from others.
_____ 6. I've been giving up trying to deal with it.
_____ 7. I've been taking action to try to make the situation better.
_____ 8. I've been refusing to believe that it has happened.
_____ 9. I've been saying things to let my unpleasant feelings escape.
_____ 10. I've been getting help and advice from other people.
_____ 11. I've been using alcohol or other drugs to help me get through it.
_____ 12. I've been trying to see it in a different light, to make it seem more positive.
_____ 13. I've been criticizing myself.
_____ 14. I've been trying to come up with a strategy about what to do.
_____ 15. I've been getting comfort and understanding from someone.
_____ 16. I've been giving up the attempt to cope.
_____ 17. I've been looking for something good in what is happening.
_____ 18. I've been making jokes about it.
_____ 19. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.
_____ 20. I've been accepting the reality of the fact that it has happened.
_____ 21. I've been expressing my negative feelings.
_____ 22. I've been trying to find comfort in my religion or spiritual beliefs.
_____ 23. I've been trying to get advice or help from other people about what to do.
_____ 24. I've been learning to live with it.
_____ 25. I've been thinking hard about what steps to take.
_____ 26. I've been blaming myself for things that happened.
_____ 27. I've been praying or meditating.
_____ 28. I've been making fun of the situation.

Brooks' Quality of Nursing Work Life Survey

This survey contains statements about nursing work life. Please indicate how much you disagree or agree with each statement using the scale given below. If you are unsure about your answer to a given item, think about it for a minute and then respond. Please mark you answer by circling one number. There are no right or wrong answers.

Please answer the following questions about the ED where you currently work.

	Strongly Disagree					**Strongly Agree**
1. I receive a sufficient amount of assistance from unlicensed support personnel (the dietary aides, housekeeping, patient care technicians, and nursing assistants).	1	2	3	4	5	6
2. I am satisfied with my job.	1	2	3	4	5	6
3. My workload is too heavy.	1	2	3	4	5	6
4. In general, society has an accurate image of nurses.	1	2	3	4	5	6
5. I am able to balance work with my family needs.	1	2	3	4	5	6
6. I have the autonomy to make patient care decisions.	1	2	3	4	5	6
7. I am able to communicate well with my nurse manager/supervisor.	1	2	3	4	5	6
8. I have adequate patient care supplies and equipment.	1	2	3	4	5	6
9. My nurse manager/supervisor provides adequate supervision.	1	2	3	4	5	6
10. It is important for a hospital to offer employees on-site childcare services.	1	2	3	4	5	6
11. I perform many non-nursing tasks.	1	2	3	4	5	6
12. I have energy left after work.	1	2	3	4	5	6
13. Friendships with my co-workers are important to me.	1	2	3	4	5	6
14. My work setting provides career advancement opportunities.	1	2	3	4	5	6
15. There is teamwork in my work setting.	1	2	3	4	5	6
16. I experience many interruptions in my daily work routine.	1	2	3	4	5	6
17. I have enough time to do my job well.	1	2	3	4	5	6
18. There are enough RNs in my work setting.	1	2	3	4	5	6
19. I feel a sense of belonging in my workplace.	1	2	3	4	5	6
20. Rotating schedules negatively affect my life.	1	2	3	4	5	6
21. I am able to communicate with other therapists (physical, respiratory, etc.).	1	2	3	4	5	6
22. I receive feedback on my performance from my nurse manager/supervisor.	1	2	3	4	5	6
23. I am able to provide good quality patient care.	1	2	3	4	5	6
24. My salary is adequate for my job given the current job market conditions.	1	2	3	4	5	6
25. My organization's policy for family-leave is adequate.	1	2	3	4	5	6
26. I am able to participate in decisions made by my nurse manager/supervisor.	1	2	3	4	5	6
27. It is important for a hospital to offer employees on-site day care for elderly parents.	1	2	3	4	5	6
28. I feel respected by physicians in my work setting.	1	2	3	4	5	6
29. It is important to have a designated, private break area for the nursing staff.	1	2	3	4	5	6
30. It is important to me to have nursing degree-granting programs available at my hospital.	1	2	3	4	5	6

31. I receive support to attend inservices and continuing education programs.	1	2	3	4	5	6
32. I communicate well with the physicians in my work setting.	1	2	3	4	5	6
33. I am recognized for my accomplishments by my nurse manager/supervisor.	1	2	3	4	5	6
34. Nursing policies and procedures facilitate my work.	1	2	3	4	5	6
35. The security department provides a secure environment.	1	2	3	4	5	6
36. It is important for a hospital to offer employees on-site ill child care services.	1	2	3	4	5	6
37. I would be able to find my same job in another organization with about the same salary and benefits.	1	2	3	4	5	6
38. I feel safe from personal harm (physical, emotional, or verbal) at work.	1	2	3	4	5	6
39. I believe my job is secure.	1	2	3	4	5	6
40. Upper-level management has respect for nursing.	1	2	3	4	5	6
41. My work impacts the lives of patients/families.	1	2	3	4	5	6
42. I receive quality assistance from unlicensed support personnel (the dietary aids, housekeeping, patient care technicians, and nursing assistants).	1	2	3	4	5	6

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phone 773-612-7224 • thebrooksgroupllc.net
The Brooks Group

June 3, 2022

Ms. C. Paige Owen, MSN, RN, CEN
PhD Candidate, Jonas Scholar 2021-2023
Cizik School of Nursing
UT Health Houston
Houston, TX 77030

Dear Paige:

You have permission to use my instrument Brooks' Quality of Nursing Worklife Survey© in your dissertation research as a doctoral student at UT Health. I understand your study will explore the prevalence and predictors of traumatic stress in emergency nurses.

In return, I require that you:

- Report summary findings to me from the survey, including reliability analysis
- Credit the use and my authorship of the survey in any publication of your research

Keep in mind that the survey was originally designed to assess the nursing worklife of staff nurses working in hospitals. Some items may require minor modification in order to be culturally relevant. Using the survey with other groups of nurses (e.g. charge nurses, nurse managers, nurse midwives, etc.) requires creating a new survey specifically designed to understand the worklife concerns of those nurses. Making significant changes to the intent of the item and/or adding items is prohibited. You may customize the demographic section as needed.

Please don't hesitate to call upon me to discuss your research. I am also available for onsite speaking or consultation.

Good luck with your research.

Sincerely,

Beth A. Brooks

Beth A. Brooks, PhD, RN, FACHE
President

Robert Wood Johnson Foundation Executive Nurse Alumnus, 2012 Cohort

Curriculum Vitae

Christian Paige Owen, PhD(c), MSN, RN, CEN
Christian.P.Owen@uth.tmc.edu
February 2024

EDUCATION

Degree	Institution	Date
PhD, Nursing	Jane & Robert Cizik School of Nursing at UTHealth, Houston, Texas	May 2024* *degree to be conferred
Post-Master's, Nursing Education	Jane & Robert Cizik School of Nursing at UTHealth, Houston, Texas	2020-2021* *courses completed
MSN, Leadership & Administration	Jane & Robert Cizik School of Nursing at UTHealth, Houston, Texas	2019
BSN	University of Texas Health Science Center at Houston School of Nursing, Houston, Texas	2007

Other Education

EMT Basic Certification	Cypress Creek Emergency Medical Services Education Program, Spring, Texas	2014
Texas Educator Certification, Secondary Education	Texas Teachers Alternative Teacher Certification Program, Houston, Texas	2013-2014
Sexual Assault Nurse Examiner Regional Training – Adult & Pediatric	Sexual Assault Prevention & Crisis Services Program, Crime Victim Services Division of the Texas Office of the Attorney General	July 2011
Pre-requisite Courses	Lone Star College, Cypress, Texas	2004-2005

LICENSURE & CERTIFICATION

State	Active or Inactive	Dates
Registered Nurse, Texas	Active Compact License (#741431)	6/2007 – 7/2024
EMT, Texas DSHS	Inactive License (#737112)	11/2014 – 12/2018
EMS Instructor, Texas DSHS	Inactive License (#175289)	2/2016 – 12/2018

Certification	Certifying Body	Dates
Certified Emergency Nurse	Board of Certified Emergency Nurses	10/2010 – 8/2026
TeamSTEPPS Master Trainer	Texas IPE Consortium	4/2021- Present

CITI: Good Clinical Practice Basic Course	Collaborative Institutional Training Initiative	8/2020 – 2/2027
CITI: Human Research, Group 2 Social & Behavioral Researchers & Key Personnel Basic Course	Collaborative Institutional Training Initiative	8/2020 – 8/2023
CITI: GCP – Social and Behavioral Research Best Practices for Clinical Research	Collaborative Institutional Training Initiative	2/2024 – 2/2027
Trauma Nursing Core Course (TNCC) Provider	Emergency Nurses Association	5/2009 - 8/2023
Emergency Nursing Pediatric Course (ENPC) Provider	Emergency Nurses Association	6/2017 - 5/2025
Emergency Medical Technician	National Registry of Emergency Medical Technicians	11/2014 – 5/2021
Certified Educator, Health Science Technology Education (Grades 8-12)	Texas Education Agency	10/2014 - 7/2020
Stop the Bleed Instructor	American College of Surgeons	7/2022 - Present
Basic Life Support (BLS) Provider	American Heart Association	5/2006 - 6/2024
Advanced Cardiac Life Support (ACLS) Provider	American Heart Association	8/2009 - 8/2024
Pediatric Advanced Life Support (PALS) Provider	American Heart Association	5/2010 – 6/2014
Certified Sexual Assault Nurse Examiner, Adult (SANE- A)	Commission for Forensic Nursing Certification, International Association of Forensic Nurses	5/2013 – 12/2016
Certified Sexual Assault Nurse Examiner, Pediatric (SANE-P)	Commission for Forensic Nursing Certification, International Association of Forensic Nurses	5/2013 – 12/2016
Certified Sexual Assault Nurse Examiner, Adult & Pediatric (CA/CP-SANE)	Texas Office of the Attorney General	5/2012 – 5/2014
Basic Disaster Life Support	National Disaster Life Support Foundation	6/2009 – 12/2012
Advanced Disaster Life Support	National Disaster Life Support Foundation	6/2009 – 12/2012
NIMS 100	National Incident Management System/FEMA	9/2014 - Present
NIMS 200	National Incident Management System/FEMA	9/2019 - Present

NIMS 700	National Incident Management System/FEMA	9/2014 – Present
NIMS 800	National Incident Management System/FEMA	9/2019 - Present

PROFESSIONAL EXPERIENCE

Institution	**Position title**	**Inclusive Dates**
HealthStream	Sr. Product Manager	11/2023 – Present
Sigma Theta Tau International	Manager of Education	11/2022 – 11/2023
Jane & Robert Cizik School of Nursing at UTHealth Houston, Texas	Instructor, Undergraduate Programs	5/2019 – 12/2022
Sam Houston State University, College of Health Sciences The Woodlands, Texas	Adjunct Clinical Instructor, Nursing	8/2019 – 12/2019
America's ER Medical Center Cypress, Texas	Emergency Staff Nurse (PRN)	5/2019 – 12/2019
Axiom Medical Consulting, LLC., Professional Development Department The Woodlands, Texas	Nurse Educator, Telephonic Nurse Case Manager	5/2018 – 4/2019
Buffalo Consulting, LLC. Galveston, Texas	TNCC/ENPC Course Instructor	12/2017 – 1/2020
Houston Methodist The Woodlands Hospital, Education Department The Woodlands, Texas	Nurse Education Specialist, Emergency Service Line	5/2017-5/2018
Harris Health System, System Quality & Risk Management Houston, Texas	Patient Safety Manager	11/2016 – 5/2017
University of Texas Health Science Center at Houston School of Dentistry, Houston, Texas	Manager of Clinical Safety, Infection Control & Emergency Preparedness; Oral Surgery RN	6/2016 – 11/2016
Tomball Independent School District, Tomball Memorial High School Tomball, Texas	Health Science Technology Education Teacher, EMS Instructor, HOSA Club Advisor	8/2013 – 6/2016
Memorial Hermann Healthcare System, Forensic Nurse Response Team & Mobile Forensic Unit Houston, Texas	Forensic Nurse Examiner	4/2012 – 9/2013

Priority Emergency Room Katy, Texas	Emergency Staff Nurse	1/2012 – 12/2012
St. Luke's Hospital at The Vintage, Emergency Department Houston, Texas	Emergency Staff Nurse, Charge Nurse, Clinical Preceptor	10/2010 – 4/2012
Houston Methodist Hospital (TMC), Emergency Department Houston, Texas	Emergency Staff Nurse, Charge Nurse, Clinical Preceptor	6/2007 – 10/2010

PUBLICATIONS

Owen, C. P., Djukic, M., Whisenant, M., Lobiondo-Wood, G. (2022) Factors of maladaptive coping in emergency healthcare professionals: A systematic review. *Journal of Nursing Scholarship*, 55(2), 536-548. https://doi.org/10.1111/jnu.12848

Galle, K. & **Owen, C. P.** (2022). Violence. In Nies, M. & McEwen, M. (Eds.), *Community/Public health nursing: Promoting the health of populations* (8th ed.). St. Louis: Elsevier.

Owen, C.P. (April, 2020). It's dark outside. *Journal of Emergency Nursing On the Other Side of the Rails Blog*. https://www.jenonline.org/content/ymen-blog-april-2020

Visser, L. & Montejano, A. (2023). *Rapid Access Guide for Triage and Emergency Nurses* (2nd ed.) New York: Springer Publishing. [Guest Reviewer on Chapter 5: Older Adult & Chapter 25: Sexual Assault/IPV]

PRESENTATIONS

Owen, C. & Gomez, J. (2023, August). *Feedback in the clinical setting* [oral in-person presentation]. GNSA's Digital Innovators Program Project. AACN's 2023 GNSA Conference. Washington, D.C.

Owen, C. (2023, May). *Coping with trauma(tic) work: Staying steady in the storm* [oral in-person presentation]. AACN's NTI ExpoEd 2023 Conference. Philadelphia, Pennsylvania

Owen, C. (2023, May). *Conference abstracts made easy... Showcase what you know and GO!* [oral in-person presentation]. AACN's NTI ExpoEd 2023 Conference. Philadelphia, Pennsylvania

Owen, C. (2023, May). *"Tag, you're it!" Empowering leadership on the frontlines.* [oral in-person presentation]. AACN's NTI ExpoEd 2023 Conference. Philadelphia, Pennsylvania

Owen, C. & Hekel, B. (2023, February). *An empirical exploration of attitudes, practices, and needs regarding trauma-informed education among nursing faculty.* [accepted as in-person presentation for February 2023]. Sigma's Creating Healthy Work Environments 2023 Conference. Austin, Texas.

Owen, C. (2022, October). *Coping with Trauma(tic) Work* [oral presentation with NCPD]. Houston ENA's 2022 Spooky Topics Educational Symposium. Memorial Hermann Cypress Hospital. Cypress, Texas.

Owen, C., Djukic, M., Whisenant, M. & Wood, G. (2022, July). *Factors of maladaptive coping in emergency healthcare professionals: A systematic review* [accepted as Rising Star poster presentation]. Sigma's 33rd International Nursing Research Congress. Edinburg, Scotland.

Pine, R., Yu, E., Von Wenckstern, T. Santa Maria, D., McCain, C., Ebel, J., & **Owen, C.** (2022, July). *Outcomes of enabling student placement during a pandemic: a strategic academic partnership* [accepted for oral presentation]. Sigma's 33rd International Nursing Research Congress. Edinburg, Scotland.

Owen, C. P. (2022, July). *RAPID psychological first aid: Providing support during times of stress.* Guest presenter (invited). UTHealth's Summer Health Professions Education Program. McGovern School of Medicine. Houston, Texas.

Hekel, B. & **Owen, C. P.** (2022, May). A trauma-informed approach to nursing education [In-person Faculty Professional Development CNE opportunity]. Cizik School of Nursing. Houston, Texas.

Owen, C.P. (2021, July). *Maintaining mindfulness (and your sanity) in nursing…* Guest presenter (invited). Cizik School of Nursing's chapter of National Alliance for Mental Illness (NAMI).

Owen, C.P. (2021, April). *Secondary traumatic stress, emergency care, and clinical education initiatives* [oral presentation]. Virtual Cizik School of Nursing and UT School of Dentistry Collaboration Workshop.

Owen, C.P., Ebel, J., Yu, E., McCain, C., Pine, R., VonWenckstern, T. and Djukic, M. (2021, February). *Catalyzing a practice-academic partnership model with dedicated education units to meet the clinical care and education needs during the Covid-19 pandemic* [oral presentation]. Southern Nursing Research Society 35th Annual Conference: Humanizing Care through Technology and Interdisciplinary Collaboration Virtual Conference.

Owen, C.P. (2020, 2021, 2022). *Acute stroke, traumatic brain injury, and acute spinal cord injury*. Cizik School of Nursing at UTHealth, Houston, Texas. Repeat Guest Lecturer (invited). Undergraduate Nursing Program, N4538: Management of Patients in High Acuity Settings.

PROFESSIONAL SERVICE

Professional Memberships

Sigma Theta Tau International, Zeta Pi Chapter	2017- Present
Emergency Nurses Association, Texas Emergency Nurses Association, Houston ENA Chapter	2007 – Present
American Nurses Association, Texas Nurses Association, District 9	2019 - Present
Southern Nurses Research Society	2020 - Present
International Society for Traumatic Stress Studies	2020 - Present
Council for the Advancement of Nursing Science	2024 - Present

Positions of Service ***Elected***

Cizik School of Nursing	Baccalaureate Council Member	1/2019- 12/2022
	RN-BSN Task Force Member	1/2019- 12/2022
	Admissions, Progression, and Graduation (APG) Committee*	8/2022 – 12/2022
	Simulation Committee	8/2020- 12/2022
	DEU Pilot Program	8/2020- 9/2020
	Faculty Life Council*	8/2022- 12/2022
Emergency Nurses Association	Houston ENA President*	1/2024 - Present
	Houston ENA President-Elect*	1/2023 – 12/2023
	Houston ENA Director*	8/2020- 12/2022
	Texas ENA Workplace Violence Task Force Committee Member	1/2022- Present
Sigma Theta Tau International, Zeta Pi Chapter	Member, Nurse Leader inductee	5/2017- Present
	Member, Leadership Succession Committee*	1/2022- Present
	Membership Task Force	8/2020- 2022
	President*	10/2018- 6/2020
	Vice President*	5/2017-10/2018
Texas IPE Consortium	Facilitator, TeamSTEPPS Virtual Master Training Course	11/2021-Present
Policy, Politics, & Nursing Practice	Manuscript Reviewer	5/2021-Present
Journal of Emergency Nursing	Manuscript Reviewer	4/2020-Present
Houston Methodist The Woodlands Hospital	Chest Pain Accreditation Committee	5/2017-5/2018
	Stroke Accreditation Committee	5/2017-5/2018
	Peer Review Committee	5/2017-5/2018
Houston Methodist Hospital System	Member, Emergency Department Professional Development Council (EDPDC)	5/2017-5/2018
Ben Taub General Hospital Harris Health System	Member, CLER Accreditation Committee	11/2016-5/2017
Cypress Creek EMS/Tomball ISD, Tomball, Texas	Instructor, BLS/Heartsaver First Aid	5/2014-5/2016
	EMS Instructor, DSHS Approved EMT-B Course #610981	8/2015-5/2016

	EMS Instructor, DSHS Approved EMT-B Course #610107	8/2014- 5/2015
Tomball Memorial High School, Tomball ISD, Tomball, Texas	Advisor, Health Occupations Students of America (HOSA)	8/2013-6/2016
	Instructor, Teen Community Emergency Response Team (CERT)	11/2015-12/2015
Montgomery County Sexual Assault Response Team (Montgomery County SART), Conroe, Texas	Member, Forensic Nurse Representative	2012-2014
Memorial Hermann Hospital System Houston, Texas	Forensic Nursing Unit Representative, Nursing Unit Practice Council	2012-2014
Houston Methodist Hospital Houston, Texas	Co-Chair, Emergency Department Shared Governance Council	2008-2010

HONORS & AWARDS

Award	**Awarding Organization**	**Date**
Texas ENA Dissertation Grant: $6000	Texas Emergency Nurses Association	August 2023
Bronze Medalist – Nursing Education	The Good Samaritan Foundation	July 2022
Rising Star Award	Zeta Pi Chapter, Sigma Theta Tau International	July 2022
Jonas Nursing and Veterans Healthcare Scholar $30,000	Jonas Philanthropies, in collaboration with Cizik School of Nursing	2021-2023
Texas ENA Doctoral Scholarship: $6000	Texas Emergency Nurses Association	August 2021
ENA Foundation Member-Supported Doctoral Scholarship: $2750	Emergency Nurses Association Foundation	August 2021
ENA Foundation Member-Supported Doctoral Scholarship: $4000	Emergency Nurses Association Foundation	August 2020
Healthcare & Nursing Education Foundation Scholar	Greater Houston Community Foundation	May 2020-Present

PhD Student Award	Zeta Pi Chapter, Sigma Theta Tau International	December 2019
Joan Eberhardt Memorial Endowment Scholarship: $5000	Emergency Nursing Association Foundation	August 2019
MSN Student Award	Zeta Pi Chapter, Sigma Theta Tau International	May 2019
BCEN Honorary Certification Recognition Award, Large Facility. Houston Methodist Hospital System	Board of Certified Emergency Nurses, Emergency Nurses Association	October 2017
A+ Teacher of the Year	Tomball Memorial High School, Tomball ISD	2014 – 2015