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A Literature Review Evalating PTSD Rates Among Healthcare Professionals Working in Emergency Transport and Critical Care Settings

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ABSTRACT

Background: The occupational stressors experienced by nurses and assistive personnel working in critical care settings can be extremely detrimental to their overall mental health. Employees in specialized units such as the intensive care unit (ICU), cardiac intensive care unit (CICU), surgical trauma intensive care unit (STICU), pediatric intensive care unit (PICU), medical intensive care unit (MICU), neonatal intensive care unit (NICU), Emergency Department (ED) or Emergency Room (ER), and Critical Care Transport (CCT) settings are responsible for patients requiring a higher level of care, and consequently, have more to worry about throughout their workday. **Research Question:** Climbing rates of Post-Traumatic Stress Disorder (PTSD) among this population may be a viable assessment of which critical care units are most susceptible to meeting diagnostic criteria due to work related events. How do PTSD rates compare among healthcare professionals working in emergency transport and critical care settings? **Literature Review:** Major findings within the quantitative studies indicated that between 4.35% (N=6) and 14% (N=7) of respondents met symptom criteria to be diagnosed with PTSD. The qualitative results emphasized why the occurrences within these critical care units are to blame for occupational stress. Furthermore, there was evidence to support that higher factors of resiliency reduce the incidence of PTSD. **Proposal:** Based on the findings, I propose that additional quantitative cross-sectional studies be carried out to identify specific employment settings as more or less detrimental to the mental health of nurses by using verified, diagnostic tools for PTSD. These studies will examine the PTSD rates of nurses from a variety of backgrounds including, but not limited to, the ED/ER, ICU, CICU, STICU, PICU, MICU, NICU, ground based CCT, rotor wing CCT, or fixed wing air ambulance CCT in both civilian and military settings in the United States.

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INTRODUCTION

The environments in which healthcare professionals work may have the widest range of possibilities among all occupations, but which of those environments are most detrimental to the employees mental status within their respective specialties? Post-Traumatic Stress Disorder (PTSD), whether diagnosed or not, is an issue among professional medical providers and especially those in high acuity settings. Paramedics, Emergency Medical Technicians (EMT's), and all Emergency Medical Service (EMS) personnel are known to have higher rates of post traumatic stress symptoms when compared to an individual working in healthcare administration, but how does this compare to Nurses who specialize in critical care transport (CCT), emergency department or emergency room (ED or ER) nurses, and intensive care unit (ICU) nurses (Hruska, 2021)? Within this investigation, the mental health detriments of civilian and military healthcare professionals will be examined. This comprehensive literature review will provide insight into which specialties have the highest rates of deteriorating mental health, in addition to investigating therapeutic interventions to keep those rates from climbing.

Those who pursue careers in healthcare often do so because they are proficient in interacting with others. Within this practice, these employees can easily develop a relationship with their patients, and in fact, they are instructed to do so through a technique called establishing rapport. However, in emergency healthcare, the time to do so is often extremely limited. For example, A med-evac nurse rescuing a patient who had fallen off a high-angle cliff in a remote area of the wilderness will be more concerned about the clinical status of the individual because it is more of a life or death scenario. Or being a nurse during the covid-19 pandemic, for example, will likely have to relive their experiences and stress of caring for their critically-ill patients (Levi, 2022). It can easily be observed that these occupations have the potential to cause mental instabilities among individuals who are employed in these areas. More importantly, emergency transport nurses working in the military are especially susceptible to post traumatic stress disorder or a related diagnosis. To juxtapose the previous analogy involving the med-evac nurse, the

members of a United States Air Force critical care air transport team or aeromedical evacuation team will have different lived experiences within their professional lives (Swearingen, 2017).

SEARCH STRATEGY

The objective of this comprehensive literature review is to determine which specialties in nursing practice yield the highest incidence of Post-Traumatic Stress Disorder, or any of the accompanying symptoms. This thesis aims to identify if ICU, ED or ER, and CCT settings are most associated with mental health instabilities. In gathering data from primary research articles of previous studies, the databases referenced included CINAHL complete, Iceberg, PsychInfo, and PubMed. Search terms included, but are not limited to ptsd, post traumatic stress disorder, posttraumatic stress disorder, post-traumatic stress disorder, ICU, intensive care unit, nursing, critical care, critical care transport, flight nursing, emergency department, ED, emergency room, ER, emergency medical services, EMS, paramedic, emergency medical technician, EMT, medical service, medical evacuation, and medevac. Using the above search criteria, over 1700 full text articles were found and 6 were chosen to be viable for this literature review. The articles elected for further review were picked for their generalizability, methodology, originality, focus of the study, study design, methods, and time periods. The publication dates range from October of 2010 to August of 2022, demonstrating present day significance and validity.

LITERATURE REVIEW

Of the six articles chosen for this review, two cover the post-traumatic symptoms of healthcare professionals who have careers in military medicine, while the other four studies analyze populations of civilian healthcare professionals. A literature review table can be found in appendix A. Categorical associations were made and weighed against one another in an attempt to implicate one professional setting as more or less detrimental to a person's mental health over

time. In category one, the professional lives of United States Air Force, United States Army, and

United States Navy medical personnel were analyzed by conducting surveys and interviews to

assess the degree of behavioral and mental health impairment. The second category of research

studies the lives of civilian healthcare professionals. For those unfamiliar with the term,

Cambridge Dictionary defines the word civilian as any "person who is not a member of the

police or the armed forces" (Cambridge University Press, 2023). This category will analyze the

mental health detriments to those working in a variety of critical care environments like the

ER/ED, ICU, Medical Intensive Care Unit (MICU), Surgical Intensive Care Unit (SICU),

Cardiac Intensive Care Unit (CICU), Neuro ICU, or any variation of critical care transport.

CATEGORY ONE

The articles discussed below revolve primarily around the teams of individuals who are

employed in critical care transport for the United States Air Force, but also include some data

from US Army and US Navy personnel. These teams, whether in a ground or air transport field,

typically consist of a critical care physician, a registered nurse, a respiratory therapist, and a

medical technician (Swearingen, 2017). Both articles within this category reference Aeromedical

Evacuation (AE) crews, in addition to Critical Care Air Transport Teams (CCATT) which are not

terms to be used interchangeably. The scope of practice of an aeromedical evacuation crew

differs from a critical care air transport team in that they aim to retrieve the patient from the point

of injury, and get them to a setting where a higher level of care can be administered. The AE

team consists of two flight nurses and three aeromedical evacuation technicians, but the staffing

may fluctuate in order to "meet mission requirements" (Rivers, 2017). However, if the patient

being transported requires care that meets criteria implicating an Intensive Care Unit level of

care, they would be put on a CCATT flight. The personnel in this type of transport include a

physician, a critical care nurse, and a respiratory therapist. Using this method, the Air Force was able to keep resources available for incoming traumas rather than sending them with the teams responsible for transporting to a larger hospital. AE crews were introduced in 1943, during World War 2. This was one of the first times that en route care was established and the military heavily utilized this type of transport. Twenty percent of patients being transported were flown by AE teams and it wasn't uncommon to make use of this service for 100,000 patients per month (Rivers, 2017). On the other hand, the CCATT training programs began in 1999 and were utilized more during the early 2000's with wars being fought in Afghanistan and Iraq. Other branches of the military caught wind of this service and developed Joint Enroute Care in 2006 which is utilized by multiple branches of the military service.

Many of the events that critical care transport personnel witness in the military have the potential to be severely taxing on their mental health. For example, explosive blasts were "the most frequent mechanism of injury" (Swearingen, 2017). The sheer brutality of the traumas that these personnel are responsible for caring for may be some of the world's most gruesome injuries. The operational risk of those who work in these settings will be compared to that of civilian nurses and hypotheses can be made to anticipate military healthcare professionals to have a higher incidence of PTSD symptom criteria. Furthermore, these are some of the only healthcare professionals who are required to be armed during transport. Simply because this is implicated by their supervisors proves that this is not a profession for the faint of heart. This point was skillfully conveyed in Rivers et. al (2017) study when the authors stated that "Army en route care nurses were more likely to be assigned to a transport unit that responded to unsecure point of injury transport locations, which would be associated with higher rates of PTSD" (Rivers et. al., 2017, p.248).

Julie Swearingen, PhD et. al. (2017) conducted a comparative study titled "Post-Traumatic Stress Symptoms in United States Air Force Aeromedical Evacuation Nurses and Technicians" in which they administered surveys to 188 active duty aeromedical evacuation and critical care air transport team members. The surveys were conducted via Uniform Resource Locator (URL) sent to verified military email accounts and included questions from a personal and occupational demographics questionnaire, and the PTSD Checklist - Military Version (PCL-M) which has well established "reliability and validity and is used as a screening instrument in civilian, active duty, and veteran settings" (Swearingen, 2017). The participants responded to the PCL-M by a rating scale ranging from 1("not at all"), to 5 ("extremely.") and the questionnaire took an average of 25-30 minutes to complete. Of the 188 participants, 138 (73.40%) were AE crew members and 50 (26.60%) were CCATT members (Swearingen, 2017). Within the demographics questionnaire, respondents found questions assessing medical profession, gender, age, marital status, average time spent in current duties, but did not ask any identifiable information such as social security number, name, or date of birth. The 17 item PTSD Checklist - Military Version yielded a symptom severity score ranging from 17 to 85. Within this section of the study, the severity scores were grouped into three categories: Low (17-36), Moderate (37-49), and High (50-85).

Results of the study indicated 13 of the 188 (6.91%) participants met the criteria to be diagnosed with PTSD per the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). Within those 13 individuals, 6 of the 138 (4.35%) AE personnel and 7 of the 50 (14.00%) CCATT personnel met symptom criteria. Therefore, CCATT members are 3.22 times more likely to meet the DSM-IV symptom criteria ($p<0.05$) than the AE counterpart. Limitations of the study include the sample size, lack of assessing length of shifts or the amount of time spent in these

settings, and the number of deployments limit generalizability and present obstacles for replication. Furthermore, the results of the study rely on self-report surveys which require genuine responses by the respondents and there is often a hesitancy to disclose mental health issues (Swearingten, 2017). On the other hand, a few strengths of the study include the assessment tools used in the survey and cross-referencing with the DSM-IV demonstrating validity and reliability.

Another study conducted by Army Nurse Felicia Rivers et. al (2017) titled "Understanding Post-Deployment Reintegration Concerns Among En Route Care Nurses: A Mixed-Methods Approach" didn't study the prevalence of mental health deterioration of healthcare professionals in the military, but instead the individuals concerns with reintegrating back into the general population and civilian settings. The study methods chosen by the researchers were online surveys and one-on-one interviews conducted via video chat and in person. 141 nurses participated in the study, 119 completed surveys and 22 opted to do interviews lasting between 25 and 90 minutes. The interview data was analyzed by the qualitative software, NVivo (version 9), and also by analyzing line by line of the interview transcript to identify key words or common phrases used by multiple participants. Other data collected from the survey included quantitative outcomes from the Post-Deployment Readjustment Inventory (PDRI).

The purpose of Rivers' et. al. (2017) study was to "better understand the post-deployment behavior health symptoms and readjustment/reintegration by military nurses who provided en route care while serving in Operation Enduring Freedom/ Operation Iraqi Freedom." Participants were excluded from the study if they had a behavioral health diagnosis prior to their first deployment, if they spent less than 30 days on the operation, if they didn't

provide en route care during their deployment, or if they had not completed post-deployment reintegration processing. The qualitative reports within this study were gathered by way of a phenomenological approach, to which the results implicated 4 categorical associations: "Leadership Matters," "I Don't Fit In," "Here is my Suffering," and "The Terror of War - You can't Unsee That." 39% (n=46) of nurses indicated they were not fitting in, 34% (n=40) gave responses in alignment with the category "Here is my Suffering," 40% (n=47) of nurses made comments associated with the category "Terror of War - You can't Unsee That," and 68% (n=81) responded with comments on how leadership style can make substantial difference in behavioral outcomes (Rivers et. al., 2017, p. 246-248). The mean number of PTSD symptoms for all participants was 18.76 proving that the quantitative portion of the study has "robust" evidence of reintegration concerns (Rivers et. al., 2017, p.248). The mean PDRI Score of all participants was 76.08 (Standard deviation =27.79) which is not in alignment with the diagnostic criteria for PTSD (Katz et. al., 2010). Scoring for the PDRI consists of summing the items of each scale. Scores range as follows: Global (36 to 180), Career Challenges (5 to 25), Social Difficulties (7 to 35), Intimate Relationship Problems (5 to 25), Health Concerns (5 to 25), Concerns About Deployment (6 to 30), and PTSD Symptoms (8 to 40). Many of the qualitative responses within this study had parallels with some similarity to the following statements made by the participants: "I've changed, part of me came back… I felt like I had the sensitivity chip missing,""[It took] three to six months to re- engage [with my children] … making a constant effort to cuddle with them… to spend more time with them,""I spent six weeks in an intensive outpatient group for PTSD. I've seen a psychiatrist monthly and a psychologist at least two times a month. I take more medication than anybody should have to take," and " All these thoughts going on… I suppressed it all. I don't talk about it," (Rivers et. al., 2017). Limitations of the

study include self-report surveys, the small sample size, and that the interview participants could not be linked to their survey responses. Having this ability would have been a great asset because the researchers could have drawn a stronger correlation to their score of the PDRI and their verbal responses. Strengths of the study include the researchers recommendation and the fact that the sample included data from 3 branches of military service.

CATEGORY TWO

The next four studies to be discussed examine the mental health of civilian healthcare professionals. The frontline workers discussed will have varied experiences from different areas of expertise including, but not limited to critical care transport, EMS, emergency room/emergency department, or the intensive care unit. However, the purpose of study within each of these articles remains the same, identifying the psychosocial risks associated with working in each of these environments.

The study titled "Intensive Care Unit Nurses' Lived Experiences of Psychological Stress and Trauma Caring for COVID-19 Patients" by Levi & Moss (2022) evaluates the occupational stress of 10 nurses from an academic health science center in the southeastern United States between August 10th 2020, and September 13th, 2020. A phenomenological methodology was utilized to entirely understand the perceptions and descriptions of the nurses participating in the study. The data collection method was a questionnaire administered by phone interview due to the risk of viral transmission and verbal informed consent was given by all participants. The interview lasted about 60 minutes but ranged from 47 to 70 minutes. The principal investigator (PI) asked questions regarding job satisfaction, intention of leaving their job, demographic data collection, and also to assess for PTSD. The PI asked interview questions such as "What have you experienced in terms of caring for your COVID-19 patient?" "What were your experiences

communicating with the family and friends of COVID-19 patients?" or "What were your experiences with your family and friends while caring for these COVID-19 patients?" Furthermore, probing phrases like "Could you expand on that?" "Can you give me an example?" and "How did that make you feel?" were utilized to get a deeper understanding of the participants true feelings on the subject. Nvivo (version 12) qualitative data analysis software was used for the interview transcriptions in addition to Colazzi's (1978) seven-step method of qualitative data analysis were used to "enhance credibility and trustworthiness in data collection" (Levi & Moss, 2022, P. 360). Several themes were identified and correlated with a response from each of the participants replies. The themes and subthemes referenced in the study include knowledge, overburden, quality of care, futility, emotion, patient's family, isolation, public reaction, and job satisfaction. Below there are examples of responses from each category of significance:

- Knowledge: "Nobody really knew what we needed to do to protect ourselves" (Levi & Moss, 2022).

- Overburden: "The pace is a lot faster than it was. It's hard, because you keep feeling like you're falling behind. That's been really hard, just trying to do everything for your patients. It's been a lot of added responsibility" (Levi & Moss, 2022).

- Quality of Care: "If one of your patients is really sick or has an acute process going on, it's really easy to feel like you're neglecting one of your other patients" (Levi & Moss, 2022).

- Futility: "I really feel like I'm doing more harm than good. They just look miserable, and the family just can't let go" (Levi & Moss, 2022).

- Emotion: It was one of the most horrific days. You have… moments when you just walk away, and you spend (time) in the bathroom to get yourself to stop crying" (Levi & Moss, 2022).

- Patient's Family: "It's been really hard because they're not there to see how bad their loved one is" (Levi & Moss, 2022).

- Isolation: "I try to talk about it, and I just want them to understand so bad, and try to help me along this process" (Levi & Moss, 2022).

- Public Reaction: "They didn't know they were on speakerphone, but it really hurt me. It made me feel so offended and really down on myself" (Levi & Moss, 2022).

- Job Satisfaction: "It's been really hard for us to feel supported" (Levi & Moss, 2022).

Many of the other subthemes were tagged with terms such as "worry, fear, grief, anger, and frustration" (Levi & Moss, 2022, p.364). With descriptions like these hanging over the heads of nurses, it's easy to find the purpose of asking themselves why they willfully put themselves through such adverse experiences everyday they go into work. The qualitative portion of this study utilized the PTSD Checklist-5 which is a 20 item scale that measures PTSD using the four DSM-5 cluster symptoms: re-experiencing of traumatic event(s), avoidance of reminders or similar situations, negative alterations in cognition and mood, and hyperarousal symptoms (Levi & Moss, 2022, p.364). Of the 10 participants in the study, 70% (n=7) met symptom criteria for PTSD using the PCL-5. Limitations of the study include racial and sexual diversity and generalizability due to the small sample size. However, the extent of the qualitative research

within this study was very strong and contained copious amounts of data which gives a great

basis of comparison for other research to be conducted in the future.

A study by Bryce Hruska and Marley Barduhn titled "Dynamic psychosocial risk and

protective factors associated with mental health associated in Emergency Medical Service

(EMS) personnel" aimed to identify the occupational stressors of 79 EMS personnel working for

American Medical Response Inc. (AMR) in New York City. The participants were emailed a link

containing questions regarding assessments of PTSD and depression symptom severity in

addition to psychosocial risk and protective factors. Included in the assessment was the

Short-Form PTSD Checklist-5 (SF-PCL-5) in which respondents rated their responses from 0

("Not at all") to 4 ("Extremely"). Depression symptom severity was assessed using the Mental

Health Inventory-depression scale (MHI-d) in which respondents rated their responses from 1

("All the time") to 6 ("None of the time"). The occupational stressors were evaluated using a 13

item checklist "based on past research with EMS workers" (Hruska & Barduhn, 2021, p. 11).

However, this 13-item checklist ruled out routine work challenges such as high call volume

shifts. The results indicated a Mean PTSD symptom severity score of 2.31 and a mean

depression symptom severity of 5.63. However, the study did not include the population or

percentage for the PTSD Symptom severity, depression symptom severity, or occupational

stressors statistics which hinders the comparability of the research to other counterparts.

Limitations of this study include the relatively small sample size, the survey based designs rely

on self reported data and a "non-experimental approach" doesn't offer a strong causal inference

(Hruska & Barduhn, 2021, p.15). Strengths of the study include the depth of study within a

specific specialty of healthcare. For example, the other articles within this review did not go as

far as gathering data on shift length, shift time, fixed versus random effects, or bivariate

correlations.

The next investigation in discussion is a cross sectional study carried out by Kathyrn Von

Rueden et. al (2010) titled "Secondary Traumatic Stress in Trauma Nurses: Prevalence and

Exposure, Coping, and Personal Environment Characteristics." The objective of the study was to

determine the incidence of secondary traumatic stress (STS) among trauma nurses and examine

their use of coping strategies in relation to their effectiveness. This study utilized a survey that

was sent out to all 262 nurses of a level one, 100 bed, all trauma center in Baltimore Maryland.

The units in which these nurses were employed include neurotrauma critical care, neurotrauma

intermediate care, multi trauma critical care, multi trauma intermediate care, select trauma

critical care, select trauma intermediate care, shock trauma acute care, hyperbaric chamber,

trauma operating room, trauma resuscitation unit, trauma post anesthesia care unit, and the

trauma clinic. The response rate within the study was 49% (n=128) and the number of years of

nursing experienced from 0.46 to 39 resulting in a mean of 12 years (Von Rueden et. al., 2010,

p.193). The questionnaire also covered demographic and behavioral data, support system type

and strength, stress relief strategies, and The Penn Inventory to measure PTSD symptoms

secondary to SDS. Results of the survey indicated that the most frequently reported support

system was family, at 90.6% (n=116), friends, at 82% (n=105), and coworkers, at 71.1% (n=91).

The scores of the Penn Inventory ranged from 1 to 54 and indicated a mean score of 17.5.

Moreover, 7% (n=9) of nurses scored 35 or more, indicating the presence of STS and 11%

(n=16) had scores of 30 or more, which is near the diagnostic cutoff for STS. Nurses meeting

diagnostic criteria for STS had "fewer years in nursing that those without secondary traumatic

stress" (Von Rueden et. al., 2010, p.194). Limits of the study include a mostly homogenous

sample; "most participants were white, female nurses" (Von Rueden et. al., 2010, p.199).

Secondly, the sample of nurses of one urban trauma center may not be representative of

nationwide STS, indicating a lack of generalizability. Moreover, the strengths of the study

include the fact that only bedside nurses were permitted to participate in the study (this excludes

all nurses in leadership roles such as nurse managers, clinical nurse specialists, and nurse

practitioners). Also, the validity of the quantitative data is proven using the Penn Inventory and a

Fisher's exact test indicating statistical significance.

The last study of this analysis was a longitudinal study titled "Factors Affecting

Resilience and Development of Posttraumatic Stress Disorder in Critical Care Nurses." Meredith

Mealer et.al. (2017) had the objective of identifying factors of resilience and to determine if the

factors "have direct or indirect effect on resilience in development of post traumatic stress

disorder" (Mealer et.al., 2017, p. 184). The study method chosen by the researchers was to mail

surveys to 3500 randomly selected critical care nurses who are members of the American

Association of Critical Care Nurses and the response rate of the survey was 34.34% (n=1202).

Of the 1202 respondents, 744 nurses made up the final sample due to the fact that 458 nurses

were not currently working. Within the survey were measures such as the posttraumatic

diagnostic scale (PDS) and the abbreviated version of the Connor-Davidson Resilience Scale

(CD-RISC). The PDS is associated with "clinician rated measures for diagnosing PTSD"

allowing for valid and reliable results (Mealer et.al., 2017, p.186). IBM's SPSS Statistics, version

20, data analytics software were used to determine descriptive statistics, demographic variables,

and bivariate correlations of resilience. The factors affecting resilience identified throughout the

study include having children (P=0.01), the number of years practicing as an ICU Nurse

(P=0.02), and type of degree earned (P=0.001). With that said, "ICU nurses who worked in any

type of ICU other than the MICU were 18% to 50% less likely to experience PTSD when mediated through resilience" (Mealer et. al., 2017, p. 189). Furthermore, "ICU nurses with a graduate degree were 18% more likely to experience PTSD than were nurses with a bachelor's degree in nursing" (Mealer et. al., 2017, p. 190). Lastly, the study suggested that the number of years in practice had a direct relationship on the development of PTSD. "As the number of years in practice increased, the risk for PTSD decreased" (Mealer et. al., 2017, p. 191). Limitations of this study include the lack of data from nurses who had previously worked in the ICU. Having data on why those individuals left that setting may be beneficial in identifying risk factors of having low resilience in similar critical care settings. However, strengths of the study include a large sample size from a nationwide population warranting strong generalizability

DISCUSSION

The six articles within the literature review noted several different variables, and most suggested the same result, but there were a few contradictory findings. Not all results had inconsistencies, but they had different types of results indicating a similar outcome. For example, several studies utilized mixed method approaches which have great comparability, but others that strictly rely on qualitative data are not comparable to quantitative studies. Levi & Moss (2022) carried out a phenomenological study which had lots of data exemplifying the perceptions of 10 ICU nurses during the COVID-19 pandemic, and those results are in alignment with the results of the study done by Mealer et. al. (2017). Within that investigation, it was found that ICU nurses can limit their risk factors associated with PTSD "when mediated through resilience" (Mealer et. al., 2017, p. 189). Also, Mealer et.al. (2017) drew a direct correlation between the amount of work experience and the knowledge of resiliency strategies. "As the number of years in practice increased, the risk for PTSD decreased" (Mealer et. al., 2017, p. 191). Furthermore, the research found in category one within the Rivers et. al. (2017) study noted that "leadership support by

service was not noted in the qualitative comments." In the Levi & Moss (2022) investigation, several respondents reported a decline in job satisfaction and 70% (n=7) of participants met criteria for PTSD based on the evaluation using the PCL-5, in addition to comments such as "It's been really hard for us to feel supported." However, in comparing military healthcare settings to civilian healthcare, only 6.91% (n=13) of participants met the diagnostic criteria for PTSD within the Swearingen et.al. (2017) analysis. With that said, the gaps in the research indicate more quantitative research must be conducted to intentionally replicate the variables of being employed in the civilian and military healthcare settings, which would then give a more accurate basis for comparison.

THEORETICAL FRAMEWORK

The process of examining the occurrences of one profession, and weighing them against another in an analogous field, is a that requires guidance and structure. Utilizing attribution theory, researchers have the ability to compare, contrast, and explain the causes and outcomes of events. As defined by Fiske and Taylor (1991), attribution theory "deals with how the social perceiver uses information to arrive at causal explanations for events. It examines what information is gathered and how it is combined to form a causal judgment." Fritz Heider (1958) was the founder of attribution theory, but Bernard Weiner (1972) designed the framework of the study to be used as a "research paradigm of social psychology" (Culatta, 2023). Attribution theory can be used to help create the connection between the effects of a stressful environment and PTSD Symptoms. Understanding how critical care nurses experience occupational stress can bring light to how others experience occupational stress in a similar line of work. Here lies the objective of this

comprehensive literature review and proposed research study, to better understand the incidence of workplace acquired PTSD and how it affects healthcare professionals of the same caliber in different environments.

PROPOSAL FOR FURTHER STUDY

Through the evaluation and analysis of the literature, the overarching gap in this area of research identified is quantitative data among a variety of healthcare professionals who work in high acuity settings. The studies within the review lacked adequate sample sizes in civilian acute care settings and the data was even more sparse for medical professionals serving in the military. I propose a cross-sectional study be performed on CCT Nurses in military and civilian settings across the globe. Using the PTSD Checklist for DSM-5 (PCL-5) for civilian nurses, and the PTSD Checklist - Military Version (PCL-M) for those who have served in the military, I will obtain viable, quantitative results implicating specific medical environments as more or less detrimental to a person's emotional well being. Descriptive statistical data will be gathered via online surveys using confidential links and exclude any personal or identifiable information. The Survey links will be sent out via email and should take 10-25 minutes to complete. Participants will be recruited through the Sigma Theta Tau Honor Society of Nursing, the American Association of Critical Care Nurses (AACN), Army Nurse Corps Association (ANCA), the Navy Nurse Corps Association (NNCA), and the Society of Air Force Nurses (SAFN). The sample will include approximately 100 participants; 50 from civilian settings, and 50 from military settings. Participation qualifications include being 18 years or older, having worked at least six months in a ground, fixed-wing, or rotor wing CCT position, and a valid Registered Nurse (RN) license. Informed consent will be obtained within the last survey item stating, "Submission of this survey will be interpreted as your informed consent to participate in the study." Participants

will be notified of the risks of taking the survey which may bring back traumatic memories or

experiences. They may skip questions or discontinue the survey at any time. However,

submission of an incomplete survey will still be included in the study. Lastly, a T-test will be

used to analyze the data sets allowing for the development of a conclusion.

ETHICAL CONSIDERATIONS

With this newfound data, researchers can investigate which populations are most

vulnerable, and then pursue further interventions to reduce the incidence of PTSD and other

occupational stressors. All studies will take ethical considerations into account by utilizing

appropriate Internal Review Boards (IRB) for each healthcare setting. The IRB will review the

research proposal to determine what research measures are safe and effective. This ensures that

the study conducted will prioritize the rights and welfare of human research participants.

Participation in the study is voluntary. Confidentiality and anonymity will be a priority in all

aspects of data collection and analysis. Research participants will not be subjected to harm in any

way while upholding the four ethical principles of research: autonomy, beneficence, justice, and

nonmaleficence.

CONCLUSION

The significance of identifying at risk populations is incredibly effective in reducing the

incidence of post-traumatic stress disorder within critical care teams. In carrying out the research

proposal above, the data received will suggest what areas of healthcare need more attention, and

more importantly, a greater emphasis on combating the negative effects of critical care units on

nurses. A potential outcome of this study may result in military CCT having the greatest

incidence of high scores from the PTSD assessment tools. Once this has been discovered,

healthcare professionals can localize resources to fields that have similar exposure and

workplace experience. Based on the findings of this literature review, qualitative research designs do not give ample information on what fields of nursing require greater consideration in combating the occurrence of post traumatic stress. The quantitative data was much more helpful in evaluating the occurrence or incidence of these symptoms. A qualitative approach would be best to use after the quantitative data is collected and analyzed. From this point, it would be more appropriate to use a qualitative research design to gather data from participants on how they believe we can combat this epidemic of mental illness secondary to occupational stress. With that said, I propose that additional quantitative, cross sectional studies be performed to assess the degree of symptom severity within high acuity units of healthcare in the United States. In order to mitigate this issue and keep the rates of workplace acquired mental illness from progressing, we first need to identify the susceptible units, and then move on to evaluating approaches to bring this epidemic to an end.

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APPENDIX
LITERATURE REVIEW TABLE

Title of your paper: A Systematic Review/Meta-Analysis of PTSD Rates in Healthcare Professionals Employed in Emergency Transport and Critical Care Settings.

Name: Keenan Mai   Date: 2/7/23

Authors/Citation	Objective of the Study	Sample - Population of Interest	Study Designs	Study Methods	Major Findings	Strengths	Limitations
Levi, P., & Moss, J. (2022). Intensive Care Unit Nurses' Lived Experiences of Psychological Stress and Trauma Caring for COVID-19 Patients. Workplace Health & Safety, 70(8), 358-367. 10.1177/216507 99211064262	Assess the mental status of ICU nurses related to occupation stress or work related events in caring for patients during the COVID-19 pandemic.	ICU Nurses - 9 females, 1 male, Mean age of 26.6.	Phenomenologic al methodology (Qualitative)	1 Hour audiotaped telephone interview using open ended questions. (PTSD Checklist, Job satisfaction with Likert-type scale, and intention to leave job with a "yes" or "no" question)	7/10 nurses were "somewhat satisfied" with their job. 5/10 nurses considered leaving their job within the last 6 months.	The depth of analysis within the sample. (at least 1 hour with each participant)	The sample size and generalizability.

Authors/Citation	Objective of the Study	Sample - Population of Interest	Study Designs	Study Methods	Major Findings	Strengths	Limitations
Swearingen, J. M., Goodman, T. M., Chappelle, W. L., & Thompson, W. T. (2017). Post-Traumatic Stress Symptoms in United States Air Force Aeromedical Evacuation Nurses and Technicians. Military Medicine, 182, 258-265. 10.7205/MILMED-D-16-00107	Assess the prevalence of PTSD symptoms in Medical professionals in the Military	188 Active duty United States Air Force Nurses and Technicians. 138 Aeromedical Evacuation(AE) and 50 critical care air transport team (CCATT) participants	Comparative Study	Personal and Occupational demographics questionnaire. PTSD Checklist-Military Version (PCL-M). 17 Item online survey (sent via military email accounts) in which participants respond with a rating scale from 1 ("not at all") to 5 ("extremely"). Took an average of 25-30 minutes to complete.	13 of the 188 (6.91%) participants met the DSM-IV PTSD Symptom criteria. (Less than that of the ICU nurse rate this study compared against)	Used DSM-IV Symptom criteria to cross reference.	Sample only included military personnel. No civilian healthcare professionals.

Authors/Citation	Objective of the Study	Sample - Population of Interest	Study Designs	Study Methods	Major Findings	Strengths	Limitations
Mealer, M. (2017). Factors Affecting Resilience and Development of Posttraumatic Stress Disorder in Critical Care Nurses. *American Journal of Critical Care, 26*(3), 184-192. 10.4037/ajcc2017798	Identify Factors that affect resilience in relation to occupational PTSD	1202 nurses completed and returned the survey, 458 were excluded from the study because they were not currently working in critical care settings. 744 valid responses. (91%were female)	Longitudinal Study	Survey sent via email to critical care nurses who were members of the American association of critical care nurses.	Nurses who worked in any type of intensive care unit other than the medical unit and had high scores for resilience were 18% to 50% less likely to experience posttraumatic stress disorder than were nurses with low scores.	Assessing the factors that affect resilience instead of just those who exhibit symptoms of PTSD. Generalizability (pulled the sample from the American Association of Critical Care Nurses instead of a 1 hospital or a number of hospitals in a specific geographical area) .	Used data from different types of units and from different shifts (ex. night vs. day shift)

Authors/Citation	Objective of the Study	Sample - Population of Interest	Study Designs	Study Methods	Major Findings	Strengths	Limitations
Von Rueden, K. T., Hinderer, K. A., McQuillan, K. A., Murray, M., Logan, T., Kramer, B., Gilmore, R., & Friedmann, E. (2010). Secondary traumatic stress in trauma nurses: prevalence and exposure, coping, and personal/environmental characteristics. Journal of Trauma Nursing, 17(4), 191-200. 10.1097/JTN.0b013e3181ff2607	Determine the incidence of secondary traumatic stress in nurses who care for trauma patients.	128 nurses from a level 1 trauma center	Cross-sectional study	Demographic/behavioral survey and the Penn Inventory	Nurses with fewer years of experience had higher rates of traumatic stress symptoms. Support from others and relationships with co-workers may prevent or limit STS. 7% (N=9) indicated they have suffered from STS.	Only bedside nurses were permitted to participate in the study (excludes theo in leadership roles such as nurse managers, clinical nurse specialists, or nurse practitioners.)	Small Sample size

Authors/Citation	Objective of the Study	Sample - Population of Interest	Study Designs	Study Methods	Major Findings	Strengths	Limitations
Rivers, F. M., Dukes, S., Hatzfeld, J., Yoder, L. H., Gordon, S., & Simmons, A. (2017). Understanding Post-Deployment Reintegration Concerns Among En Route Care Nurses: A Mixed-Methods Approach. Military Medicine, 182, 243-250. 10.7205/MILMED-D-16-00209	To better understand the post-deployment behavior health symptoms and readjustment/reintegration experienced by military nurses who provided en route care in Iraq.	Military Healthcare professionals - 119 Surveys, 22 interviews	Exploratory, concurrent, mixed-methods	Surveys were done via surveymonkey and interviews were completed via skype or face to face.	Results indicated that en route nurses encountered difficulties when attempting to return to pre deployment roles. 4.35% (N=6) of AE and 14.00% (N=7) of CCATT met PTSD Symptom criteria.	Recommendations based on the study. Participation of veterans from multiple branches of service.	Surveys were limited by way of suppressing the ability to interpret the narrative responses.

Authors/Citation	Objective of the Study	Sample - Population of Interest	Study Designs	Study Methods	Major Findings	Strengths	Limitations
Hruska, B., & Barduhn, M. S. (2021). Dynamic psychosocial risk and protective factors associated with mental health in Emergency Medical Service (EMS) personnel. *Journal of Affective Disorders, 282,* 9-17. 10.1016/j.jad.2020.12.130	Examine psychosocial factors and their relationship with daily mental health symptoms among EMS employees	Emergency Medical Service providers, those who provide preliminary care during transport to the Emergency Department.	Ambulatory Assessment design	Daily Web based surveys using the Shift form PTSD checklist 5 (SF-PCL-5), and the mental health inventory depression scale (MHI-d)	Mean PTSD symptom severity score of 2.31 and a mean depression symptom severity 5.63 indicating a high level of occupational stressors.	In depth examination of shift time and prevalence of occupational stressors within each.	Small sample size and self report survey design