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Utilizing the Butterfly Hug to Reduce Distress in Emergency Department Nurses

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Abstract

Emergency department (ED) nurses are experiencing high levels of job-related distress. However, only some studies have examined ways to mitigate this distress. This project aimed to assess ED nurse distress and to reduce that distress with the Butterfly Hug. ED nurses were taught how to use the Butterfly Hug, a low-intensity, self-administered eye movement desensitization and reprocessing (EMDR) based bilateral stimulation technique to reduce distress. The Need for Recovery (NFR) Scale was used to assess their distress level pre- and post-test. Seven participants completed this project. One month after being taught to ED nurses, the results show that participants who used the Butterfly Hug multiple times experienced less distress over the subsequent month compared to participants who did not use the Butterfly Hug. In the current project, the Butterfly Hug reduced distress significantly in ED nurses.

Keywords: distress, Butterfly Hug, EMDR, bilateral stimulation, emergency department nurses

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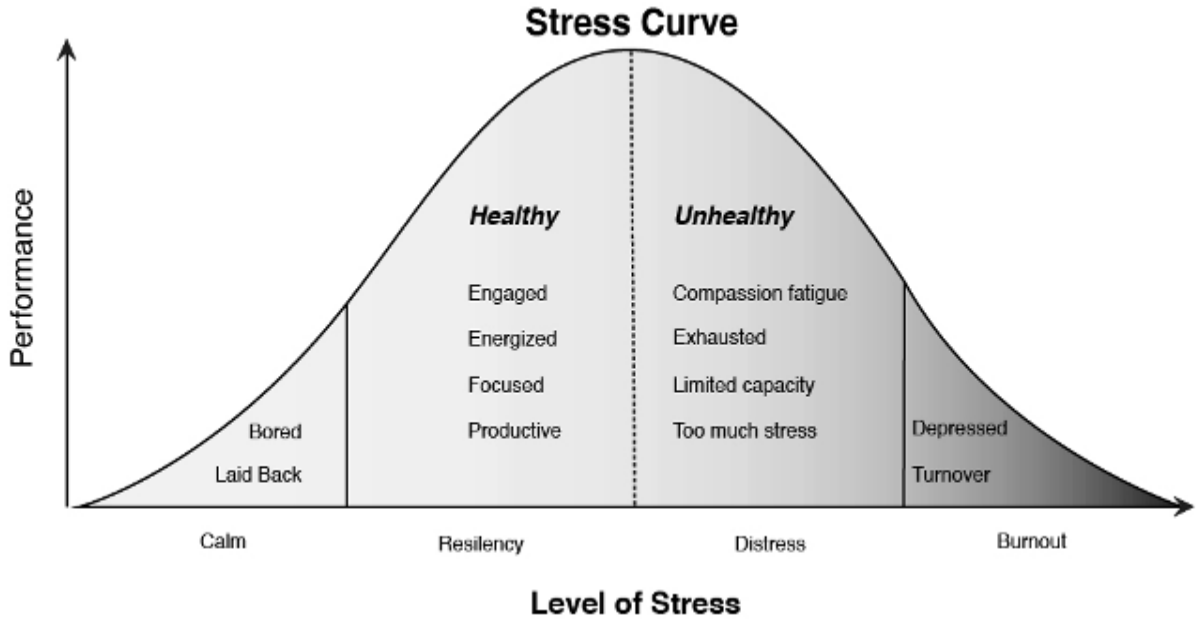
Distress is a state of heightened mental, psychological, or physical strain that results in suffering (Merriam-Webster, 2022). Merriam-Webster (2022) defines stress as a constraining influence that can be beneficial in limited amounts. Emergency department (ED) nursing is characterized by continuous stress from a fast-paced environment where staff is routinely exposed to human suffering, violence, and death (Aquino et al., 2021; Chor et al., 2021; Dundin et al., 2020; Jackson, 2017; Knowles et al., 2013). ED nurses need time to recover from stressors to reduce their levels of distress (van Dam, 2021; Schwarzer, 2001); however, they often do not have time and space to process and recover from a stressful experience before moving on to the next (Clark et al., 2020).

Exposure to overwhelming stress is known to reduce the ability of the prefrontal cortex to provide top-down regulation of the limbic system and hypothalamic-pituitary-adrenal (HPA) axis, impairing cognitive processing and executive decision-making (Arnsten & Shanafelt, 2021). These impairments create inherent patient safety concerns (Li et al., 2018; Lupien et al., 2018). In addition, stress can pose a serious risk to ED nurses' health because excessive amounts of stress without time to recover may cause distress, which increases the risk of disease over time (Man et al., 2020). ED nurses need time to recover from these stressors to mitigate their levels of distress (van Dam, 2021).

Distress and resilience have an inverse relationship (Rieckert et al., 2021; Shaw, 2020; Yasien et al., 2016). Resilience is managing adversity and recovering after stress (Cooper et al., 2021; Merriam-Webster, 2022). An individual’s resilience is based on experiences, psychological coping mechanisms, and resources in time to recover and resume stability (Graham et al., 2020; Rieckert et al., 2021). Distress can ensue when recovery time between stressors is insufficient to reestablish stability (Jang et al., 2021; Sluiter et al., 2003). A consequence of repeated distress layered atop existing distress results in burnout (Maslach & Leiter, 2016). Figure 1 illustrates the relationship between resilience, distress, and burnout. Over time, distress, if not treated, can lead to burnout and post-traumatic stress disorder (PTSD) (Jang et al., 2021; Marcomini et al., 2021; Li et al., 2018; van der Kolk, 2014).

Figure 1

The relationship between performance and levels of stability, resilience, distress, and burnout.



Note: Adapted from 2022 *Stress Curve: Royalty-free stock vector illustration of a diagram* by Dreamstime.com, 2022 (https://www.dreamstime.com/stresscurve-image161635695). In the public domain.

Burnout, defined as an "occupational phenomenon" by the World Health Organization (WHO) (2019) in the International Classification of Diseases 11th revision (ICD-11), is a psychological syndrome. Burnout results from physical, mental, and emotional exhaustion related to excessive time and energy demands (World Health Organization, 2022). An all-too-common phenomenon among healthcare workers (de la Cruz et al., 2020; Kakeman et al., 2021; Maslach & Leiter, 2016; Reith, 2018; Schaufeli, 2021; Woo et al., 2020), burnout is considered a severe form of persistent exhaustion and distress resulting from the erosion of coping mechanisms over time (Maslach & Leiter, 2016; Schaufeli, 2021). In addition, burnout is progressive, correlating with a higher incidence of illness, absenteeism, and turnover (de la Cruz et al., 2020; Lesley, 2021; Maslach & Leiter, 2016; van Dam, 2021; World Health Organization, 2022).

Symptoms of burnout include changes to sleeping, eating, and substance use patterns (Choflet et al., 2022; Pearman et al., 2020). Somatic symptoms of pain, fatigue, and chronic health problems worsen. Cognitive and emotional difficulties with concentration, irritability, anxiety, depersonalization, dehumanization, and depressive symptoms increase (McHugh et al., 2011). Burnout results in detachment from work, cynicism, an internal sense of ineffectiveness, and overwhelming exhaustion, closely followed by feelings of guilt (Maslach & Leiter, 2016). Dehumanization of others and depression increase as a form of self-protection (Maslach & Leiter, 2016; McHugh et al., 2011). If left untreated, distress and burnout can progress to post-traumatic stress disorder (PTSD) (Jang et al., 2021; Marcomini et al., 2021; Kredlow et al., 2022; Li et al., 2018; van der Kolk, 2014; Rodriquez et al., 2021). The psychiatric sequela of burnout is an increased vulnerability to trauma (van der Kolk, 2014).

Trauma is a psychological and physiological response to an event perceived as highly stressful and dangerous to survival (Griffin et al., 2014; Philips et al., 2022). Trauma can be acute or chronic (Huang et al., 2014). However, repeated and regular exposure to trauma leads to pathophysiological and psychological changes that can reduce resilience and lead to PTSD (American Psychological Association, 2022; Giwa et al., 2021; Lupien et al., 2018; Marks et al., 2018; Shahrour & Dardas, 2020; Shapiro & Forrest, 2016).

Post-traumatic stress disorder (PTSD) can result from traumatic experiences, causing intrusive memories, avoidance of reminders, and enduring cognitive distortions. Symptoms may include hypervigilance, anger, sleep problems, and a decline in daily functioning (American Psychiatric Association, 2022, p.301-303). Emergency personnel and first responders are commonly affected (American Psychological Association, 2017).

Emergency department (ED) registered nurses (RNs) are experiencing unmitigated distress resulting in an exodus from the field (Chor et al., 2021; Kakeman et al., 2021; Lesley, 2021; McDermid et al., 2020; Wolf et al., 2020). While the most recent wave of departures may have been impacted by being a front-line healthcare worker during the COVID-19 pandemic (Chen et al., 2021; Chor et al., 2021; Hannemann et al., 2022), ED nursing has historically had higher attrition rates (Rocha et al., 2019) than

most nursing specialties, with turnover increasing from 18% in 2018 to 30% into 2021 (Hut, 2021; NSI Nursing Solutions, Inc., 2021), representing a 50% increase in attrition from 2020 to 2021 (NSI Nursing Solutions, Inc., 2022). That number remained consistent throughout 2022, with 29.7% ED nurse attrition (NSI Nursing Solutions, Inc., 2023). As a result, too many talented, skilled ED nurses leave their chosen specialty.

Nurses are suffering, and this exodus places a financial cost on healthcare organizations and the healthcare system. For example, the average hospital loss can be $3.6 to $6.1 million annually, resulting from attrition costs and temporary replacement of ED nurses with travel nurses (NSI Nursing Solutions Inc., 2021), with costs significantly higher since COVID-19 began (Lagasse, 2021; NSI Nursing Solutions Inc., 2021; Plescia, 2021; Premier, 2021). The problem of high ED nurse attrition (McDermid et al., 2020; Woo et al., 2020) is not unique to the United States of America. Most of the research on ED nurses included in the current project is from Australia *(6)*, China *(5)*, the United Kingdom *(5)*, Italy *(3)*, Germany *(2)*, and Iran *(2)*. Spain, New Zealand, Belgium, Canada, Brazil, India, and Pakistan also have published pertinent studies on ED nurse well-being and distress in English.

Background & Significance

Emergency department use in the U.S. has escalated for decades as life expectancy has increased. Older people are likely to have multiple co-morbidities and a higher complexity of care (Centers for Disease Control and Prevention, 2021). Social status and pride are attached to being an ED nurse (Winters, 2016). The coping mechanisms of ED nurses are straining to help them process and deal with their distress, both mentally and physically (Adriaenssens et al., 2015; Clark et al., 2022; Clark et al., 2020; Giwa et al., 2021; Wolf et al., 2018).

The distress that ED nurses endure includes several factors. For example, end-of-life care is common (Aquino et al., 2021; Giles et al., 2019; Jackson, 2017; Nesbit et al., 2021). In addition, physical violence, threats, and verbal assaults often occur in the ED (Aljohani et al., 2021; Al-Qadi, 2020; Knowles et al., 2013; Medley et al., 2012; Stene et al., 2015); 70% (Budd, 2020) to 94.4% (Oztas et al., 2023) of ED nurses reported being physically assaulted on the job in 2018. Still, only 30% of those were

reported to a manager, as discovered in research after the fact (Lucea et al., 2018). The number of violent incidents increased by 27.4% with the advent of stress and misinformation surrounding the COVID-19 pandemic (Byon et al., 2022; Devi, 2020; Jungkunz, 2021; Ramzi et al., 2022; Wong et al., 2022), as reporting of these incidents decreased by 9.5% (Byon et al., 2022). ED nurses normalize this trauma as part of the job (Ashton et al., 2018; Hogarth et al., 2016), but normalizing it does nothing to prevent it (Brophy et al., 2018) and contributes to underreporting (Mausz et al., 2021). When distressful experiences occur, ED nurses often do not have time to recover or process their emotions before caring for other patients or contending with another emergency (Hou et al., 2021; Lucea et al., 2018).

The impact of the COVID-19 pandemic created an increased level of distress (Dundin et al., 2020; Haddad et al., 2022: Hart et al., 2020). In addition to caring for suffering patients, the fear of bringing COVID-19 home to loved ones (Fernandez et al., 2022; Hannemann et al., 2022; Khattak et al., 2021) and the political polarization of the pandemic (Jungkunz, 2021) added more distress to ED nurses. Additionally, the symptoms of distress were exacerbated as the pandemic continued (Acosta-Ramos et al., 2021; Rodriguez et al., 2021).

Distress in ED RNs needs to be addressed so that distress does not progress to burnout. Compounded distress incidents physiologically change brain structure, reducing resilience (Giwa et al., 2021; Higgins & George, 2019; Kredlow et al., 2022). Physiological changes in the brain from burnout include neuronal loss in the hippocampus and amygdala, which reduces resilience and increases the likelihood of PTSD development, along with decreasing cognitive processes and memory, further compromising the nurse's judgment and decision-making (Besteher et al., 2017; Griffin et al., 2014; Higgins & George, 2019; Kredlow et al., 2022). Lorello et al. (2021) found that across the gender spectrum, burnout in female-identified people correlated to levels of emotional exhaustion, whereas in male-identified people, burnout correlated to depersonalization. In a different study, nurses with less social support reported higher levels of burnout and poor quality of life (Asante et al., 2019).

The 2021 NSI (Nursing Solutions, Inc.) National Health Care Retention & RN Staffing Report found that 43.4% of nurses reported that a decision to quit was at least partially based on prolonged

distress. Since the COVID-19 pandemic began, moderate to severe distress has been reported in 91% of ED nurses (Jose et al., 2020). Replacing specialized nurses requires time, financial resources, and team and institutional morale (Abraham et al., 2018; Allah, 2021; Mudallal et al., 2017).

Statistics support the concern of distress among ED nurses. Approximately 65% of all RNs work full-time (Shumaker et al., 2019). In contrast, 85.4% of ED RNs work full-time, indicating a higher risk of exposure to workplace stress (Schumaker et al., 2019). Schumaker et al. (2019) found that 63.7% of 400 nursing sub-specialty respondents reported stress management was their greatest weakness, and 32% reported that stress management training is needed. Seventy-one percent of employers believe they are excelling at supporting the mental health of their frontline staff, consisting of ED RNs and ED technicians, whereas only 27% of frontline staff report feeling their mental health was supported by their employer (AMN Healthcare, 2023; American Nurses Foundation, 2023; Berlin et al., 2021; Lesley, 2021; Woo et al., 2020; Yuwanich et al., 2018). These statistics highlight the importance of reducing distress in the workforce. Stress management training reduces distress (Giuseppe et al., 2021; Kriakous et al., 2021). Therefore, training to alleviate distress is needed.

Historically, most research on nurse distress has focused on intensive care unit (ICU) nurses. Many ICU patients are bedridden and sedated. In contrast to the ED, in the ICU, verbal abuse more often comes from peers or a patient's family members (Chen et al., 2021; Vahedian-Azimi et al., 2017). The focus of research on ED nurses has primarily included moral distress and secondary traumatic stress (Lopez et al., 2022).

Moral distress is a psychological imbalance with painful emotions. It arises when an ED nurse feels powerless to carry out the recognized correct course of action due to limitations in time, resources, and institutional or legal policies (Jameton, 1984, p. 5-6; Wolf et al., 2016). Repeated moral distress can lead to caregiver fatigue and burnout (Kirk et al., 2021). Although moral distress contributes to the overall distress experienced by ED nurses, it does not encompass the entirety of the distress experienced due to secondary traumatic stress or primary trauma they encounter.

Exposure to the trauma of others, witnessing its aftermath, participating in resuscitation efforts, or working in a high-pressure environment with interpersonal conflicts all contribute to the development of secondary traumatic stress (STS). It is a natural response to abnormal events (Basu et al., 2019; Jobe et al., 2021). When left untreated, STS can lead to PTSD (Jobe et al., 2021). While STS contributes to overall distress levels, it should be noted that it does not result from the primary trauma experienced directly due to violence.

ED nurses' exposure to unrelenting stress, violence, and trauma may be overlooked in the U.S., perhaps because it is considered an expected facet of the job (Ashton et al., 2018; Basu et al., 2019; Catlette, 2005; Knowles et al., 2012; Lavoie et al., 2016; McHugh et al., 2011; Norful et al., 2023; Oztas et al., 2023; Pich et al., 2017; Wong et al., 2022). When ED nurses' physical safety is in jeopardy due to often-dangerous situations, a new picture of ED nurse-experienced distress emerges. However, little U.S. research exists on this phenomenon.

Acknowledging, investigating, and directing interventions toward assaults of ED nurses is worthy of attention since this focus may be part of their distress. Since little evidence addresses distress in ED nurses in the United States, there is a gap in knowledge and a pressing need to explore solutions (Jose et al., 2020; Schneider et al., 2019; Schreiber et al., 2019; Yuwanich et al., 2018). The current project investigated the distress of ED nurses using the Butterfly Hug, an evidence-based intervention (Faretta et al., 2022; Jarero et al., 2008; Kaptan et al., 2020; Lazzaroni et al., 2021; Luber, 2014) to reduce distress.

The Butterfly Hug

Evidence suggests that the Butterfly Hug effectively treats trauma in many different types of groups. Its implementation globally is now standard practice for many clinicians who respond to manmade and natural disasters offering treatment to people of all ages (Church et al., 2022; Davies, 2021; Fessell & Cheris, 2020; Goga et al., 2022; Manfield et al., 2021; Jarero & Artigas, 2020; Jarero et al., 2006; Luber, 2014). The history of the Butterfly Hug began in late 1997, as Hurricane Pauline caused significant flooding and damage in Mexico, resulting in mass trauma. When national mental health providers arrived, they found many survivors were children. To treat many groups of children at once,

Shapiro's 1991 protocol of bilateral stimulation for adaptive information processing model, known as Eye Movement Desensitization Reprocessing (EMDR) (Shapiro, 2001; Shapiro & Forrest, 2016), was used to create the Butterfly Hug (Fernandez et al., 2022; Jarero & Artigas, 2013; Kaptan et al., 2020; Luber, 2014). Similarly, ED nurses using a self-administered low-intensity EMDR-based technique immediately after perceived traumatic instances during shifts will reduce nurses' distress (Faretta et al., 2022; Fernandez et al., 2022) compared to ED nurses who do not use this intervention. Studies by Faretta et al. (2022) and Passoni et al. (2018) found that when nurses have a tool such as the Butterfly Hug, their distress levels improve, as does their sense of empowerment and ability to handle their discomfort (Grealish et al., 2017; Kuokkanen & Leino-Kilpi, 2008; Ryles, 1999).

Purpose and Aims

The purpose of this project is to decrease ED nurse distress by teaching them an intervention called the Butterfly Hug, an effective tool that is easy to self-administer (Jarero & Artigas, 2013). The Butterfly Hug is a portable, self-administered form of Eye Movement Desensitization Reprocessing (EMDR) (Shapiro & Forest, 2016). The specific aims of this project are (1) to assess the level of distress in ED nurses and (2) to investigate a reduction in distress in ED nurses who used the Butterfly Hug. The intervention will utilize a portable, self-administered form called the Butterfly Hug.

PICO Statement

Will teaching Emergency Department (ED) nurses to use the Butterfly Hug (BH), compared to ED nurses who do not use the BH intervention, reduce levels of job-related distress?

Literature Review

Literature in PubMed, CINAHL, EBSCOhost, and Google Scholar was reviewed that included the following search terms: ED nurses; ER nurses; emergency department nurses; emergency room nurses; emergency nurses; in conjunction with distress; distress tolerance; burnout; violence; resilience; posttraumatic stress disorder; post-traumatic stress; PTSD; Butterfly Hug; EMDR, eye movement desensitization reprocessing. Initial search criteria were limited to studies from 2018 to the present time. Studies had to be printed in English with full text available. Initially, 423 appeared relevant and

appropriate based on their titles. However, a review of abstracts removed 271 studies. The remaining 152 studies were read in full, and of these, 87 studies were deemed relevant to this question.

The shortage of ED nurses globally due to attrition (Drennan & Ross, 2019; Haddad et al., 2022; McDermid et al., 2020) has been concerning. Before the advent of the COVID-19 pandemic, 40-64% of ED nurses met the criteria for PTSD (Carmassi et al., 2022; Marcomini et al., 2021), with nearly 80% showing some symptoms of burnout and worsened overall health (de la Cruz et al., 2020; Schaufeli, 2021). Since the pandemic has begun, almost 91% of ED nurses have endorsed some level of distress and burnout (Jose et al., 2020). A literature review by Poon et al. (2022) of 43 peer-reviewed studies on nurse and healthcare worker attrition found that work-related distress and exposure to workplace violence have increased attrition. In addition, a positive correlation exists between workload increases and subsequent attrition, further increasing ED RN turnover (Tolksdorf et al., 2022).

Healthcare organizations have attempted to reduce ED staff distress. For example, medical institutions regard programs such as Critical Incident Stress Management (CISM) interventions and team debriefings as beneficial, as they tend to focus on quality improvement in teamwork (Everly, 2017; Flannery & Everly, 2004; Pallas, 2020; van Emmerik et al., 2002). CISM interventions help troubleshoot errors in running a code or looking back on a critical incident; however, they do not mitigate the impact of distress directly related to those incidents (Devilly et al., 2006; Pallas, 2020; Gist & Devilly, 2002; Schreiber et al., 2019; van Emmerik et al., 2002).

There are other ways that institutions have tried to help reduce distress in nurses. For example, some institutions have suggested that their caregivers practice mindfulness and yoga (Cocchiara et al., 2019; Lucea et al., 2018); however, benefits were not appreciated until almost three months into the regular practice of each (Cocchiara et al., 2019). Healthcare organizations have also provided memberships to smartphone applications for their staff (Boulos et al., 2014; Yang et al., 2018). Using mental health smartphone apps may benefit some ED nurses; however, they are currently an unregulated entity, with personal data being collected, sold, and used for discrimination in some instances (Boulos et al., 2014; Gooding & Kariotis, 2022; Gooding & Kariotis, 2021). Discrimination can take many forms,

from available services to higher insurance rates and even places to travel (Boulos et al., 2014). For example, recent travelers from Canada to the U.S. were denied entry because personal information about non-criminal mental health had been shared with a law enforcement database (Gooding & Kariotis, 2022).

One promising intervention for ED nurse distress is the Butterfly Hug, a type of EMDR. EMDR is highly effective at reducing symptoms of PTSD and comorbid depression, with a low risk of harm to the participants (American Psychological Association, 2017; Culjpers et al., 2020; Shapiro & Forrest, 2016; van der Kolk, 2013). EMDR involves following a trained clinician's finger or a light bar with only their eyes as it moves side to side while processing traumatic memories, creating bilateral brain stimulation. Treatment typically involves multiple sessions with a trained therapist (Shapiro & Forrest, 2016). Studies of EMDR efficacy with healthcare workers by Fernandez et al. (2022) and military Veterans by Davies (2021) showed reduced distress and PTSD symptoms. A meta-analysis of 22 studies comprised of 1739 participants conducted by Kaptan et al. (2021) concluded that EMDR is beneficial in improving symptoms of anxiety, depression, and PTSD. The effects of EMDR have provided continued relief for many (Davies, 2021; Fernandez et al., 2022; Kaptan et al., 2021; van der Kolk, 2014). The Emotional Freedom Technique (Boath et al., 2013; Church et al., 2022; McPherson, 2021) also relies on bilateral stimulation by tapping on various acupressure points on the body and is effective when guided by a therapist but is not recommended for self-soothing (Morales-Rivero et al., 2020). Similarly, the self-administered bilateral stimulation of the Butterfly Hug helps to process trauma in real time, calm the nervous system and reduce distress (Fernandez et al., 2022). Teaching ED nurses how to do a brief, self-administered form of EMDR may reduce their levels of distress.

Theoretical Framework

The Conservation of Resources (COR) theory provides the framework for the Butterfly Hug intervention. Developed as a theoretical framework to understand organizational behavior and motivation, COR looks at the interplay between current resource conservation, resource loss, and the acquisition of new resources (Halbesleben et al., 2014). This theory defines resources as a broad category of anything people value to help attain goals (Hobfoll et al., 2018). When goals are not achieved, distress ensues. Hobfoll et al.

(1997) define distress as an individualized experience based on a person's existing psychological and physiological resources. What may reduce distress in one person, such as a family relationship, may increase distress in another. COR theory has been used to clarify the causes of distress, reactions to traumatic stress, and recovery (Hobfoll et al., 1997). The principles of COR are: (1) resource loss is more impactful than resource gain because it manifests as increased distress; (2) resource investment is needed to prevent or recover from loss and gain resources. The corollaries of COR are: (a) those with more resources are more likely to experience gains compared to those with fewer resources; (b) initially lost resources compound over time; (c) initial gains in resources compound over time; (d) resource deficits lead to defensive conservation attempts (Halbesleben et al., 2014). In a defensive conservation attempt, the choice becomes escaping the situation or gaining resources (Ito & Brotheridge, 2003). This theory is appropriate for this project since the Butterfly Hug may improve distress for ED nurses. The way this theory is used as a framework is explained in the following paragraph.

Recognizing ED nurse distress levels in the Pre-test addresses the first principle of COR theory, that resource loss is more impactful than resource gain because it manifests in distress. Teaching ED RNs the Butterfly Hug intervention to reduce distress provides a resource gain to address the second COR principle; resource investment is needed to prevent or recover from loss and gain resources, measured in the Post-test. The corollaries of COR correspond to shifts in distress reduction measured between the Pre- and Post-tests. Examples of these corollaries in this project include (a) nurses who have the tools and support they need to thrive in the ED, compared to ED nurses who have fewer resources; (b) increases in distress and attrition result in more distress as resources are lost; (c) gaining a resource such as the Butterfly Hug to reduce distress, compounds over time; (d) when distress increases, people turn to what resources they have that they know will work, such as the Butterfly Hug, in an attempt to conserve. Addressing the defensive position to conserve energy and resources, ED nurses will gain a resource to manage their distress.

Methods

Design

The quantitative methodology for this evidence-based clinical inquiry project is causal-comparative with convenience sampling (QuestionPro, 2022; Rea & Parker, 2014; von Winkle, 2022). In addition, this project evaluated the effect of the Butterfly Hug intervention on levels of distress to provide Level III evidence (Lobiondo-Wood & Haber, 2018; Maciejewski, 2020; Marks et al., 2018; Miller et al., 2020; von Winkle, 2022).

Ethical Consideration

The Human Research Protection Program (HRPP) at the site determined that this clinical inquiry project does not meet the federal regulation's definition of research. Therefore, an Institutional Review Board (IRB) review was not required. Accordingly, the HRPP agreed to allow this clinical inquiry project to proceed. Informed consent entailed that respondents were ED nurses over 18 who agreed to participate in this project (see Appendix A). The Pre- and Post-test surveys were anonymous, with only a Pre-test completion code the respondent was instructed to include in the Post-test, which linked responses together. To maintain privacy, all project results were de-identified of any personal health information (PHI) and were aggregated.

Setting

This project recruited Emergency Department (ED) nurses employed at a Level II trauma center in the Pacific Northwest that serves the population of five counties and several small Native American reservations, resulting in 93,800 ED visits annually (Becker’s Hospital Review, 2020). The demography ranges from metropolitan to rural and covers more than 7,120 square miles. The area's total population exceeds 1.15 million people, with a median age of approximately 39.5 years. Female persons make up 49.6% of the population. More than a third of the population has a bachelor’s degree or higher, and the median household income is $92,258, with a poverty rate of <10% for persons under 18 years of age. Though 51.5% of the population identifies as a naturalized U.S. citizen, 78% speak English at home.

Spanish (8.5%) and Asian/Pacific Islander (8%) are the following most common languages spoken at home (U.S. Census Bureau, n.d.-a, n.d.-b, n.d.-c, n.d.-d, n.d.-e, n.d.-f.).

Participants

ED nurses employed at a Level II trauma center in the Pacific Northwest were recruited for this project (see Table 1). Approximately 82% of the sample identified as female, were in their 30's (40.4%), though ages range between 21 to the mid-70s, are white (89.2%), and 68.4% are married. Shift duration varies, but most Pre-test participants were scheduled for a 12-hour workday and listed as a 0.9/1.0 FTE (59.5%), followed by those working part-time at 0.6 FTE (27%). Two-thirds of ED nurses surveyed have worked in that environment for at least five years. While some nurses were new to the ED (7.9%), one had been working in the ED for 26-30 years (2.6%); however, the majority reported working in the ED for 6-10 years (39.5%), followed by 3-5 years (18.4%), then 16-20 years (13.2%). The total number of years working as a nurse was also assessed, with 10.5% of the participants having worked there for less than a year. Nurses with 11-15 years (26.3 %) were followed by those with 6-10 years (23.7%) and 3-5 years (15.8%). One nurse reported a career spanning over 31 years (2.6%). Approximately 160 ED staff nurses and 50 ED nurse travelers are employed at this hospital (personal correspondence, ED manager); however, less than one-fifth of the ED nurses there participated in this project. The demographics of the project participants are informative but do not adequately illustrate the actual population of ED nurses at this location.

Table 1

Demographic Characteristics of Pre-Test Participants in the Butterfly Hug Project

		n	%			*n*	%
Gender Identity				**FTE Status**			
	Female	31	81.6		0.4	3	8.1
	Male	7	18.4		0.6	10	27.0
	Other	0	0.0		0.8	1	2.7
					0.9/1.0	22	59.5
					per diem	1	2.7
Age				**Years in the ED**			
	null	1	2.4		0-1 year	3	7.9
	21-24 years	1	2.4		1-2 years	3	7.9
	25-29 years	4	9.5		3-5 years	7	18.4
	30-34 years	9	21.4		6-10 years	15	39.5
	35-39 years	8	19.0		11-15 years	3	7.9
	40-44 years	5	11.9		16-20 years	5	13.2
	45-49 years	6	14.3		21-25 years	1	2.6
	50-54 years	7	16.7		26-30 years	1	2.6
	70+ years	1	2.4		31+ years	0	0.0
Ethnicity				**Years as a Nurse**			
	Asian	1	2.7		0-1 year	4	10.5
	Black	0	0.0		1-2 years	2	5.3
	Mixed	1	2.7		3-5 years	6	15.8
	White	33	89.2		6-10 years	9	23.7
	Declined	2	5.4		11-15 years	10	26.3
					16-20 years	3	7.9
Marital Status					21-25 years	1	2.6
	Single	7	18.4		26-30 years	2	5.3
	Divorced	1	2.6		31+ years	1	2.6
	Partnered	4	10.5				
	Married	26	68.4				

Note. *n* varied from 37 to 42 respondents for each demographic point tested.

Recruitment

To recruit volunteers, posters encouraging participation were placed in the breakroom, locker room, staff bathrooms, and floor nutrition rooms, containing a QR code to the survey and a typed-out link for ease of use (see Appendix A). In addition, an email (see Appendix B) with a link to the Consent to Participate (see Appendix C) and the online Pre-test Qualtrics survey (see Appendix D) was sent to the ED Manager, who forwarded it via a blinded mailing list to all registered nurses in the ED. One week later, a reminder email was sent via a blinded mailing list to encourage participation in the Pre-test survey. A week after that, the Butterfly Hug intervention was taught during 12 pre-shift huddles at different times throughout one week. A total of 139 ED nurses attended the Butterfly Hug intervention

teaching. Five of those nurses were present at more than one huddle, so they went through the training twice but have only been counted once. In addition, the project lead remained on site throughout those days to answer questions from the ED nurses about the intervention.

Intervention

The Butterfly Hug is performed by placing the hands vertically on opposite clavicles, with fingers pointed more upwards than toward the arms, before interlocking the thumbs. Each person then assessed their level of distress, with 0 being no distress and 10 being the highest level of distress. Next, the person performing it began tapping their hands alternately and slowly. During this, the eyes can be open or closed, or partially closed and looking towards the tip of the nose. Participants were told to let images pass like overhead clouds if they arose. If distress begins to rise, tap slower. Participants were encouraged to keep breathing slow deep breaths while tapping. After 15-20 seconds, the arms were dropped to the side and shaken. A steadying breath or two was encouraged. Then, the tapping began again. This time the tapping continues for 20-30+ seconds. It is essential to tap slowly to prevent unearthing past traumatic memories. Once that approximate time has elapsed, the arms are dropped to the side and shaken briefly. Some people may require a longer duration based on their individual needs. The person performing it was encouraged to reassess their level of distress (Jarero & Artigas, 2022).

Once learned, implementation takes 1-3 minutes and can be utilized up to 6 times daily to reduce personal distress levels. ED nurses were encouraged to use it when experiencing moderate distress during a private moment, such as in the nutrition room or when getting a warm blanket for a patient. Weekly reminder emails were sent to ED nurses to encourage participation. In addition, two weeks after the presentation to all ED nurses, a short video on YouTube.com (see Appendix F) was sent to all ED nurses reminding them to practice the Butterfly Hug intervention, with another instructional demonstration they could follow.

One month after the BH was taught in person, the quantitative Post-test survey (see Appendix G) was emailed out (see Appendix H), with new posters and a new QR code (see Appendix I) placed in the abovementioned areas. In addition, the Post-test survey added questions about Butterfly Hug utilization.

Finally, the Post-test included a place to add the randomized Pre-test code provided, enabling test results to be linked. This link resulted in measurable quantitative data.

Participants Who Completed Both the Pre-test and Post-test

Post-test participant responses (see Table 2) were only included once paired with their correlating Pre-test, comprising a subset of the total participant population. There were some differences compared to the sample in Table 1. While female-identified participants comprised 81.6% of the Pre-test, they only accounted for 57.1% of Post-test respondents. The age of participants was skewed when comparing the Pre-test to Post-test demographic results as well because out of the seven participants who completed the Post-test, three were between the ages of 50-54 (42.8%) versus seven in the Pre-test (16.7%). Only one person identified as Asian in this project, representing 2.7 % of the population in the Pre-test but 14.3% in the Post-test, skewing that demographic too. None of the Post-test participants were single, divorced, or partnered, unlike the Pre-test. In the Pre-test, the majority of participants (59.6%) worked 0.9/1.0 FTE, and 27% worked a 0.6 FTE, whereas, in the Post-test, those numbers were reversed to 28.5% and 57.1%, respectively. While years of working in the ED correlated between both the Pre- and Post-test, participants with 3-5 years of nursing experience were weighed heavier than those with 6-10 years of nursing experience in the Post-test, which is the opposite of the Pre-test results. The demographics of the ED nurses who participated in the Pre-test, intervention, and Post-test were not accurately representative of the ED nurse population compared to the participants who only completed the Pre-test.

Table 2

Demographic Characteristics of Participants Who Participated in the Pre-test, Intervention, and Post-test

		n	%
Gender Identity			
	Female	4	57.1
	Male	3	42.9
Age			
	35-39 years	2	28.5
	40-44 years	2	28.5
	50-54 years	3	42.9
Ethnicity			
	Asian	1	14.3
	White	6	85.7
Marital Status			
	Single	0	0
	Married	7	100
FTE Status			
	0.6	4	57.1
	0.9/1.0	2	28.5
	per diem	1	14.3
Years in the ED			
	3-5 years	2	28.5
	6-10 years	3	42.9
	11-15 years	2	28.5
Years as a Nurse			
	3-5 years	2	28.5
	6-10 years	1	14.3
	11-15 years	4	57.1

Note. This table includes the demographic characteristics of the seven participants who completed the Pre- and Post-test. $n = 7$.

Data Collection

Pre-test

The Pre-test included demographic and structured questions from the Need for Recovery Scale (NFR) (Sluiter et al., 2003). The Need for Recovery Scale assesses the personal needs for physiological and psychological recovery following work, providing insight into contributing factors such as work-life balance, work-related fatigue, and distress (de Croon et al., 2006; Graham et al., 2020; Sluiter et al., 2003; Sonnentag & Zijlstra, 2006; van Veldhoven & Broersen, 2003). Nurses were part of the 68,775 participants for whom this test was validated, and reliability was established during scale construction,

with Spearman's rho varying between 0.82 and 0.95 and Cronbach's alpha >0.7 (van Veldhoven & Broersen, 2003). The NFR Scale is an 11-item questionnaire (see Appendix J) of yes/no responses, making the survey completion time less than ten minutes. NFR Scale scores range from 0, indicating low levels of distress and no need for recovery, to 100, showing high levels of distress requiring a higher intensity of need for recovery after work. Responses of 'yes' indicate distress on all items except for number 4, where 'no' is unfavorable (de Croon et al., 2006). Loevinger's H ranged between 0.42 and 0.95, indicating consistency in unidimensional constructs (van Veldhoven & Broersen, 2003). This scale may be more sensitive to subtle decreases in distress and has been used in international studies, including Denmark, the United Kingdom, and the Netherlands, to measure ED staff well-being and levels of distress (de Croon et al., 2006; Graham et al., 2020; van Veldhoven & Broersen, 2003). Upon completing the anonymous survey, a unique code was assigned for that person to retain for the Post-test survey (see Appendix I).

Data Analysis

Frequency distribution, a form of descriptive statistical analysis, was used due to the low number of paired Pre- and Post-test responses. Frequency distribution allows for the presentation of visual data organized by highlighting noteworthy points when data is complex or insufficient to find variability adequately. Central tendencies were used to assess the average and median pattern responses of distress over time (Lobiondo-Wood & Haber, 2018).

Results

Pre-test Results

Pre-test levels of distress were examined by demographics. In addition, distress levels over the preceding week and month were evaluated. Since answering each question was optional, *n* varied between 37 to 42 respondents.

Distress by Age

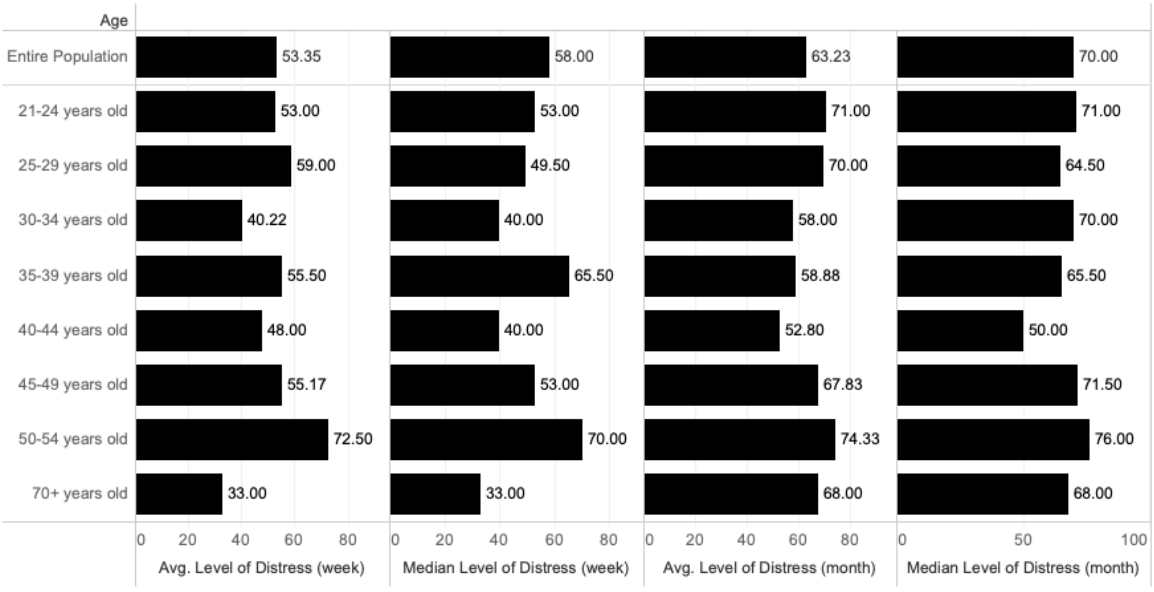
The average level of distress within the week preceding the project for the population who completed the Pre-test was 53.4% on a scale of 0-100, where 0 indicates no distress, and 100 indicates the

highest possible level of distress. The highest levels of distress were found in ED nurses who were 50-54 years old (72.5%) compared to the lowest distress levels in the 70+ category (33%). For the preceding month, the average level of distress was 63.2%, with the highest levels of distress reported among ED nurses 50-54 years old (74%), compared to those 40-44 years old (52.8%) (see Table 3).

ED nurses' levels of distress were elevated over the preceding week and were higher over the prior month when asked to reflect on their distress in the Pre-test sampling (see Table 3). Respondents who were 50-54 years old consistently reported the highest levels of distress over time compared to other participants, resulting in noticeably higher distress scores than the average and median in both week and month durations. Conversely, the 40-44 age group did not show sharp increases in distress when reporting perceived distress over the preceding month compared to the other groups (30-34 and 70+) with the lowest average weekly distress levels.

Table 3

Results of Pre-test Levels of Distress by Participant Age Over the Preceding Week and Month



Note. *n* varied between 37-42. Pre-test participants' ages ranged from the low 20s into their 70s, separated by average and median reported levels of distress based on a scale of 0-100 over the preceding week and month, respectively.

Distress by Experience

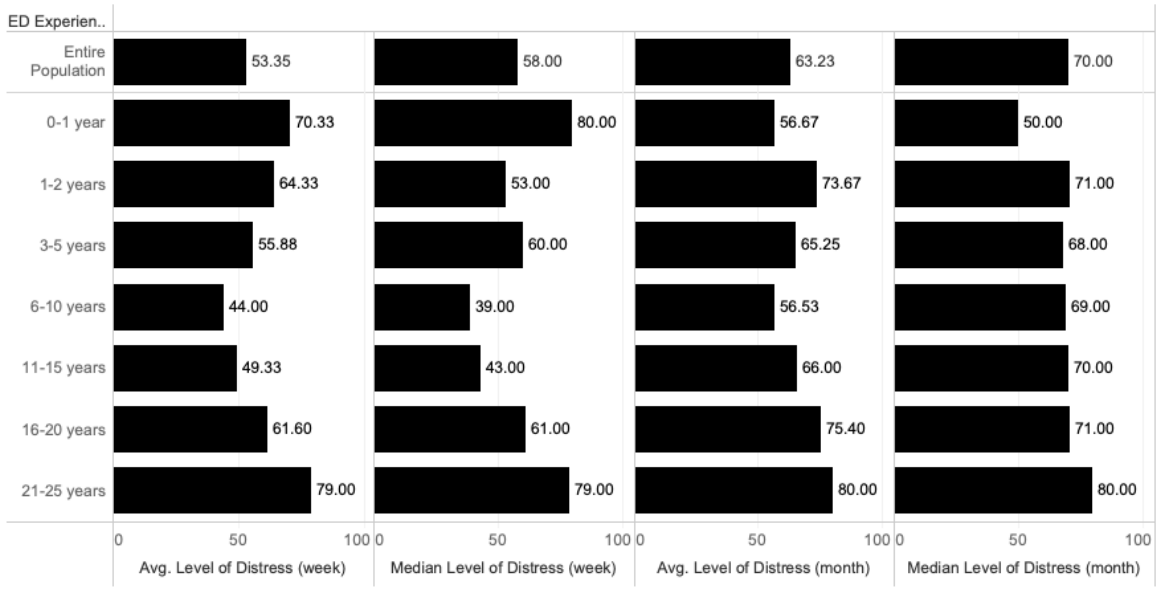
The purpose of measuring levels of distress in the Pre-test based on the number of years working as a nurse in the emergency department (see Table 4) and the overall number of years as a nurse working in any setting (see Table 5) was to assess if experience acted as a protective factor or if it contributed to higher levels of distress. In addition, measuring distress levels while considering experience in nursing outside of the ED may point to an area where resiliency may have been developed.

As shown in Table 4, the level of distress does not correlate to the number of years of ED nursing experience over the preceding month but may be a factor from week to week for most participants. Nurses who are new to the ED report high distress over a week (average = 70.3%), but the second lowest distress over the course of a month (average 56.7), whereas nurses with 6-10 years of experience rate the lowest average rates of distress over the preceding week (44%) and month (56.5%). Nurses with 21 or more years in the ED showed the highest levels of distress both weekly (79%) and monthly (80%).

Total years of nursing experience compared to levels of distress in ED nurses were depicted in Table 5. The lowest average levels of distress over the preceding week were those with 21-25 years of nursing experience (33%), followed by those with 6-10 years of experience (38.8%); however, over the preceding month, those with 6-10 years of experience continued to report less distress than the other age groups. The highest weekly and monthly average levels of distress were experienced by nurses who worked for 25-30 years of nursing experience (94% and 96%, respectively), nurses with 31+ years of experience (averages of 79% and 80%, respectively), and those with 1-2 years (78.5 % and 85.5%, respectively).

Table 4

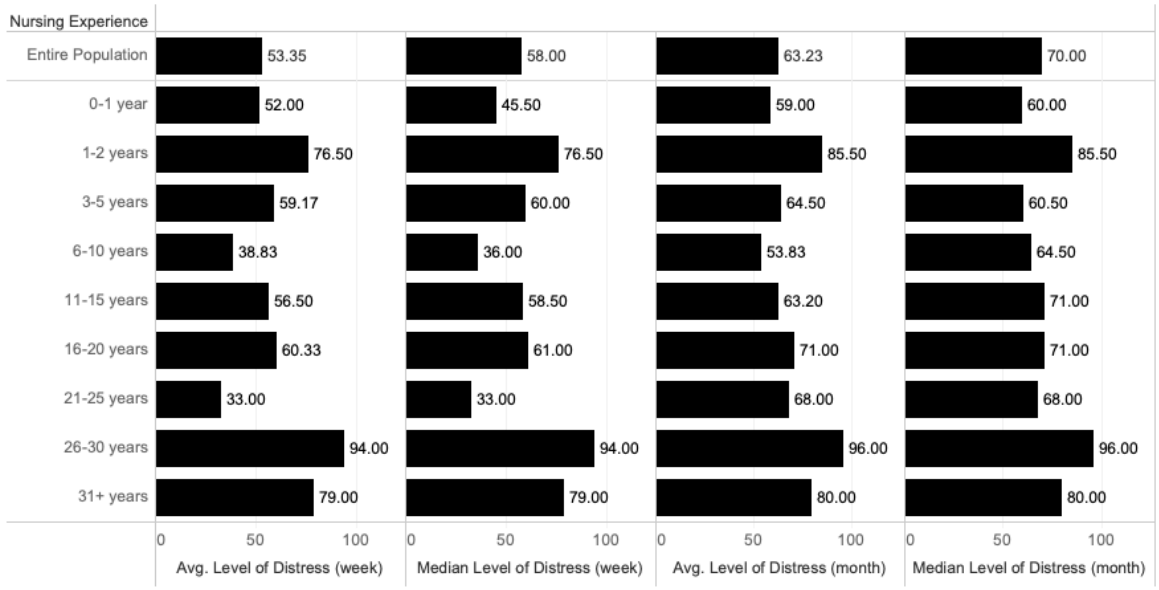
Level of Distress Compared to Years of Experience in the Emergency Department



Note. *n*= 37-42.

Table 5

Level of Distress Based on Nursing Experience in Any Setting



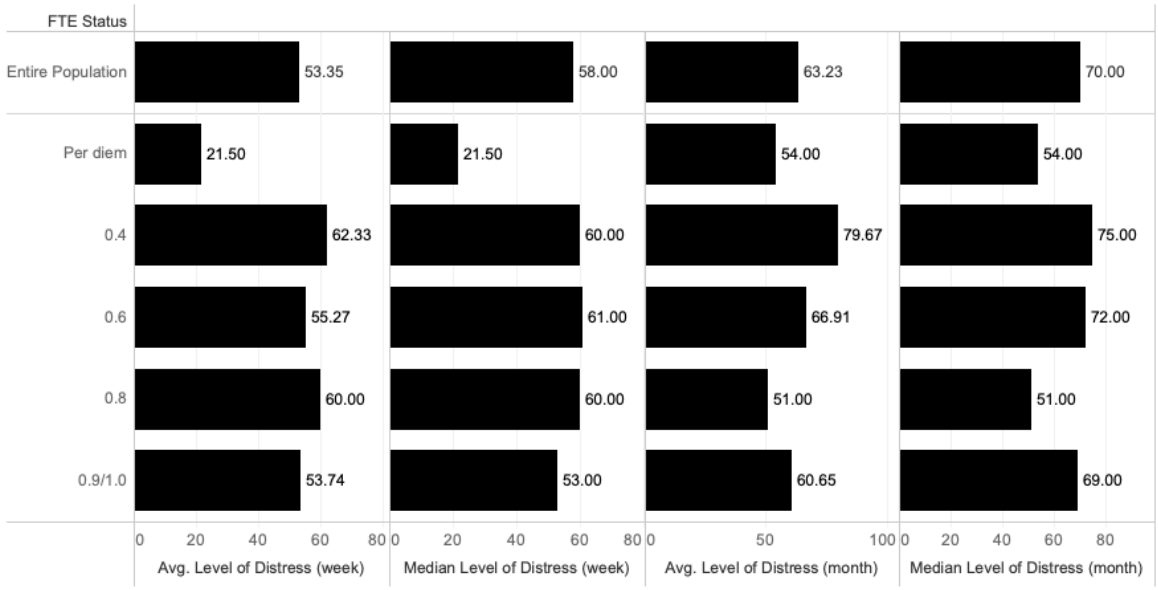
Note. *n* varied between 37-42

Distress by FTE

Distress levels, using a scale of 0-100, were evaluated based on the time of nursing experience and reported by average and median levels over the preceding week and month, respectively (see Table 6). Data was gathered on the FTE status of nurses participating in this project to ascertain whether FTE impacted levels of distress. Those with an FTE status of 0.4 or 0.6 experienced more distress (75% and 72%, respectively) than ED nurses working an FTE of 0.9/1.0 (69%) and considerably more than the one participant who worked a 0.8 FTE. One participant worked per diem and scored the lowest weekly distress of all FTE statuses (21.5%). While the per diem employee reported the lowest weekly distress, they still reported higher monthly distress (54%) than those with a 0.8 FTE (51%).

Table 6

Level of Distress Compared to Full-Time Equivalent (FTE) Status



Note. *n* varied between 37-42. Average and median levels of distress using a scale of 0-100 compared per diem, part-time, and full-time work status over the preceding week and month, respectively.

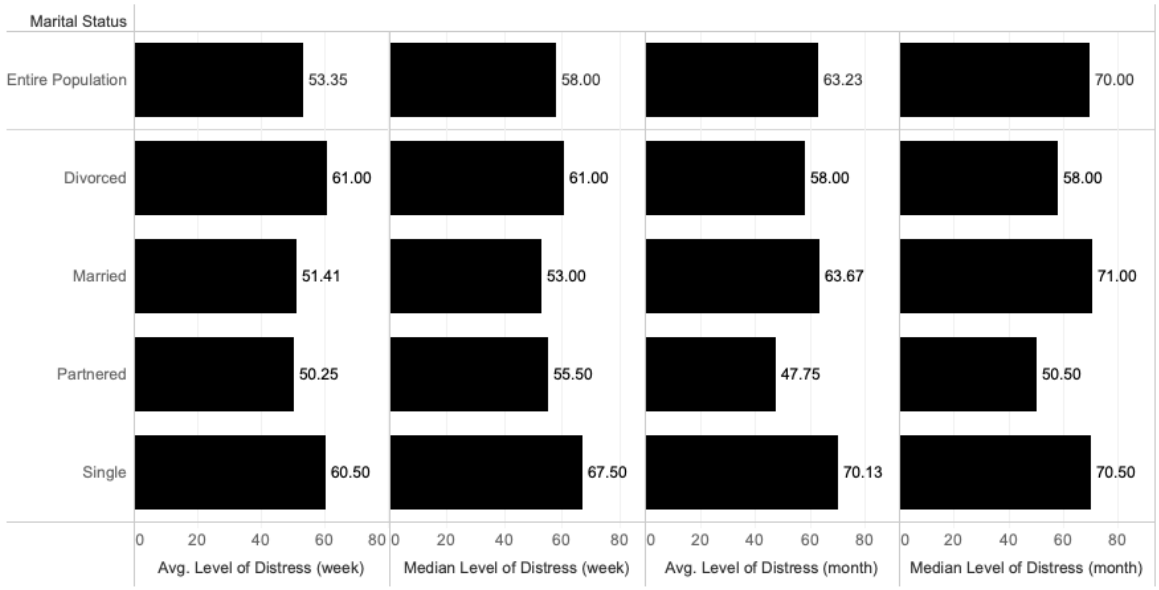
Distress by Marital Status

This project focuses on distress levels due to working in an ED; however, non-work life may play a role in perceptions of distress. Table 7 depicts how personal relationship status is related to distress levels, separated by average and median reported levels of distress using a scale of 0-100 over the preceding week and month, respectively. By looking at the level of distress compared to marital status in

this group of ED nurses, it is evident that married and partnered nurses had lower weekly average levels of distress (52.4 % and 50.25 %) than their divorced (61%) or single counterparts (60.5%). Over the preceding month, partnered but not married ED nurses had the lowest average monthly levels of distress at 47.75%. Divorced ED nurses reported levels a little higher (58%) than partnered ED nurses but lower than married ones (63.7%). ED nurses who identified as single reported the highest levels of distress across the board, with a weekly distress level of 60.5% and a monthly distress level of 70.3%

Table 7

Level of Distress Compared to Marital Status



Note. *n* varied between 37-42.

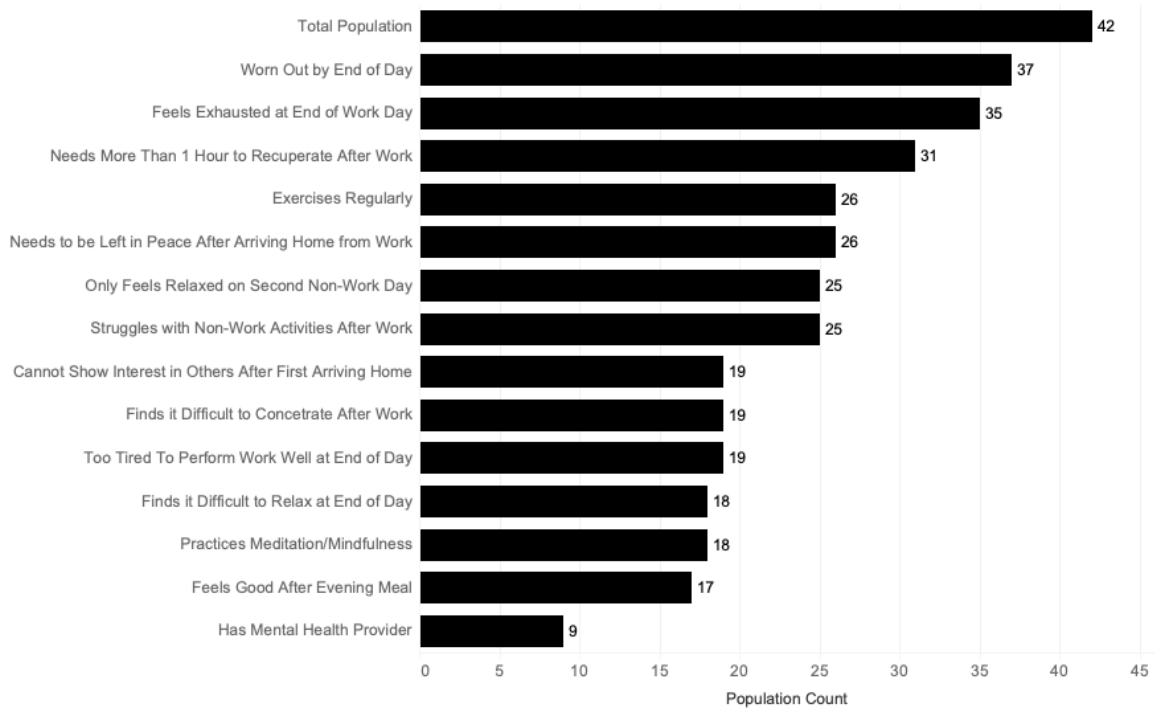
The Need for Recovery Scale: Pre-test Results

The Need for Recovery Scale was used for this project to visualize how distress may manifest in ED nurses. There were 42 participants in the Pre-test of the NFR Scale who answered "yes" to the questions reflected in Table 8. Thirty-seven out of forty-two ED nurses (88.1%) reported being worn out by the end of the day, and 73.8% needed more than an hour to recuperate after work. More than half of the nurses (62%) exercise regularly, and less than half practice mindfulness or meditation (43%). Approximately 62% of respondents reported they need to be left in peace after arriving home from work, and 59.5% only begin to feel relaxed on the second non-working day, while an equal number struggle

with non-work activities when no longer at work. More than 45% find they are too tired to perform work well at the end of the day, with the same percentage of ED nurses reporting an inability to show interest in others after arriving home and having difficulty concentrating. Seventeen ED nurses (40%) reported feeling better after their first meal after their work shift. Twenty-one percent work with a mental health provider.

Table 8

The Need for Recovery Scale and Participant Feelings and Behaviors Pre-test



Note. n=42. Only "yes" responses are counted.

[a] Percentage based on the number of "yes" responses divided by 42 total participants.

Post-test Results

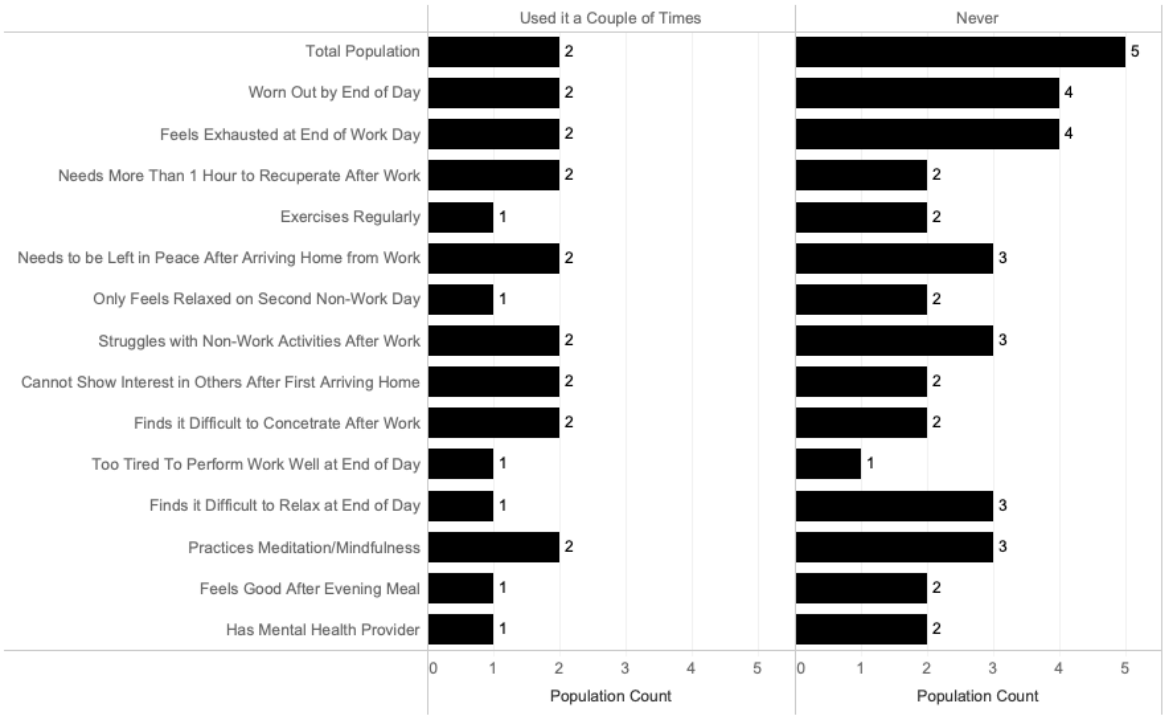
The Need for Recovery Scale

The level of distress experienced by the participants who used the Butterfly Hug a couple of times (2 ED RNs) was compared to those who did not use the BH intervention (5 ED RNs). During the Post-test, the distress levels and subsequent behaviors were quantified by answering "yes/no" questions on the Need for Recovery Scale and other questions related to mental health practices. These findings are then

visualized in Table 9 for better understanding and analysis. Approximately 29% of ED nurses (n=2/7) completed the Post-test after using the Butterfly Hug more than once. Six of the seven (86%) feel worn out and exhausted at the end of the workday. Seventy-one percent struggle with non-work activities after work and must be left in peace after arriving home. Four out of seven (57%) Post-test participants need more than an hour to recuperate after work, find it difficult to concentrate, and cannot show interest in others after arriving home. Twenty percent are too tired to perform work well at the end of the day. Three of the seven (43%) exercise regularly and have a mental health provider, while 71% practice meditation or mindfulness.

Table 9

The Need for Recovery Scale and Participant Feelings and Behaviors Post-test



Note. n=7. Only "yes" responses are counted.

[a] Percentage based on the number of "yes" responses divided by seven total participants.

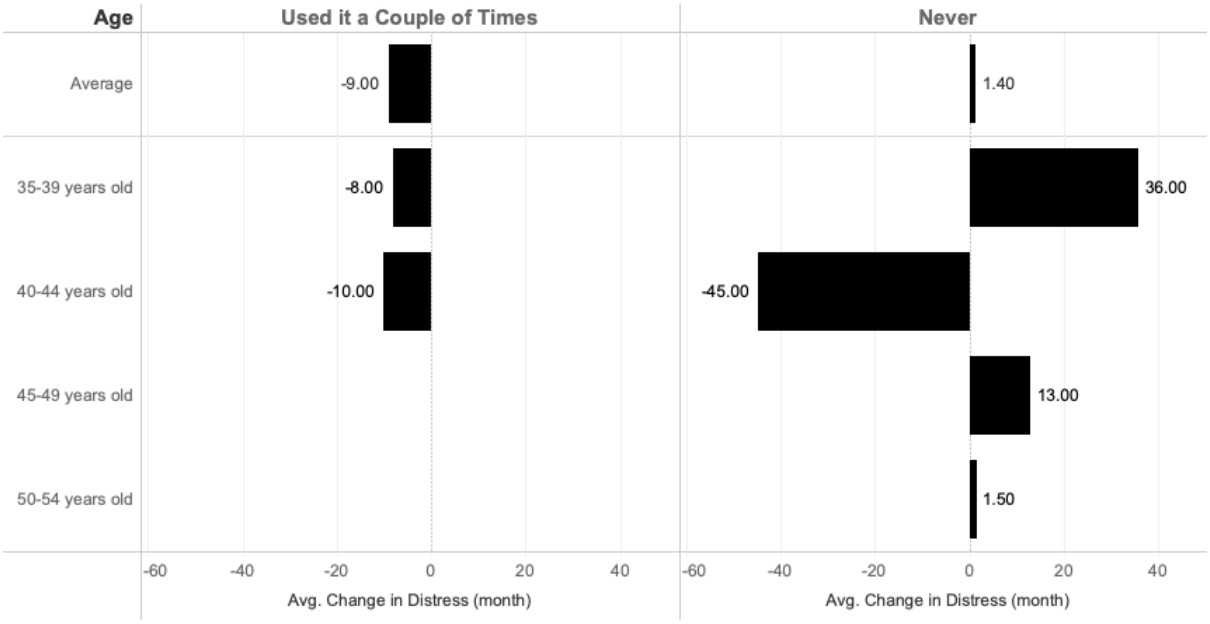
Distress by Age in Post-test

There was a notable difference comparing the change of distress by age in the Post-test between those who used the BH and those who did not (see Table 10). The two ED nurses who used the BH

reported a 9-point average decrease in distress, whereas the five people who did not use the BH reported a 1.4-point average increase in distress. That number would have been significantly higher except for one outlier who reported a 45-point decrease in distress from their Pre-test value.

Table 10

Changes in Distress by Age with the Use of the Butterfly Hug Intervention



Note. n=7. When calculating the average for the "Never" category, two individuals in the 50-54 age group were combined and treated as a single unit.

Butterfly Hug Utilization and Impact on Participants

To assess whether participants found value in the Butterfly Hug intervention, they were asked if they would recommend the BH to others. This data was compared against their use and the impact on their distress levels (see Table 11). Two participants used the BH a couple of times, and their distress level over one month decreased by an average of 9 points. Five people did not use the BH, and their average monthly distress increased by 1.4 points. The week before the Post-test, those who used the BH had a 5-point average increase in distress, while those who did not reported a 5.2-point average increase in distress. The total change in distress was calculated by combining each participant's change in distress and dividing by all 7 Post-test participants. These seven participants showed an overall reduction in

distress of -1.57 points which carried through utilization, impact, and recommendation. While 71% did not believe the BH helped them, these participants did not use the Butterfly Hug. Forty-three percent of participants would recommend using the BH, even though at least one of those recommending the BH never used it themselves.

Table 11

Butterfly Hug Utilization, Impact, and Recommendation of use going forward.

	Butterfly Hug	Total Population	Average Change in Distress (week)	Average Change in Distress (month)
Utilization				
	Used a couple times	2	5	-9
	Never	5	5.2	1.4
	Grand Total	7	5.14	-1.57
Impact				
	BH Helped	1	0	-10
	BH Did Not Help	5	4.4	-7.4
	Did Not Answer	1	14	36
	Grand Total	7	5.14	-1.57
Recommendation				
	Would Not Recommend the BH	4	2.25	-4.75
	Would Recommend the BH	3	9	2.67
	Grand Total	7	5.14	-1.57

Note. n=7.

[a] When calculating the average, two individuals in the 50-54 age group were combined and treated as a single unit.

Discussion

The aims of this project were to (1) assess the level of distress in ED nurses and (2) reduce that distress by teaching them the Butterfly Hug. The total number of respondents to the Pre-test was approximately 20% (n=42) of the entire ED nurse population at the project site. Seven participants

completed both the Pre- and Post-test. Only two of the seven practiced the Butterfly Hug. The Post-test revealed that those who used the Butterfly Hug reported less distress. This finding corresponds to existing research on the efficacy of the use of the Butterfly Hug (Jarero & Artigas, 2022; Jarero et al., 2006; Jarero et al., 2008; Kaptan et al., 2020; Luber, 2014; Manfield et al., 2021; Shapiro & Laub, 2015).

The levels of distress at the beginning of this project were moderate to high across all demographics, with those in their early forties reporting salient but consistently lower levels of distress than their coworkers (see Table 3). In addition, the highest levels of distress according to age appeared to be divided into two peaks, one occurring throughout their 30s before declining and then rising again in their 50s. Of interest is that those with 6-10 years of ED nursing experience (see Table 4) reported the lowest levels of weekly distress and average monthly distress. In contrast, those with more ED and other nursing experience report higher levels of distress across the board (see Table 5). Understandably, those with less experience would rate higher distress as they are still learning to adjust to the rigors of ED nursing; however, participants with 11 or more years of ED nursing experience reported increased distress levels. The current project's results are in contrast with findings by Norful et al. (2023), who found that older ED nurses with more experience had decreased levels of burnout. Working in a state of frequent distress leads to burnout over time (Lesley, 2021; van Dam, 2021). One reason for the current study's results may be the low number of participants who used the Butterfly Hug.

Working at a full-time equivalent (FTE) status of 0.8 (32 hours/week) or 0.9/1.0 (36-40 hours/week) may confer a protective measure indicated by slightly lower rates of distress across time compared to ED nurses working less than full time (see Table 6). Full-time ED nurses may be able to emotionally distance themselves from what they encounter on the job by just going through the motions of work; however, their reported levels of distress are still salient. For example, those with a lower FTE rated more distress. The current project's results suggested that being in a partnered relationship may provide a supportive and stabilizing factor in an ED nurse's life, thereby reducing distress (see Table 7). The weekly and average monthly distress for partnered and married participants was lower than others,

but the monthly median distress was rated the highest in married individuals. This information may be due to a paucity of data, however.

The pervasive distress ED nurses experienced, as detected in both the Pre-test (see Table 8) and the Post-test (see Table 9), was unsettling, especially since few people were willing to try and practice the Butterfly Hug intervention. Despite the levels of distress these ED nurses reported, only 21.4% had a mental health provider (see Table 8). After teaching the Butterfly Hug to 139 ED nurses in pre-shift huddles, only two nurses used it more than once and reported their use. Both experienced a salient decline in their levels of distress compared to those who did not use the Butterfly Hug Intervention (see Table 10). The participants who used the Butterfly Hug at least a few times showed an average monthly reduction of 9 points in distress ratings compared to the preceding month. Those who learned the Butterfly Hug but did not practice it reported a moderate increase in distress of 1.4 points in the subsequent month. There was one case of one participant who had not used the BH who reported a 45-point drop in distress over the prior month, a potential outlier since such a steep decline in distress may have been related to an external factor in their personal life, like a vacation, marriage, or something else, other than workplace distress. Despite attempts to find patterns within this data to explain distress and possible resilience, this outlier also points to the fact that each ED nurse has their own experiences of successes and challenges, which can change from week to week. Regardless, out of seven total project participants, the five who did not use the BH more than once reported that it did not help; however, these respondents said they did not practice it. Interestingly, some participants who did not use the Butterfly Hug still recommended it.

Limitations

Time for implementation was the biggest challenge for this project. While project implementation spanned almost two months, the time taken to instruct using the Butterfly Hug was truncated. Due to staffing challenges post-COVID-19 pandemic, quarterly staff meetings had been canceled, eliminating the proposed method of intervention instruction. As a result, the current project was presented in shift huddles over 2-3 minutes just after the Charge nurse report had been given and just when the ED nurses were

about to start their shift. In addition, two huddles were cut short during the BH presentation due to incoming trauma and code activations. As a result, shift huddles were not an opportune time to address their mental health. Instead, introducing the Butterfly Hug during a staff meeting or other time for learning may have yielded more robust results.

While approximately one-fifth of the ED nurses at the project site completed the Pre-test, most of those participants did not respond to the Post-test. Perhaps ED nurses were too stressed or short-staffed to believe they could take a minute to do the Butterfly Hug. Before introducing ED nurses to the Butterfly Hug, the project lead was present, which may have encouraged them to complete the Pre-test. Had the project lead been more visible at the site throughout the project to promote participation and utilization, the Post-test responses may have been more robust. Another area for improvement may be the systemic culture inherent in many EDs, where nurses are great at caring for others but resist applying that same care to themselves. Another limitation is that the name "Butterfly Hug" may be off-putting to some, or they felt embarrassed to practice it.

Sustainability Plan

The results of this project will be presented to the project site. In addition, findings and instructions for the Butterfly Hug will be shown to the ED nurse educators so that they can implement the Butterfly Hug with incoming ED nurse residents and fellows. If the Butterfly Hug interventions decrease distress, other units within this organization may follow suit. If other people build upon this project, other departments and hospitals may realize the benefits too.

Recommendations for future projects

This data illustrated that this sample of ED nurses experienced meaningful distress. Therefore, one recommendation is to teach the use of the Butterfly Hug over 7-10 minutes to ED nurses during mandatory quarterly staff meetings, with group participation encouraged. Another recommendation is to deduce barriers to ED nurse implementation and provide a question in the Post-test for qualitative feedback. A final suggestion is to conduct the study over a longer duration to elicit more ED nurse engagement.

Implications for Advanced Practice Nursing

This project's results show decreased distress levels for the participants who utilized the Butterfly Hug. However, the results must be interpreted cautiously since the participant level was low. This project may help inform current emergency department educator teams to begin encouraging the use of the Butterfly Hug by their ED nurses and staff. Other people seeking to study reducing distress using the Butterfly Hug may find the information presented here beneficial. More research must be done on mitigating ED nurse distress to avoid burnout.

Conclusion

This project aimed to quantify ED nurse distress and mitigate that distress by teaching the Butterfly Hug to those nurses. Though the study was small, the results suggest that ED nurses are experiencing salient distress and that those who used the Butterfly Hug reported reduced distress. This project was designed to address distress before it develops into burnout. There is no one-size-fits-all approach to addressing distress in ED nurses, but by offering a variety of tools, ED nurses can choose what works best for each individual. This is one such tool.

At the end of April 2023, AMN Healthcare (2023) revealed that a study involving 18,000 nurses in the U.S. concluded that 85% of nurses plan to leave their current hospital roles within one year. In addition, the National Council of State Boards of Nursing, Inc. (2023, April 13) announced in a press release that 900,000 registered nurses intend to leave the workforce in less than four years, amounting to an exodus of 20% of all nurses in the U.S. The ramifications of the high attrition rates experienced across the U.S. are already being witnessed. In most states across this nation, there are fewer than ten nurses per 1,000 people, and most nurses are at least 50 years old (NurseJournal Staff, 2023; U.S. Bureau of Labor Statistics, 2023). While some of this attrition is due to the retirement of the baby boomer generation, some are also due to distress and burnout due to the COVID-19 pandemic (National Council of State Boards of Nursing, Inc., 2023; NSI Nursing Solutions, Inc., 2023). In addition, younger people are not pursuing nursing as a career path at the same rates as in previous years, and fewer educators are available

to teach them (NurseJournal Staff, 2023). Yet nurses are the backbone of our healthcare system. Something must be done to reduce their distress.

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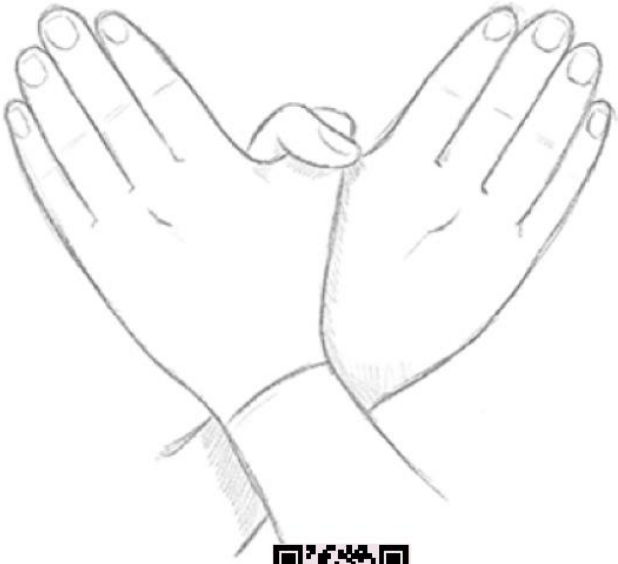
Appendix A.

Pre-test Recruitment Poster

All ED Nurses

Please take a anonymous quick survey for a
DNP project on distress.



Please only take the survey once! Please try to complete it before March 12th.
Thanks! Darian Hawke, RN, CEN.
Pre-Test survey link:
https://seattleux.qualtrics.com/jfe/form/SV_40oebijUMUkkKsm

Appendix B.

Pre-test Email

Pre-test email being sent to All ED Nurses:

Hi. My name is Darian Hawke, RN, CEN. I have worked with many of you. I am pursuing my DNP as a Psychiatric Mental Health Nurse Practitioner (PMHNP) at Seattle University. I am conducting a project on distress in ED nurses. I have attached the link to an anonymous survey here, but it is also accessible on posters placed in the break room, locker room, and nutrition rooms. It will only take a few minutes to do. I hope you choose to participate, and I look forward to showing you a brief intervention that has been proven to help many.

Pre-Test survey link: https://seattleux.qualtrics.com/jfe/form/SV_40oebijUMUkkKsm

Download QR Code

Results will be available in June 2023.

If you have any questions, I can be reached at: dhawke@seattleu.edu

Thank you!

Darian

Appendix C.

Seattle University Consent to Participate in a Clinical Inquiry Project

You are invited to participate in a clinical inquiry project, Utilizing the Butterfly Hug to Reduce Distress in Emergency Department Nurses**,** that will teach you a quick, easy-to-use tool. This is the initial survey before teaching you the Butterfly Hug. After four weeks of using this tool, another survey will be sent to you to determine if the Butterfly Hug reduced your distress.

This 14-question survey will ask yes/no questions about how you feel at the end of a day at work. The survey will take less than 10 minutes to complete. The survey is entirely voluntary, and you may stop at any time without any consequences.

Direct identifiers for this project will not be collected. However, basic demographic information is necessary to determine trends in data before and after the intervention is taught and identify any confounding factors revealed in the results.

RISKS:

- • _You may find some questions personal or upsetting. You can skip any questions you do not want to answer or stop the survey entirely.
- • _Whenever you provide information online, your data could be intercepted.
- • _A secured system will be used to collect this data called Qualtrics through Seattle University to reduce this risk.
- • _All data will be de-identified and held for seven years.
- • _All electronic data will be stored on a password-protected, encrypted computer and the online Qualtrics survey software servers.

BENEFITS:

- _The Butterfly Hug may reduce your levels of distress, giving you more energy for other areas of your life.
- _Treating distress may reduce the risk of developing post-traumatic stress disorder (PTSD)

Participation in this project will require no monetary cost to you.
Only the project lead (Darian Hawke, RN, CEN) will have access to the information you provide, as well as the faculty advisor (Annette Thomas, Ph.D., RN). The site location will also be obscured.

If you have any questions about this project, contact Darian Hawke, RN, CEN, PMHNP DNP Student, Seattle University, at 206-920-3460 or dhawke@seattleu.edu.

If you meet the eligibility criteria below and would like to participate in this project, click the button to begin the survey. Remember, your participation is entirely voluntary, and you can withdraw anytime.

- _I am at least 18 years old
- _I am a registered nurse currently working in the emergency department

Appendix D.

Pre-Intervention Survey

For the following questions, please select the answer that best describes you.

Demographics:

1. How would you define your gender?
   - Male
   - Female
   - Non-binary/third gender
   - I prefer not to say

2. What is your ethnic background?
   - White or Caucasian
   - Black or African American
   - Hispanic/Latin American
   - American Indian/Native American/Alaska Native
   - Native Hawaiian/Pacific Islander
   - Asian – Eastern
   - Asian – Western/Indian
   - Other
   - I Prefer not to say

3. What is your age?
   - 20-24
   - 25-29
   - 30-34
   - 35-39
   - 40-44
   - 45-49
   - 50-54
   - 55-59
   - 60-64
   - 65-69
   - 70+
   - I prefer not to say

4. What is your marital status?
   - Single
   - Partnered
   - Separated
   - Divorced
   - Married
   - I prefer not to say

5. What is your full-time equivalent (FTE) status?
   - 0.9/1.0
   - 0.8
   - 0.6
   - 0.4
   - Per diem

6. How many years have you worked in the ED?
   - 0-1
   - 1-2

3-5
6-10
11-15
16-2
21-30
31-40
41+

7. How many years have you worked as an RN?
   0-1
   1-2
   3-5
   6-10
   11-15
   16-2
   21-30
   31-40
   41+

8. On a scale of 0 to 10, please rate your overall level of distress for the past month:
   0 (no distress)
   1
   2
   3
   4
   5 (moderate distress)
   6
   7
   8
   9
   10 (highest possible level of distress)

9. On a scale of 0 to 10, please rate your overall level of distress for the past week:
   0 (no distress)
   1
   2
   3
   4
   5 (moderate distress)
   6
   7
   8
   9
   10 (highest possible level of distress)

Please select Yes or No for the following questions and statements:

10. Are you currently working with a mental health provider? Yes/No

11. Do you exercise regularly outside of work? Yes/No

12. Do you practice meditation/mindfulness? Yes/No

The Need for Recovery Scale

13. I find it difficult to relax at the end of a working day. Yes/No
14. By the end of the working day, I feel really worn out. Yes/No
15. Because of my job, at the end of the working day, I feel rather exhausted. Yes/No
16. After the evening meal, I generally feel in good shape. Yes/No
17. In general, I only start to feel relaxed on the second non-working day. Yes/No
18. I find it difficult to concentrate in my free time after work. Yes/No
19. I cannot really show any interest in other people when I have just come home myself. Yes/No
20. Generally, I need more than an hour before I feel completely recuperated after work. Yes/No
21. When I get home from work, I need to be left in peace for a while. Yes/No
22. Often, after a day's work, I feel so tired that I cannot get involved in other activities. Yes/No
23. A feeling of tiredness prevents me from doing my work as well as I normally would during the last part of the working day. Yes/No

(van Veldhoven & Broersen, 2003).

Appendix E.

The Butterfly Hug Intervention Instructions

The Butterfly Hug is performed by placing the hands vertically on opposite clavicles, with fingers pointed more upwards than toward the arms, before interlocking the thumbs. Each person then assessed their level of distress, with 0 being no distress and 10 being the highest level of distress. Next, the person performing it began tapping their hands alternately and slowly. During this, the eyes can be open or closed, or partially closed and looking towards the tip of the nose. Participants were told to let images pass like overhead clouds if they arose. If distress begins to rise, tap slower. Participants were encouraged to keep breathing slow deep breaths while tapping. After 15-20 seconds, the arms were dropped to the side and shaken. A steadying breath or two was encouraged. Then, the tapping began again. This time the tapping continues for 20-30+ seconds. It is essential to tap slowly to prevent unearthing past traumatic memories. Once that approximate time has elapsed, the arms are dropped to the side and shaken briefly. Some people may require a longer duration based on their individual needs. The person performing it was encouraged to reassess their level of distress (Jarero & Artigas, 2022). Once learned, implementation takes 1-3 minutes and can be utilized up to 6 times daily to reduce personal distress levels.

Appendix F.

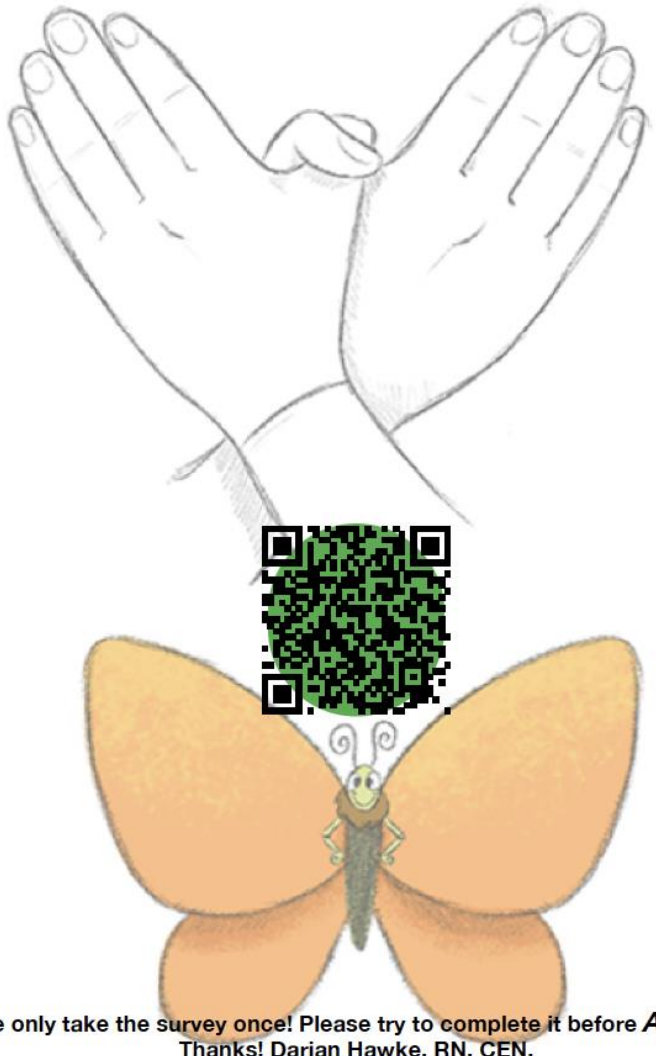
YouTube.com link: https://www.youtube.com/watch?v=4x6MpRSa4EE

Appendix G.

Post-test Recruitment Poster

All ED Nurses

Please take a anonymous quick *follow-up* survey for a *DNP project on distress.*



Please only take the survey once! Please try to complete it before *April 23rd*.
Thanks! Darian Hawke, RN, CEN.
Post-Test survey link:
https://seattleux.qualtrics.com/jfe/form/SV_8dhLFAMpE8IQPZ4

Appendix H.

Post-test Email

Post-test email being sent to all ED Nurses:

Hi. Thank you to everyone for filling out the initial survey. By now, you likely have had a chance to learn the Butterfly Hug intervention to reduce distress. Below I have attached another short anonymous survey to see if you found the Butterfly Hug helpful in reducing your distress and if you continue to use it. **Please complete this survey even if you did not complete the first one!** Once again, posters have been placed around the unit in the break room, locker room, and nutrition rooms for your convenience. These posters differ from the first, so please use the new QR code or link attached, or you can click on the survey right now to fill it out.

Post-Test survey link:
https://seattleux.qualtrics.com/jfe/form/SV_8dhLFAMpE8IQPZ4?LoginID=${e://Field/Login%20ID}

If you have any questions or concerns, please send me an email at: dhawke@seattleu.edu

Results will be available in June 2023 for anyone interested.

Thank you!

Darian

Appendix I.

Post-Intervention Survey

For the following questions, please select the answer that best describes you.

Demographics:

1. How would you define your gender?
   - Male
   - Female
   - Non-binary/third gender
   - I prefer not to say

2. What is your ethnic background?
   - White or Caucasian
   - Black or African American
   - Hispanic/Latin American
   - American Indian/Native American/Alaska Native
   - Native Hawaiian/Pacific Islander
   - Asian – Eastern
   - Asian – Western/Indian
   - Other
   - I prefer not to say

3. What is your age?
   - 20-24
   - 25-29
   - 30-34
   - 35-39
   - 40-44
   - 45-49
   - 50-54
   - 55-59
   - 60-64
   - 65-69
   - 70+
   - I prefer not to say

4. What is your marital status?
   - Single
   - Partnered
   - Separated
   - Divorced
   - Married
   - I prefer not to say

5. What is your full-time equivalent (FTE) status?
   - 0.9/1.0
   - 0.8
   - 0.6
   - 0.4
   - Per diem

6. How many years have you worked in the ED?
   - 0-1
   - 1-2

3-5
6-10
11-15
16-2
21-30
31-40
41+

7. How many years have you worked as an RN? 0-1
1-2
3-5
6-10
11-15
16-2
21-30
31-40
41+

8. On a scale of 0 to 10, please rate your overall level of distress for the past month:
0 (no distress)
1
2
3
4
5 (moderate distress)
6
7
8
9
10 highest possible level of distress)
9. On a scale of 0 to 10, please rate your overall level of distress for the past week:
0 (no distress)
1
2
3
4
5 (moderate distress)
6
7
8
9
10 (highest possible level of distress)

Please select Yes or No for the following questions and statements:

10. Are you currently working with a mental health provider? Yes/No

11. Do you exercise regularly outside of work? Yes/No

12. Do you practice meditation/mindfulness? Yes/No

13. Have you been utilizing the Butterfly Hug? Yes/No
14. Have you been utilizing the Butterfly Hug at work? Yes/No
15. Do you feel like the Butterfly Hug has helped you? Yes/No
16. Would you recommend the Butterfly Hug to others? Yes/No
17. How often are you using the Butterfly Hug?
    a.) Once a day
    b.) Multiple times/day
    c.) Once a week
    d.) Multiple times/week
    e.) I have only used it a couple of times
    f.) Never

The Need for Recovery Scale

18. I find it difficult to relax at the end of a working day. Yes/No
19. By the end of the working day, I feel really worn out. Yes/No
20. Because of my job, at the end of the working day, I feel rather exhausted. Yes/No
21. After the evening meal, I generally feel in good shape. Yes/No
22. In general, I only start to feel relaxed on the second non-working day. Yes/No
23. I find it difficult to concentrate in my free time after work. Yes/No
24. I cannot really show any interest in other people when I have just come home myself. Yes/No
25. Generally, I need more than an hour before I feel completely recuperated after work. Yes/No
26. When I get home from work, I need to be left in peace for a while. Yes/No
27. Often, after a day's work, I feel so tired that I cannot get involved in other activities. Yes/No
28. A feeling of tiredness prevents me from doing my work as well as I normally would during the last part of the working day. Yes/No

(van Veldhoven & Broersen, 2003).

If you took the first survey, please enter your unique ID code here:

Appendix J

The Need for Recovery Scale (NFR)

The Need for Recovery Scale

1. I find it difficult to relax at the end of a working day. Yes/No
2. By the end of the working day, I feel really worn out. Yes/No
3. Because of my job, at the end of the working day, I feel rather exhausted. Yes/No
4. After the evening meal, I generally feel in good shape. Yes/No
5. In general, I only start to feel relaxed on the second non-working day. Yes/No
6. I find it difficult to concentrate in my free time after work. Yes/No
7. I cannot really show any interest in other people when I have just come home myself. Yes/No
8. Generally, I need more than an hour before I feel completely recuperated after work. Yes/No
9. When I get home from work, I need to be left in peace for a while. Yes/No
10. Often, after a day's work, I feel so tired that I cannot get involved in other activities. Yes/No
11. A feeling of tiredness prevents me from doing my work as well as I normally would during the last part of the working day. Yes/No

(van Veldhoven & Broersen, 2003).

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Hawke_Utilizing Butterfly Hug in ED Nurses

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