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### The Impact of Disaster Tabletop Exercise on the Nurses Knowledge on Emergency Preparedness and the Influence on Professional Quality of Life

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THE IMPACT OF DISASTER TABLETOP EXERCISE ON THE NURSING KNOWLEDGE  
OF EMERGENCY PREPAREDNESS AND THE INFLUENCE ON PROFESSIONAL  
QUALITY OF LIFE

Vivian Fuentes, MSN, RN, CEN

A Doctor of Nursing Practice Project Submitted in Partial  
Fulfillment of the Requirements  
for the Degree of

Doctor of Nursing Practice

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Saint Francis Medical Center College of Nursing  
Peoria, Illinois

**DNP Project Team Final Approval Form**

The members of the DNP Project Team of

met on (date):  *Student's Name*  
and agree that the DNP Project titled,

has successfully met all required criteria as stipulated by Saint Francis Medical Center College of Nursing.

Name of DNP Project Advisor(*Print*)

DNP Project Advisor's signature

Date

Name of DNP Project Expert (*Print*)

DNP Project Expert's signature

Date

### **Acknowledgements**

I would like to first recognize God and the power of faith for the strength provided to finish this study successfully. My subsequent recognition goes to Diane Amado-Tate, Doctors Hospital's chief nursing officer, for her immediate response to approve and support the implementation of this project. This project would not have been completed as effortlessly without the incredible support and guidance of Dr. Kelly Cone, project faculty advisor, and Dr. Griselle Pastor, preceptor and Doctors Hospital assistant vice president of nursing. Both Dr. Cone and Dr. Pastor are genuinely committed to their profession, and I sincerely appreciate the time they invested in me. Other essential people who shared their expertise to create the foundation of this project are Dr. Roberto Roman Laporte, nurse scientist; Monica Jurysta, emergency department manager; Emilio Xiques, emergency preparedness department educator; Richard Whitehurst, emergency preparedness department manager; and Nancy Acebal, Doctors Hospital safety manager. Finally, I would like to acknowledge my colleagues and friends, Diane Kramer and Kayce Tugg, who provided great encouragement to help me achieve my project goals. I will be forever grateful for everyone's selfless support when I needed it the most.

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### Abstract

It is widely reported that nurses are underprepared to respond to a disaster event, despite the available resources for emergency preparedness education. The purpose of this project was to measure the impact of disaster tabletop exercises on emergency preparedness knowledge of the emergency department (ED) nurses and its influence on the professional quality of life. Twenty-nine nurses from a south Florida hospital participated in the evaluation of this evidence-based project. The Professional Quality of Life (ProQOL) and adapted Emergency Preparedness Information Questionnaire (EPIQ) were implemented before and after disaster tabletop exercises. The EPIQ findings included an overall 20% increase in emergency preparedness knowledge. Thirteen questions showed a statistically significant ( $P = < .05$ ) improvement in the mean familiarity score. Three questions from the ProQOL survey showed statistical significance ( $P = < .05$ ), translating into a 15% increase in high compassion satisfaction levels and a 95% increase in moderate burnout levels. The qualitative data analysis themes from the tabletop showed strengths, such as the disaster and emergency preparedness organizational plan and educational resources for nurses, and the reality of the ED nurses' disaster preparedness expectations. The themes identified from participant responses about what they intend to do differently following education include self-motivation for disaster preparedness and policy review. Disaster tabletop exercises are recommended as part of the ED nurses' annual emergency preparedness education.

*Keywords:* emergency preparedness, disaster tabletop exercise, emergency preparedness information questionnaire, professional quality of life, emergency department nurses

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### **Section 1: Background and Significance of Proposed Project**

Studies conducted to measure nurses' self-perception in emergency preparedness have revealed a general lack of disaster situation awareness. The results have implications for academia and hospital administration (Labrague et al., 2018). Nurses do not feel prepared to effectively respond to a disaster situation, because they do not possess the necessary knowledge, skills, and abilities due to lack of emergency preparedness education at the academic and organizational level (Nash, 2017). A lack of experience in disaster situations can cause stress and fear (Lee & Kim, 2018) that can lead to provider burnout and an increased rate of patient morbidity and mortality during a disaster situation (Georgino et al., 2015). The development of negative symptoms in nurses who are providing patient care is associated with compassion fatigue, which can be divided into two parts: burnout and secondary traumatic stress disorder. These elements, along with compassion satisfaction (the positive aspect of caring for others), comprise the professional quality of life (Stamm, 2010). Frontline responders, such as emergency department (ED) nurses, are at risk to experience compassion satisfaction and compassion fatigue. Lee and Kim (2018) found a positively significant correlation between disaster preparedness and compassion satisfaction.

The tabletop exercise in emergency preparedness education is categorized by the Federal Emergency Management Agency (FEMA) as a discussion-type drill with significant success on assessment and performance metrics for participant, policy, and procedure core activities (Evans & Schwartz, 2019). A tabletop exercise gives participants the opportunity to demonstrate their transfer of knowledge, skills, and abilities based on their participation in realistic practice scenarios using decision-making and problem-solving activities. In addition, the tabletop after-



exercise, called the hot wash, highlights the strengths and lessons learned along with the identification of any gaps in policy, procedures, and competency (Evans & Schwartz, 2019).

### **Practice Issue**

The emergency preparedness competency dimensions were created based on eight reliable and valid themes related to preparedness in the event of a large-scale emergency event (Wisniewski et al., 2004). Dimensions include triage and basic first aid; detection; ability to access critical resources and reporting; the incident command system; isolation, quarantine, and decontamination; psychological issues, epidemiology, and clinical decision making; and communication and connectivity. These dimensions were created to evaluate first responders' self-assessed familiarity with emergency preparedness and to develop an emergency preparedness curriculum that includes all dimensions.

The current protocol for emergency preparedness education at Doctors Hospital consists of a yearly mandatory hazmat and augmented biological personal protective equipment class. Classes combine lecture methodology and a hands-on component for practice in donning and doffing personal protective equipment but do not include use of tabletop exercises.

### **PICO Question**

The study question was created using the PICO mnemonic. The P, or population to be studied, is in this project the ED nurses. I, the intervention, is the tabletop exercise. C represents comparison or current practices. This study will compare the use of a tabletop exercise in emergency preparedness education against the standard emergency preparedness education. Additionally, the study will compare the professional quality of life of the ED nurses before and after the emergency participating in the preparedness tabletop exercise. O refers to the outcomes the study intends to achieve, in this case, the increase of both emergency preparedness

knowledge and professional quality of life, which consist of compassion fatigue and satisfaction.

The final product of the PICO reads: For Emergency Department nurses, does the use of a tabletop exercise on emergency preparedness education increase the knowledge of emergency preparedness and change the perception of professional quality of life during a disaster event compared to nurses who receive only standard emergency preparedness education?

### **Situation Leading to Proposed Project**

The 2020 pandemic that involved the rapid spread of the respiratory illness called coronavirus (COVID-19) revealed insufficiencies at a national level to effectively respond to the event (Veenema et al., 2020). Among the findings, the nursing workforce response to the COVID-19 pandemic has resulted in more than 300 nursing deaths from COVID-19, and thousands have become sick or had to self-quarantine because of workplace exposure. Frontline nurses have reported being mentally, physically, and emotionally exhausted, in addition to being fearful of becoming infected or infecting a loved one. Uncertainties about the unknowns related to self-protection and the proper care of a patient with COVID-19 have created an additional layer of stress that has made some nurses reconsider their profession, causing some to resign their positions (Veenema et al., 2020). Nurses' confidence in their ability to respond to disaster events is associated with prior participation in a disaster. Nurses' willingness to participate in a disaster event is associated with their perceived competence in emergency preparedness (Baack & Alfred, 2013). Participating in a tabletop exercise increased nurses' preparedness during a disaster event (Mirzaei et al., 2020).

### **Theoretical Framework/Program Planning Model/Evidence-Based Practice Model**

The use of a theoretical framework strengthens a quality improvement, evidence-based practice, or research project by providing guidance to better comprehend the meaning and

challenges of a specific phenomenon (Moran et al., 2020). Program planning and evidence-based practice models promote guidance from the implementation phase through the evaluation phase of the project. They also provide guidance for actions for sustainability to ensure that decisions are made after considering all healthcare resources and to promote effective decision making (Moran et al., 2020).

### ***Plan-Do-Study-Act Cycle***

According to Mind Tools (n.d.-b), the Plan-Do-Study-Act (PDSA) cycle is a four-step sequence for continuous improvement, or change of a process to improve quality and safety. The first step of the cycle is the plan stage, which involves identifying an opportunity to make a change (Mind Tools, n.d.-b). The planning process in this phase includes drafting an aim statement to determine what must be accomplished, the change needed for improvements, and how to measure the change or improvement. A team of people knowledgeable about the topic is assembled and decides how goals will be met. In addition to evaluating the established processes to determine what has previously worked and not worked well. The team can perform a strength, weaknesses, opportunities, and threats (SWOT) analysis to brainstorm current and future needs. They also establish roles and responsibilities and set timelines and should identify the problem, its causes, and alternatives. The use of workflow process maps assists with analyzing the causes and alternatives and creating an action plan (Minnesota Department of Health, n.d.).

In the second phase (do), the team implements the action plan on a small scale, and data related to findings, unexpected outcomes, or observations are documented (Mind Tools, n.d.-b). During the study or check phase, the aim statement and the data gathered during the second phase are used to analyze and measure how much improvement was achieved, and the advantages and disadvantages of the process (Mind Tools, n.d.-b). In the act phase of the cycle,

the team determines whether the process was successful enough to standardize the changes and work on sustainability (Minnesota Department of Health, n.d.). The PDSA model is an ongoing cycle. Following standardized implementation, the process should be reevaluated for effectiveness, quality, and safety. Phases may be repeated as needed if modifications to the initial plan do not result in the outcomes expected or if a new plan is needed (Mind Tools, n.d.-b).

The PDSA model provides a framework with the necessary steps to implement changes to improve quality and safety outcomes in emergency preparedness education for ED nurses at Doctors Hospital. The structured model has been used successfully at Baptist Health South Florida for several years and is widely used for quality improvement projects. It allows for small scale planning to standardize changes when goals have been reached and improvement has been achieved, minimizing waste of resources. The cycle is a scientific method used for action-oriented learning (Agency for Healthcare Research and Quality, 2013).

The PDSA model will guide this project in the use of a tabletop exercise on emergency preparedness education and its influence on the professional quality of life of ED nurses by providing an organized method of planning and implementation. To fulfill the guidelines of the plan phase, a PICO question has been created and an interprofessional team with experts on emergency preparedness field has been assembled. The interprofessional team created for this project performed a SWOT analysis of the emergency preparedness education currently provided to ED nurses. An action plan has been created for data collection and emergency preparedness tabletop exercise implementation. In the do phase, the action plan interventions will be carried out at Doctors Hospital per the timeline established while collecting data. During the study phase, data collected during implementation will be analyzed and correlated to the PICO question and intervention results to determine if the use of tabletop exercises in emergency

preparedness education had an impact on the nurses' knowledge and if it influenced their professional quality of life. If the outcomes of the intervention correlate with the literature review findings and show an improvement, the project can then move into the act phase to standardize the project.

### ***Kirkpatrick's Model***

Donald Kirkpatrick's four-level training evaluation model was created in 1959 and updated in 1975 and 1993, and is used to evaluate the impact and effectiveness of learning programs, to determine their return on investment, and to collect quantitative data (Mind Tools, n.d.-a). The four levels are reaction, learning, behavior, and results. The first level, reaction, focuses on participants' responses to and satisfaction with the training. This feedback leads to program improvements (Mind Tools, n.d.-a). One method to collect this information is an after-training evaluation (Petroni, 2017). Learning, the second level, measures whether the objectives of the program were met and if knowledge or skills were improved as a result (Mind Tools, n.d.-a). This type of evaluation can be accomplished by using pre- and posttests or hands-on assignments that demonstrate the learner's new skills (Petroni, 2017). Level three, behavior, evaluates the extent to which behaviors were changed over time. Successful methods to evaluate behavior changes are daily work observation and evaluations (Mind Tools, n.d.-a). In the field setting, evaluations can be performed based on work behaviors, behaviors during exercises, or behaviors that emerge from participating in a real event (Public Health Foundation, n.d.). The fourth level, results, assesses benefits versus costs. Training will result in quantifiable results, such as increased productivity, decreased number of accidents, and increased patient satisfaction. Assessing the return on investment in educational programs is challenging, because identifying

the monetary value of the benefits can be difficult. A rule of thumb is to calculate the benefits as 1% of the profit from sales (Baron & Armstrong, 2007).

Baron and Armstrong (2007) advised that use of a method to evaluate educational impact should be part of every educational program. Kirkpatrick's model was selected for this project because it measures that impact. The intervention of the project is the implementation of a disaster tabletop exercise as part of emergency preparedness education; Kirkpatrick's model will provide guidance in how to evaluate the effectiveness of the intervention at each level. Additionally, the use of this model will align with how the Preparedness and Emergency Response Learning Centers evaluate their training programs to ensure workforce readiness (Public Health Foundation, n.d.).

Learning is a continuous process to enhance the individual's existing capabilities. Adding skills, knowledge, and attitudes helps to develop employees who can perform at higher levels and take on more responsibilities that bring value to the organization. When highly skilled employees perform more efficiently, they help reduce costs while increasing customer satisfaction and maintaining a healthy working climate. Although skills, knowledge, and attitudes are intangible assets, the data and metrics collected as a result of learning and development programs can be translated into return on investment for the organization, which can be seen in higher profits and increase in cash flow (Baron & Armstrong, 2007).

**Evaluation Tools.** The Kirkpatrick model will guide the evaluation of project outcomes by using the four levels of training evaluation to measure learners' transfer of knowledge and to identify areas of improvement in the emergency preparedness education and tabletop exercise. The reaction level will be measured using a class evaluation tool that asks participants the degree to which the program met its objectives, their educational needs were met, the teaching strategies

were appropriate, and the instructor was effective. Additional questions will ask about the strengths and weaknesses of the program, what would improve the program, and what the participant intends to do differently following the education.

The learning level will be evaluated using the Emergency Preparedness Information Questionnaire, or EPIQ, instrument. Participants will complete the questionnaire to self-assess their familiarity with the emergency preparedness competency dimensions. The questionnaire will be completed by participants before and after receiving emergency preparedness education. In addition, participants will participate in a tabletop exercise in which they demonstrate transfer of knowledge, skills, and attitudes by discussing problem-solving interventions based on a case scenario provided after the emergency preparedness education.

The behavior level will be measured by using a posteducation survey. The survey will have questions related to participation in emergency preparedness education about a year after the implementation of the project, that may have helped the participants during the tabletop exercise.

Results, the final level of the model, involves a long-term evaluation that will measure the success of the training for the organization and its return on investment (ROI). This evaluation will be performed by the ED leaders based on nonmonetary assets, such as nurses' increased knowledge of emergency preparedness or disaster readiness. In the event of a disaster event occurring after the education is provided, the ROI could be measured based on patient satisfaction levels and quality outcomes.

## **Section 2: Development and Implementation**

Nursing practice is guided by science. The identification of phenomena of interest to improve nursing practice, healthcare quality, and patient outcomes requires the implementation of a quality improvement or evidence-based practice project. The process is initiated by performing a literature review to get a clear understanding of all the concepts related to the topic and what has already been studied. Reviewing the literature reveals the most current practices to identify areas of improvement needed in the workplace. Findings from the literature support the need to further investigate a topic (Moran et al., 2020).

### **Literature Review**

A systematic literature review was completed to appraise recent literature related to the nurse's emergency preparedness knowledge, the use of tabletop exercises for emergency preparedness education, and the nurse's professional quality of life to better understand needs related to nursing emergency preparedness education and its effects. The review of the literature helped to identify best practices regarding learning needs in the emergency preparedness curriculum and method of delivery. Additionally, the literature validates the correlation between disaster preparedness and the components of professional quality of life. The findings can be used to improve the nurse's emergency preparedness education plan.

### **Methods**

The search strategy included the databases CINAHL, Ovid, PubMed, and Google Scholar using the keywords *emergency preparedness*, *disaster preparedness*, *emergency preparedness information questionnaire*, *emergency preparedness tabletop*, *disaster preparedness education*, and *professional quality of life*. A custom range of years was used from 2015 through 2020.



Inclusion criteria included articles published in English within the last 5 years. From the 106 articles found, 20 were selected. The criteria for selecting articles included the use of the Emergency Preparedness Information Questionnaire (EPIQ) instrument, the use of the Professional Quality of Life scale (ProQOL) instrument, and the use of tabletop exercise for emergency preparedness education. Studies published before 2015 that explain the origin of the instruments EPIQ and ProQOL were selected because they verified the validity and reliability of the instruments. Exclusion criteria included studies published before 2015 that did not use EPIQ or ProQOL and did not use tabletop exercises as a method of education.

The 20 selected articles were analyzed, and the required data was documented using a literature review table (see Appendix A). A majority of the studies had a level of evidence of VI, based on the criteria developed by Melnyk and Fineout-Overholt (2019). Most of the studies selected were of descriptive design, with a combination of quantitative and qualitative data (Baack & Alfred, 2013; Evans et al., 2019; Evans & Schwartz, 2019; Garbutt et al., 2008; Georgino et al., 2015; Hodge et al., 2017; Hunsaker et al., 2015; Lee & Kim, 2018; Lu et al., 2002; Setou et al., 2018; Seyedin et al., 2015; So et al., 2019; Stamm, 2010; Taskiran & Baykal, 2019; Watson et al., 2019; Wisniewski et al., 2004; Worrall, 2012). Twelve of the studies were completed in the United States (Baack & Alfred, 2013; Evans et al., 2019; Evans & Schwartz, 2019; Garbutt et al., 2008; Georgino et al., 2015; Hodge et al., 2017; Hunsaker et al., 2015; So et al., 2019; Stamm, 2010; Taskiran & Baykal, 2019; Watson et al., 2019; Wisniewski et al., 2004).

The studies that used the EPIQ instrument were conducted outside of the United States in the United Kingdom (Worrall, 2012), and in Iran (Seyedin et al., 2015). Those that used the ProQOL instrument outside the United States were in South Korea (Lee & Kim, 2018), Japan (Setou et al., 2018), and Taiwan (Lu et al., 2020). A study completed in Turkey focused on

emergency preparedness using the Nurses' Perceptions of Disaster Core Competencies scale (Taskiran & Baykal, 2019).

### **Data Evaluation and Analysis**

Since the beginning of the 21st century, special attention has been given to emergency preparedness due to the considerable increase in the number of disasters worldwide (Georgino et al., 2015). A disaster relates to any event that involves a significant number of individuals and negatively affects the health, economy, or environment. When a major disaster occurs, the demands on nursing are greater than on any other healthcare profession (Baack & Alfred, 2013). Nurses play a vital role as first responders during a disaster event, and their involvement has a direct impact on patients' outcomes and the wellness of their communities. The ability for nurses to properly respond to a disaster is directly associated with the training that healthcare systems provide to their nurses (Hodge et al., 2017). "Emergency preparedness is defined as a comprehensive set of skills, abilities, knowledge, and actions that are needed to be prepared and respond to an actual or suspected threat of disaster" (Baack & Alfred, 2013, p. 282). The American Nurses Association encourages nurses to strengthen their ability to intervene during a disaster event, to be familiar with their employer's emergency plan and to be personally prepared for emergencies (Hodge et al., 2017). However, Georgino et al. (2015) noted the lack of education in undergraduate or new hire nursing orientation programs. (Hodge et al., 2017) demonstrated a lack in nursing curricula and a knowledge gap for emergency preparedness, in addition to a lack of confidence in the nurse's ability to respond to disaster care

The inability to properly respond to a disaster can lead to provider burnout and the increase of victim morbidity and mortality (Georgino et al., 2015). In the ED, nurses provide care for patients in extreme stress and life-threatening situations. Nurses experience compassion

satisfaction from helping others; however, they also experience compassion fatigue, burnout, or secondary traumatic stress (Lee & Kim, 2018). The elements of professional quality of life are compassion satisfaction and compassion fatigue. Burnout and secondary traumatic stress, which are work-related negative feelings, are elements of compassion fatigue (Stamm, 2010). Lee and Kim (2018) found a positive correlation between disaster preparedness and compassion satisfaction.

The training needs of individuals must be taken into account to create a robust education that includes annual training courses related to emergency preparedness, such as workshops and scenario-based drills (Seyedin et al., 2015). Disaster tabletop exercises are categorized by the FEMA as discussion-type drills that provide open-ended decision-making opportunities to identify solutions (Evans & Schwartz, 2019). Institutions that employ tabletop and drill training have registered low patient fatality rates during disaster incidents (Georgino et al., 2015).

### **Sampling**

The EPIQ instrument was designed to evaluate the emergency preparedness familiarity of first responders in a disaster situation. The literature provides a varied selection of participants using EPIQ. Nurses were the participants in the studies from Baack and Alfred, 2013; Garbutt et al., 2008; and Wisniewski et al., 2004. Participants in the Georgino (2015) study included all trauma nurses. Seyedin et al. (2015) used a convenience sample of ED nurses. Worrall (2012) studied a combination of disciplines comprised of nurses and healthcare assistants, and Hodge et al. (2017) of registered nurses, license practical nurses, and advance practice nurses.

The ProQOL instrument is intended to measure compassion satisfaction, compassion fatigue, burnout, and secondary traumatic stress in people who work in the helping professions (Stamm, 2010). Setou et al. (2018) used ProQOL with earthquake relief workers in Haiti,

including nurses, care managers, pharmacists, and psychologists. Lu et al. (2020) utilized the instrument with nurses in the Formosa Fun Coast explosion using convenience samples, and Hunsaker et al. (2015) with registered nurses throughout the United States.

Researchers have conducted various studies using disaster tabletop exercises to improve emergency preparedness education. From high-ranking U.S. government officials (Watson et al., 2019) to pediatric and public health practitioners (So et al., 2019), people from various disciplines and levels of knowledge and expertise have participated in these studies. Taskiran and Baykal (2019) recruited a convenience sample of nurses, while Evans and Schwartz (2019) and Evans et al. (2019) tested a sample of senior nursing students for their studies.

### **Limitations**

In this systematic review, no limitations were listed in five studies (Evans & Schwartz, 2019; Garbutt et al., 2008; Stamm, 2010; Watson et al., 2019; Wisniewski et al., 2004). Some limitations included sample size, no demographic data collection, and a scoring system adaptation (Worrall, 2012). Similar limitations were recorded by Hunsaker et al. (2015), with a limited sample size and single measuring of the variables. Other study limitations identified were the reporting system, the limited time between completion of pre- and posttest, and lack of validity or reliability of the adopted instrument used (Georgino et al., 2015). Seyedin et al., (2015) reported the lack of cooperation from participants. Similar limitations were reported by Baack and Alfred (2013) with results from a single geographical area; Lu et al. (2020) with results from only one healthcare medical center; and Taskiran and Baykal (2019) with results from a single hospital in addition to a convenience sampling. Additional limitations included specialized sampling results that could not be used for generalization, difficulty understanding participants' true intent during qualitative data collection, and social bias (So et al., 2019).

Results could not apply to all similar situations, and timing of the data collection became extended (Klappa et al., 2016). Using questionnaires instead of interviews was a limitation, along with variables created by the authors rather than use of a standardized scale (Setou et al., 2018). In one study, a majority of participants were from rural areas, and there was a potential bias due to the principal investigator's role in the setting of the study, incomplete surveys, and the influence of environmental circumstances during the time of survey implementation (Hodge et al., 2017). Finally, Evans et al. (2019) identified these limitations: Their study was conducted in one setting with virtually no diversity, evaluating goal achievement with abstract phenomena was challenging, and reactions might be different in real-life situations.

### **Findings and Results**

The following data evaluation and analysis include information related to the findings from the literature review on EPIQ, ProQOL, and the disaster tabletop exercise.

#### ***EPIQ***

According to Wisniewski et al. (2004), EPIQ was developed in 2002 in Wisconsin. The Wisconsin Nurses Association formed the Emergency Preparedness Self-Assessment Task Force, which through grant funding, created a partnership with the Center for Public Health Preparedness and the University of Minnesota School of Public Health to finalize the instrument now called EPIQ. The instrument has 44 knowledge-based questions related to the eight emergency preparedness competencies. The eight dimensions of the EPIQ instrument are (a) triage and basic first aid; (b) detection; (c) ability to access critical resources and reporting; (d) the incident command system; (e) isolation, quarantine, and decontamination; (f) psychological issues; (g) epidemiology and clinical decision making; and (h) communication and connectivity. The respondents of the survey rate their familiarity with the items using a scale ranging from 1,

not familiar, to 5, very familiar with the item. Using the same scale, respondents also specify their overall familiarity with activities related to a large-scale event. Additionally, the instrument asks about preferred education method and class scheduling options. Results of the research study from Wisniewski et al. (2004) using the innovative EPIQ instrument showed that the cumulative variance explained from the Equamax factor analysis was 73.5%. High levels of internal reliability were demonstrated by the coefficient alpha results that ranged from .827 to .94. The overall familiarity score with emergency preparedness was 2.29, and the highest competency domain was triage and basic first aid, with a score of 3.15. The lowest score was in the domain of communication and connectivity, with 2.08. These results are nearly identical to the results from Garbutt (2008), in which the overall familiarity emergency preparedness score was 2.3, the highest score of 3.2 was for the triage domain, and the lowest score of 2.1 was in the communication and connectivity domain.

Georgino et al. (2015) and Worrall (2012) conducted their studies to evaluate emergency preparedness readiness using the EPIQ tool before and after an educational intervention. The Worrall study compared the before and after EPIQ results for overall familiarity with emergency preparedness and demonstrated improvement and statistical significance on the two-tailed  $p$  value ( $p < 0.0001$ ). The triage and basic first aid domain scored the highest, and the lowest score was isolation, decontamination, and quarantine. Georgino et al. (2015) used an adapted EPIQ survey with 18 items. However, the analysis of the before and after EPIQ scores demonstrated a statistically significant improvement in mean familiarity ( $p < .001$ ; 98% confidence interval). The same results occurred with Garbutt et al. (2008), Wisniewski et al. (2004), and Worrall (2012), for whom the triage and basic first aid domain had the highest score with 3.50, and the

lowest score was in the incident command system. An improved EPIQ score was obtained after an emergency preparedness educational intervention (Georgino et al., 2015; Worrall, 2012).

Baack and Alfred (2013) and Seyedin et al. (2015) used EPIQ to measure nurses' emergency preparedness knowledge in combination with nurses' demographics, educational level, and professional experience. Baack and Alfred incorporated two additional instruments: The Nurses Assessment of Readiness (NAR) and the Self-regulation scale. The resulting median of 82.5 and mean of 90 indicated a low overall perceived competence in emergency preparedness familiarity. The sum scores of the NAR scale ( $n = 618$ ;  $M = 4.2$ ;  $SD = 1.85$ ; range = 2–10) showed that nurses do not feel prepared to respond to a disaster situation. Traditional demographics had an impact on nurses' ability to respond to a disaster. However, previous participation in a disaster situation ( $r = 0.347$ ,  $p < .001$ ) or a shelter after a disaster ( $r = 0.226$ ,  $p < .001$ ) were statistically correlated with the EPIQ total score. The results from Seyedin et al. (2015) showed a mean of 2.43, demonstrating a moderate response in emergency preparedness knowledge. However, as with Baack and Alfred, no relationship was noted between the nurse's demographic and the EPIQ results. The EPIQ domain of triage and first aid had the highest mean of 2.77, and epidemiology and clinical decision making, the lowest mean of 2.17.

In conclusion similarities in results and findings among the studies that used the EPIQ instrument to measure the nurse's emergency preparedness familiarity demonstrated a low to moderate level of preparedness to deal with a disaster event.

### ***ProQOL***

The concepts related to the ProQOL scale were introduced in 1995 (Stamm, 2010). The studies appraised in this systematic literature review used a combination of instruments and procedures with the ProQOL. Lee and Kim (2018) used the ProQOL with the Disaster

Preparedness Questionnaire for Nurses, and general and work-related characteristics. Their results for disaster preparedness among nurses was an average of 3.01 out of the measurable 1 to 5 range. The disaster preparedness status of the participants positively correlated with compassion satisfaction ( $r = .42, p = .001$ ). Statistically significant differences were found in disaster preparedness and the work position of the subject ( $t = -2.32, p = .004$ ), type of work ( $t = -2.32, p = .004$ ) and the number of experiences of trauma events ( $F = 5.26, p = .009$ ).

Compassion satisfaction, general characteristics, and work-related characteristics showed statistically significant differences by gender ( $t = 2.88, p = .006$ ), desire for continuous work in the ED ( $t = 2.95, p = .005$ ), and job satisfaction ( $F = 10.81, p < .001$ ). There were significant differences in burnout according to gender ( $t = -2.05, p = .045$ ), general characteristics of the subjects ( $t = -2.37, p = .021$ ), desire for continuous work in the ED ( $t = -2.31, p = .025$ ), and job satisfaction ( $F = 11.99, p < .001$ ). Lu et al. (2020) conducted a study similar to Lee and Kim using participant demographics and work-related characteristics, the ProQOL scale, and the Professional Perceived Stress Scale to measure predictors of professional quality of life among nursing staff who cared for patients affected by an explosion in Taiwan. The results revealed that length of service in nursing ( $\beta = -0.26, p = 0.029$ ) and perceived stress levels ( $\beta = 0.15, p = 0.002$ ) are significant predictors of compassion satisfaction. Additionally, age ( $\beta = 0.42, p = 0.33$ ) and perceived stress ( $\beta = 0.20, p = 0.020$ ) were important predictors of compassion fatigue. Nurses' age and perceived stress were also predictors of burnout ( $\beta = 0.18, p = 0.044$  &  $\beta = 0.14, p < 0.001$ , respectively).

Klappa et al. (2016) used the ProQOL scale survey in combination with online interviews to evaluate reentry challenges of relief workers and levels of compassion satisfaction, compassion fatigue, burnout, and secondary traumatic stress. The ProQOL results displayed high



levels of compassion satisfaction among the participants of the study ( $M = 43.4$ ,  $SD = 5.9$ ). Participants scored low for secondary traumatic stress ( $M = 21.0$ ,  $SD = 7.6$ ) and burnout ( $M = 19.25$ ,  $SD = 6.6$ ). Reentry challenges were organized into two themes based on participant responses; personal, professional, and family reentry challenges; and reentry coping strategies.

Setou et al. (2018) used the ProQOL scale instrument along with the Kessler Psychological Distress Scale (K6), basic demographic characteristics, and 11 items of possible challenges the participant may have been facing at the time, with relief workers from a Japanese earthquake over 2 years after the disaster. Both “fatigue” and “non-fatigue” groups were created based on participants’ yes/no answer for the fatigue item. The K6 and ProQOL revealed significant differences between the groups, the fatigue group displaying high risk of burnout and compassion fatigue. The identified factors related to worker fatigue were loss of trust in others (adjusted OR, 10.03: 95%CI, 2.30–43.79), no confidence to continue work (adjusted OR, 6.27: 95%CI, 1.72–22.83), loss of important person(s) (adjusted OR, 5.58: 95%CI, 2.05–15.19), and sleep disturbance (adjusted OR, 5.14: 95%CI, 1.93–13.67).

Hunsaker et al. (2015) examined which demographic and work-related characteristics affected the development of compassion satisfaction, compassion fatigue, burnout, and secondary traumatic stress in U.S. ED nurses. Under demographics, they found that the older a nurse was when taking the survey, the higher the level of compassion satisfaction ( $r = .260$ ,  $p = .001$ ). Among the work-related findings, higher levels of compassion satisfaction were found in nurses at the graduate and doctorate level ( $F = 5.48$ ,  $p = .005$ ), and significantly lower levels of burnout ( $F = 4.92$ ,  $p = .008$ ). Nurses who had worked more years in the ED had a higher level of compassion satisfaction ( $r = .264$ ,  $p = .001$ ) and lower level of burnout ( $r = -.183$ ,  $p = .003$ ). Nurses who worked 8- to 10-hour shifts had a higher level of compassion satisfaction ( $t = 2.47$ ,  $p$

= .014) and a lower level of burnout ( $t = -3.34, p = .001$ ) compared to nurses who worked 12-hour shifts. Finally, nurses who perceived receiving support from their manager had a higher level of compassion satisfaction ( $t = 3.99, p = .001$ ) and a lower level of compassion fatigue ( $t = -2.89, p = .005$ ) and burnout ( $t = -5.64, p = .001$ ). Overall, this study indicated a low average level of compassion fatigue and burnout in ED nurses.

The findings from each of the studies that used the ProQOL scale instrument are unique and were based on the authors' study designs. This is due to the fact that each of the authors based their correlations of the ProQOL with the participants' demographics or other instruments.

### ***Disaster Tabletop Exercise***

The use of disaster tabletop exercises includes the academic setting. A tabletop exercise is designed to identify the ability of the participants to apply their knowledge in novel circumstances and is an activity directed to solve problems by transferring the learning gained from nursing courses (Evans et al., 2019). A virtual tabletop exercise is another strategy that can be implemented with the use of FEMA models to simulate a multistate disease outbreak. This type of tabletop exercise has been implemented with the participation of pediatricians and public health practitioners (So et al., 2019).

Findings and results from a tabletop exercise with nursing students include the matrix scores that were tallied for a possible score of 0 to 25. The mean (SD) students' scores are infection, 17.61(6.03); bleeding, 14.93 (5.36); pain, 11.17 (5.08); electrolyte, 13.73 (6.19); disaster knowledge, 19.46 (3.08); and attitudes, 51.41 (5.43) (Evans et al., 2019). Overall, the findings from a disaster tabletop exercise involving the participation of nursing students demonstrated transfer of knowledge from early coursework (Evans & Schwartz, 2019).

On a greater scale, a tabletop case scenario was created to identify gaps in the process of responding to a pandemic in the United States. The results from this multistate disease outbreak showed that the participants reported a greater ability to identify their state's patient emergency preparedness ( $p = .01$ ), strengths, and weaknesses after the exercise compared with results from before the exercise. Participant knowledge and confidence increased significantly ( $p = .08$ ). Additionally, So et al. (2019) saw a statistically significant increase ( $p < 0.05$ ) on the Strategic Alliance Formative Assessment Rubric domains related to collaboration between pediatricians and public health practitioners. Important findings identified from the tabletop exercise involving a national pandemic event were related to gaps that could lead to a potential serious impact in the ability of the United States to respond to the event. The areas of improvement include: (a) capability to produce vaccines and drugs for novel pathogens; (b) a strong global health security system; (c) a capable national public health system that can handle challenges during the response to a pandemic; (d) a national plan to effectively harness all of the U.S. healthcare assets in a catastrophic pandemic; (e) an international strategy for addressing research that increases pandemic risk; and (f) a national security community well prepared to prevent, detect, and respond to infectious disease emergencies (Watson et al., 2019).

In addition to the information provided about studies that used the EPIQ and ProQOL instruments and a disaster tabletop exercise, two systematic reviews of descriptive and qualitative studies were found (Labrague et al., 2018; Nash, 2017) with a level of evidence of V by the criteria of Melnyk and Fineout-Overholt (2019). One of the studies was conducted in the United States (Nash, 2017) and the other in the Sultanate of Oman (Labrague et al., 2018). Nash identified no study limitations; however, Labrague et al. (2018) listed as a limitation the review of articles in one language only.

According to the American Nurses Association, disaster nursing education is vital to ensure the safety of the communities and the members served. Nurses must possess a minimum level of emergency preparedness knowledge and skills to competently respond to a disaster situation (as cited in Nash, 2017). However, the literature demonstrates a lack of educational resources to cover the needed competencies for emergency preparedness education (Nash, 2017), and nurses are both insufficiently prepared and do not feel confident responding to disaster events (Labrague et al., 2018).

The low to moderate score levels in emergency preparedness from Georgino et al. (2015) and Worrall (2012) aligned with the systematic review findings on disaster preparedness among nurses from Labrague et al. (2018). The improved EPIQ scores after the educational intervention studies were also associated with Labrague et al. findings, proving that disaster-related training is a factor that increases preparedness for disaster response.

### **Objectives**

The project objectives are created to guide the project to reach its goal. They also identify the resources needed and the timeline planned for the project (Moran et al., 2020). The objectives for this emergency preparedness project are:

1. Assemble an interprofessional team at Doctors Hospital to evaluate the current practice related to emergency preparedness education for the emergency department nurses in June 2020 (correlated with DNP Essentials I, II, III, IV, V, VI, VII, & VIII).
2. Assess the ED nurses' self-perception of knowledge in emergency preparedness using the EPIQ instrument, and their compassion satisfaction, compassion fatigue, burnout, and secondary traumatic stress using the ProQOL instrument delivered via Research

- Electronic Data Capture (REDCap) and in paper in October 2020 (correlated with DNP Essentials I, II, III, & IV).
3. Analyze the data collected to identify knowledge gaps related to emergency preparedness in the ED nurse population in December 2020 (correlated with DNP Essentials I, II, III, IV, VI, VII, & VIII).
  4. Develop and facilitate evidence-based emergency preparedness education using a tabletop exercise to fill knowledge gaps identified among ED nurses in November 2020 (correlated with DNP Essentials I, II, III, IV, VI, VII, & VIII).
  5. Assess emergency preparedness knowledge and professional quality of life changes after the implementation of emergency preparedness education using the EPIQ and ProQOL instruments, delivered via REDCap and paper format in November 2020. A 20% improvement from the initial EPIQ survey is expected after the emergency preparedness tabletop exercise (correlated with DNP Essentials I, II, III, IV, VI, VII, & VIII).
  6. Review the emergency preparedness hospital specific policy and amend as necessary based on findings from the emergency preparedness evidence-based education outcomes in January 2021 (correlated with DNP Essentials I, II, III, IV, V, VI, VII, & VIII).

The objectives for this emergency preparedness related project correlate with *The Essentials of Doctoral Education for Advanced Nursing Practice* (DNP Essentials) from the American Association of Colleges of Nursing (2006). The planning, implementation, and evaluation processes of the DNP project allow the doctoral student to put into practice the eight essentials for advanced nursing practice. Essential I: Scientific Underpinnings for Practice is

demonstrated in this project by the identification of a phenomenon and the initiation of a process to identify best practices to improve current processes in the workplace. Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking correlates with the processes to lead this quality improvement project and create an interprofessional team while maintaining the necessary communication skills to meet the objectives in a timely manner. Additionally, consideration of the financial aspects of the project implementation includes practicing some of the finance principles. Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice is achieved by the process of designing and implementing the project. Some of the components include the completion of a literature review on emergency preparedness tabletop exercises and professional quality of life, the use of a quality improvement model such as Plan-Do-Study-Act, and the process to collect and analyze data to implement organizational policy changes. Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care is attained through the use of REDCap to collect data on emergency preparedness readiness and professional quality of life. Essential V: Health Care Policy for Advocacy in Health Care is met through the evaluation of the emergency operational plan hospital policy. Essential VI: Interprofessional Collaboration for improving Patient and Population Health Outcomes is met through collaboration with the Doctors Hospital chief nursing officer, safety manager, nurse scientist, ED leaders, educator, and frontline nurses, and the emergency preparedness department leaders and educator. Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health is achieved through the implementation of best practices, such the use of tabletop exercises for emergency preparedness education. Through the implementation of this DNP project, the ED nurses will receive emergency preparedness

education with the objective to increase their knowledge, skills, and attitudes for intervention during a disaster event. The emergency nurses are frontline responders during a disaster event, so their readiness to intervene during an emergency situation has a direct impact on safety and quality outcomes and the community they serve. Essential VIII: Advance Nursing Practice correlates with the project objectives by implementing best practice interventions at Doctors Hospital that could represent potential standardization of best practices for all hospitals in the Baptist Health South Florida organization. The experience gained during the implementation of this project will serve to mentor others on the implementation of evidence-based practice projects.

#### **Statement of Mutual Agreement**

A statement of mutual agreement for this project was completed in collaboration with the agency representative for Doctors Hospital, Dr. Griselle Pastor, DNP, MBA, RN, NE-BC; DNP project advisor Dr. Kelly Jo Cone, PhD, RN, CNE; and DNP student Vivian Fuentes, MSN, RN, CEN (see Appendix B).

#### **Institutional Review Board Approval**

Approval by the OSF College of Health Sciences president (see Appendix C) and the Institutional Review Boards for OSF HealthCare (see Appendix D) and Baptist Health South Florida (see Appendix E) was granted as a project that does not constitute human subjects' research.

### **Section 3: Plan and Implementation Strategy**

A needs assessment is a process to identify gaps in the current condition of a phenomenon. Once a phenomenon is determined, an assessment plan is created to determine the objectives, the target audience, and how data will be collected. The data collected could offer valuable information to support a proposed project and to provide knowledge about effective approaches to fill the gap and the project's potential impact. A quality improvement project is defined as "a systematic and continuous process that leads to measurable improvements in healthcare services and healthcare status of targeted groups" (Moran et al., 2020, p. 138). Data collected through a needs assessment can be utilized to drive change during the implementation of a quality improvement project (Moran et al., 2020).

#### **Assessments**

A survey created to measure ED nurses' emergency preparedness knowledge and its influence on their professional quality of life was introduced in a unit staff meeting. The plan includes disseminating the survey to the nurses twice, before and after emergency preparedness education and a tabletop exercise. The survey requires the use of a unique identifier to analyze the data collected pre- and posteducation and consists of questions on participants' demographics, the Emergency Preparedness Information Questionnaire (EPIQ), and the Professional Quality of Life questionnaire (ProQOL).

#### **Action Plan**

An action plan was created to delineate the plan on how to achieve the project goals, how to conduct the implementation, and the people involved in the project (see Appendix F).



### Discussion

A research-based publication about the nursing response to the 2019 novel coronavirus disease (COVID-19) pandemic revealed insufficiencies at a national level to effectively respond to the pandemic. These findings correlate with previous research that examined nurses' overall familiarity with emergency preparedness and disaster response and found little to no familiarity on the subject (Veenema et al., 2020). This deficiency triggered a knowledge-focused interest to better understand the Doctors Hospital ED nurses' perception of emergency preparedness knowledge. To measure ED nurse perception of self-familiarity in emergency preparedness, a survey to collect quantitative data was created in the browser-based software Research Electronic Data Capture (REDCap).

The literature review on emergency preparedness established that the use of disaster tabletop exercises was an effective tool for disaster education. Knowing that disaster tabletop exercises are not conducted regularly as part of the emergency preparedness educations at Doctors Hospital, a knowledge-focused practice change was identified. The practice change is related to the components and the strategy to deliver the annual mandatory emergency preparedness education for the ED nurses. The literature review confirmed the use of a discussion-based exercise such as a disaster tabletop exercise to stimulate discussion of hypothetical scenarios. Incorporating tabletop exercises allows participants to demonstrate their transfer of knowledge, skills, and abilities during realistic case scenarios and identifies organizational gaps in emergency preparedness (Evans & Schwartz, 2019). The Preparedness and Emergency Response Learning Centers recommend the use of tabletop exercises to measure learning as part of the second level of training evaluation from the Kirkpatrick's model following emergency preparedness education (Public Health Foundation, n.d.). As part of emergency

preparedness education, a tabletop exercise promotes nurses' readiness during a disaster event (Mirzaei et al., 2020). In addition, Lee and Kim (2018) found that frontline staff experienced higher levels of compassion satisfaction when they felt prepared to participate in a disaster event. This finding also generated the desire to examine the professional quality of life of the ED nurses at Doctors Hospital.

Currently, the emergency preparedness education for nurses at Doctors Hospital consists of a yearly mandatory hazmat and augmented biological personal protective equipment (PPE) course, which covers information from two of the emergency preparedness dimensions. The Hazmat course consists of an 8-hour initial class and then a yearly 4-hour class to teach healthcare providers about the local threat, potential uses, and impact of hazardous materials from incidents involving nuclear, biological, or chemical agents (including weapons of mass destruction and accidental hazardous materials exposures). The augmented biological PPE course is a yearly 4-hour class designed for discussion and hands-on practice in donning and doffing biological PPE.

The quality improvement initiative includes changes in the annual required training for emergency preparedness at Doctors Hospital. The ED nurses will be required to attend a new class incorporating the eight dimensions of emergency preparedness (Wisniewski et al., 2004) and guided by the Doctors Hospital emergency operational plan. The nurses will register for the class via the Baptist Health University (BHU). A roster generated by BHU will confirm participants' attendance in the course and will produce a transcript for their educational electronic profile. The course method of delivery will include a PowerPoint presentation, a demonstration on proper donning and doffing of PPE, and a tabletop exercise to validate the transfer of knowledge. Four 3-hour class dates have been created with a maximum of nine

participants per class to comply with COVID-19 social distancing requirements. A flyer was created to communicate to the nurses the class dates, times, and location (see Appendix G). The classes will be conducted in a classroom at Doctors Hospital. A class evaluation will be collected after the education to collect quantitative and qualitative data (see Appendix H), followed by the posteducation survey that includes the EPIQ and ProQOL instruments (see Appendix I). The survey includes questions to collect demographic information about the participants, including age, gender, race, marital status, and educational level. In addition, three open-ended questions ask participants to account for the number of years of nursing experience and ED experience, and the number of disaster events in which they have participated. The tabletop after exercise, or hot wash, will serve as an additional tool to collect qualitative data related to emergency preparedness knowledge (see Appendix J).

The EPIQ tool is a valid reliable instrument to collect quantitative data on nurses' self-assessed familiarity with the emergency preparedness competency dimensions. The eight core competency dimensions are triage and basic first aid; biological agent detection; accessing critical resources and reporting; the incident command system; isolation, quarantine, and decontamination; psychological issues; epidemiology and clinical decision making; and communication and connectivity. Answers are recorded by choosing a level of familiarity between 1 and 5 as follows: (1) I have never heard of this topic before; (2) I have heard the terminology but have no knowledge of this situation; (3) I know the terminology but have limited knowledge of this topic; (4) I am familiar with this topic but not extremely proficient in all subject matter; and (5) I am very familiar with this topic; I am an expert in the proficiency on this topic (Wisniewski et al., 2004). Multiple studies have utilized the EPIQ instrument to evaluate nurses' familiarity with emergency preparedness (Baack & Alfred, 2013; Garbutt et al.,

2008; Georgino et al., 2015; Hodge et al., 2017; Labrague et al., 2018; Nash, 2017; Seyedin et al., 2015; Wisniewski et al., 2004; Worrall, 2012). The EPIQ tool has also been used to compare nurses' self-perception of emergency preparedness knowledge before and after the implementation of an educational component on emergency preparedness (Georgino et al., 2015; Worrall, 2012). Georgino et al. (2015) modified the original 44-question EPIQ tool to 18 questions with the permission of the authors. Validity and reliability were also conducted for the modified questionnaire. Permission was received from the author to use the adapted EPIQ instrument at Doctors Hospital (see Appendix K).

The ProQOL instrument was created in 1995 and is used to measure compassion satisfaction and compassion fatigue in individuals who work with helping others. It also measures burnout and secondary traumatic stress as subcategories of compassion fatigue. The instrument is valid and reliable. The author authorized the use of the Version 5 tool as long as no changes were made, and the author was credited (see Appendix L). Participants respond to the 30-question ProQOL by assigning a numeric value: (1) never, (2) rarely, (3) sometimes, (4) often, and (5) very often (Stamm, 2010).

### **The Impact on Nursing**

The purpose of a practice change on the components and delivery for emergency preparedness education is to give the ED nurses the opportunity to learn and apply their organizational protocol during an emergency event. It will also help the nurses to feel prepared with basic knowledge in handling different types of disaster-related situations based on the Doctors Hospital emergency operational plan.

Nurses' confidence in their ability to respond to disaster events is associated with prior participation in a disaster, and their willingness to participate in a disaster event is associated

with their perceived competence in emergency preparedness (Baack & Alfred, 2013). Improper education in emergency preparedness could lead to healthcare provider burnout (Georgino et al., 2015). The need for a practice change in emergency preparedness education is validated by findings from a survey of 32,000 nurses conducted by the American Nurses Association in March 2020 (Veenema et al., 2020). Results showed that 87% of the nurses feared going to work, and only 11% felt well-prepared to work during the most recent pandemic event.

Additional findings included frontline nurses' reports of being mentally, physically, and emotionally exhausted, in addition to feeling fearful of becoming infected or infecting a loved one. Uncertainties about the unknowns related to self-protection and the proper care of patients with infectious disease created an additional layer of stress that made some nurses reconsider their profession and caused some to resign their positions (Veenema et al., 2020). Similar findings were reported in a study to measure predictors of professional quality of life among nurses who care for patients involved in a major disaster. Nurses who felt more stressed at work and could not adapt to stress developed high levels of compassion fatigue, leading to job dissatisfaction, self-doubt, and for some, eventual resignation (Lu et al., 2020).

### **The Impact on the Patient Population**

Patients will also be impacted if this project is not implemented. Nurses play a vital role as first responders during a disaster event; however, a lack of knowledge about emergency preparedness can have a direct impact on the wellness of their communities (Hodge et al., 2017), and can increase the rate of victim morbidity and mortality (Georgino et al., 2015). Nurses prepared to respond to a disaster situation play a critical role in reducing negative consequences to the health of the victims (Labrague et al., 2018). Institutions that use tabletop exercises have demonstrated low patient fatality rates during disaster events (Georgino et al., 2015).

**Benefits to the Organization**

Healthcare organizations benefit from positive outcomes resulting from nurses who perceive themselves as prepared to intervene during a disaster situation. In research studies that evaluated nurses' emergency preparedness familiarity, nurses were unclear about how to locate organizational disaster policies or were unfamiliar with their contents. Organizational disaster training is necessary to adequately prepare nurses to respond to disaster situations. A positive correlation has been found between ED nurses with disaster preparedness education and compassion satisfaction (Lee & Kim, 2018). Compassion satisfaction in professional quality of life is derived from the ability of employees who work as helpers, such as nurses, to do their job well. People who experienced high levels of compassion satisfaction were invigorated by their work, kept up with new technology and protocols, felt successful at work, enjoyed their work, and believed that they made a difference (Stamm, 2010).

**Cost Savings Related to the Practice Change Implementation**

Disaster education and training prepares healthcare providers to respond to a disaster in an organized, competent, safe manner. Trained nurses work more effectively during a disaster, leading to greater patient satisfaction and fewer medical errors, resulting in cost savings (Langan & Krieger, 2019). Tabletop exercises are a cost-effective tool to validate strategies and competence (Ready, 2016). A positive return on investment has been documented following providing education in emergency preparedness. Although the return of investment is difficult to measure for healthcare preparedness, a cost-benefit analysis of emergency preparedness activities could help the organization see the benefits of the investment (Stryckman et al., 2015).

## **Body of Evidence**

The body of evidence found in the literature provided substantial evidence to confidently initiate the practice change to use disaster tabletop exercises during the emergency preparedness education. The literature illustrates how the use of disaster tabletop exercises has influenced the learning experience of frontline responders and how their learning has in turn influenced the organization, the community, and their professional quality of life (Baack & Alfred, 2013; Evans et al., 2019; Evans & Schwartz, 2019; Garbutt et al., 2008; Georgino et al., 2015; Hodge et al., 2017; Hunsaker, et al., 2015; Klappa et al., 2016; Labrague et al., 2018; Lee & Kim, 2018; Lu et al., 2020; Nash, 2017; Setou et al., 2018; Seyedin et al., 2015; So et al., 2019; Stamm, 2010; Taskiran & Baykal, 2019; Watson et al., 2019; Wisniewski et al., 2004; Worrall, 2012). The level of evidence hierarchy used was based on criteria created by Melnyk and Fineout (2019). The literature found related to the use of tabletop exercises for emergency preparedness education and professional quality of life includes Levels IV, V, VI, and VII. One cross-sectional study met Level IV (Seyedin et al., 2015). Two systematic reviews of descriptive studies met Level V (Labrague et al., 2018 & Nash, 2017). Fifteen studies that met Level VI were a combination of quantitative and qualitative descriptive design (Baack & Alfred, 2013; Evans et al., 2019; Garbutt et al., 2008; Georgino et al., 2015; Hodge et al., 2017; Hunsaker, et al., 2015; Klappa et al., 2016; Lee & Kim, 2018; Lu et al., 2020; Setou et al., 2018; So et al., 2019; Stamm, 2010; Taskiran & Baykal, 2019; Wisniewski et al., 2004; Worrall, 2012). Finally, two studies met Level VII (Evans & Schwartz, 2019 & Watson et al., 2019).

## **Education**

The educational content for the DNP project intervention, directed to the ED nurses at Doctors Hospital, is titled *The Impact of Disaster Tabletop Exercises on the Nursing Knowledge*

*of Emergency Preparedness and the Influence on Professional Quality of Life*. It consists of a live 3-hour PowerPoint presentation led by the project manager on the topic of emergency preparedness (see Appendix M) and a tabletop exercise (see Appendix J).

### **Education Process and Methodology**

The emergency preparedness education and tabletop exercise are scheduled for November and December 2020. Classes will be scheduled on four dates, and starting times include both morning and afternoon sessions to meet the needs of nurses' shifts in the ED. Enrollment will be done electronically through BHU. Detailed information about class logistics was communicated to the nurses in a flyer sent via email and posted in the staff lounge and the ED (see Appendix G). Each class of nine participants will be held in a classroom at Doctors Hospital. During the class, participants will work in teams of two or three to respond to the disaster tabletop case scenarios. Attendance will be recorded in participants' employee transcript in BHU upon completion of the class.

The use of the disaster tabletop exercise for the ED nurses at Doctors Hospital will be incorporated as part of the annual mandatory education on emergency preparedness. Every year, the ED nurses attend two classes as part of the emergency preparedness requirements, which include a hazmat class and the augmented biological PPE class. To incorporate the use of disaster tabletop exercises into the existing education, the augmented biological PPE class will need to be restructured, which must be approved by the manager of the Emergency Preparedness Department and applicable system and hospital committees. In addition to the augmented PPE component, the class will include a presentation created using the eight core competency topics of emergency preparedness to align with the standards of the Doctors Hospital Emergency Operational Plan.



**Educational Materials**

The educational materials include an emergency preparedness PowerPoint presentation (see Appendix M) and a disaster tabletop exercise (see Appendix J). The emergency preparedness presentation includes the eight core competency topics from EPIQ (Wisniewski et al., 2004): triage and basic first aid; biological agent detection; accessing critical resources and reporting; the incident command system; isolation, quarantine, and decontamination; psychological issues; epidemiology and clinical decision making; and communication and connectivity. Each of the topics will be discussed using the Doctors Hospital Emergency Operation Plan as a reference to ensure that participants are familiarized with the policy and what is expected of them in different disaster-related situations. After the competencies of emergency preparedness and the augmented PPE components are discussed, a disaster tabletop exercise will be implemented.

The disaster tabletop exercise was created using a hypothetical scenario based on an explosion at the University of Miami dining hall, which is located 0.7 miles from Doctors Hospital. The scenario describes a visible yellow-green vapor cloud that occurred during the explosion, suggesting that chlorine might have mixed with a cleaning detergent and caused the explosion. The scenario contains four states that will cover the phases of disaster management: preparedness, response, mitigation, and recovery. In addition, one of the scenario events will allow participants to practice the Simple Triage and Rapid Assessment (START; Chemical Hazards Emergency Medical Management, 2020c) and the JumpSTART pediatric triage algorithms (Chemical Hazards Emergency Medical Management, 2020b) by assigning the correct category and color. Participants will also review first aid interventions for victims of an explosion with blast injuries and chemical exposure and the use of decontamination equipment

and PPE. A hot wash will be performed after each scenario event to ensure that all of the participants shared their answers and that receive the correct answers based on the situation and to collect data on the organizational strengths and possible areas of improvements. The tabletop exercise is intended to connect all of the components discussed during the presentation, promote decision-making opportunities, and evaluate the participants' transfer of knowledge, skills, and attitudes while completing a problem-solving discussion-type drill.

The presentation and tabletop exercises were created by the project manager in collaboration with the Baptist Health South Florida (BHSF) Emergency Preparedness Department manager and educator, the Doctors Hospital safety manager, and the Emergency Department director. Resources used to create the disaster tabletop exercise include the Homeland Security Exercise and Evaluation Program webpage from the Federal Emergency Management Agency (2020) website, the San Francisco City and County Department of Emergency Management (n.d.), Computer Aid Management of Emergency Operations (CAMEO) Chemicals (n.d.), and Chemical Hazards Emergency Medical Management (2020a).

The training evaluation will be conducted using the Kirkpatrick's Model of Training Evaluation (Mind Tools, n.d.-a). The Kirkpatrick's model correlates with the Quality and Safety Education for Nurses' (QSEN) competencies by ensuring knowledge, skills, and attitudes guided by evidence-based practices to improve the quality and safety of healthcare organizations (QSEN Institute, 2020). The first level in the Kirkpatrick's model is reaction. It will be implemented by using a class evaluation tool that asks participants the degree to which the program met its objectives, if the participants' educational needs were met, if the teaching strategies were appropriate, and how effective the instructor was. Additional questions address the strengths and

weaknesses of the program, suggestions to improve the program, and an open-ended question about what participants intend to do differently following the education (see Appendix H).

The second level of training evaluations is learning. Participants' learning will be measured during the disaster tabletop exercise and will demonstrate transfer of knowledge, skills, and attitudes by discussing problem-solving interventions based on a case scenario provided after the emergency preparedness education, by applying the guidelines from the Doctors Hospital Emergency Operational Plan. In addition, the participants will complete a posteducation survey that includes questions related to the participants' demographics, the EPIQ, and the ProQOL tool (see Appendix I). Survey results will be analyzed to compare nurses' self-perception of their knowledge of emergency preparedness before and after the emergency education.

The EPIQ is a valid instrument developed by a coalition of experts from organizations and agencies that manage emergency preparedness in Wisconsin, including the state health department. The validity and reliability of the instrument was measured through the implementation of a research study using the EPIQ questions. Reliability was measured through cumulative variance from the Equamax factor analysis of 73.5%, and the resulting coefficient alphas ranged from .827 to .94 (Wisniewski et al., 2004). A second research study was conducted to confirm the validity and internal reliability of the EPIQ tool with positive results. Cronbach's alpha values were used to assess reliability, with a cumulative variance of 73.5% and alpha values ranging from 0.83 to 0.94. The alpha value for the entire instrument was 0.97 (Garbutt et al., 2008). Other studies have been conducted using the EPIQ tool without any issues reported related to readability, clarity, or cultural content (Baack & Alfred, 2013; Georgino et al., 2015; Hodge et al., 2017; Labrague et al., 2018; Nash, 2017; Seyedin et al., 2015; Worrall, 2012).

The ProQOL instrument measures compassion satisfaction, compassion fatigue, burnout, and secondary traumatic stress. The instrument has been published in over 200 papers, and about 50 research studies have used it. The compassion fatigue inter-scale correlations have shown a 2% variance ( $r = -.23$ ;  $\text{co-}\sigma = 5\%$ ;  $n = 1187$ ) with secondary traumatic stress and 5% shared variance ( $r = -.14$ ;  $\text{co-}\sigma = 2\%$ ;  $n = 1187$ ) with burnout. Although the burnout and secondary traumatic stress scales have a common variance, they measure different concepts. The shared variance between the two scales is 34% ( $r = .58$ ;  $\text{co-}\sigma = 34\%$ ;  $n = 1187$ ) (Stamm, 2010). The studies that used the ProQOL instrument did not report any issues related to readability, clarity, or cultural content (Hunsaker et al., 2015; Klappa et al., 2016; Lee & Kim, 2018; Lu et al., 2020; Setou et al., 2018).

### **Budget and Resources**

Natural and human-made disasters caused a global economic loss of \$165 billion in 2018 (McCarthy, 2019). During the first 7 months of 2020, 16 weather-related disasters accounted for losses over \$16 billion in the United States (National Centers for Environmental Information, 2020). Disasters jeopardize the lives of many people and can occur at any time, leading to a surge in medical personnel demand (Lee & Kim, 2018). The financial and human losses sustained during a disaster are substantially higher than the cost of an educational program on emergency preparedness that equip the nurses with the knowledge to mitigate the effects of the disaster effects.

The emergency preparedness class and tabletop exercise budget table list program expenses and start-up, capital, and operational costs. The potential monetary value of the program's benefits and losses from the total projected expenses and the program revenue is also revealed (see Appendix N).

Program expenses include salaries for the project manager (who is a nurse educator), the ED nurse educator, a risk management nurse, 33 ED nurses, and a system administrator. The average annual wage for an ED educator is \$121,180.00 (U.S. Bureau of Labor and Statistics, 2020a) and for risk management nurses, \$75,595.00 (ZipRecruiter, n.d.-a). The ED educator and the risk management nurses will facilitate the PPE section of the class because they are members of the hospital emergency response team (HERT) and serve as subject matter experts for training in doffing and donning PPE. The contribution of the HERT instructors was calculated based on the total number of hours they contributed to the PPE demonstration. Expenses also include the bedside nursing average hourly wage times the total amount of hours that they will attend the emergency preparedness class and tabletop exercise times the total number of bedside nurses who participate in the class. The total annual salary of 33 bedside specialty nurses is \$2,231,130.00 (U.S. Bureau of Labor and Statistics, 2020b). The total reflects the annual salary cost of the ED nurses who are to attend the emergency preparedness training as mandatory to fulfill the annual educational requirements. The last salary listed is for the Research Electronic Data Capture (REDCap) system administrator. REDCap is the software being used for the project needs assessment survey. The average annual salary for this position is \$85,290.00 (ZipRecruiter, n.d.-b). However, the REDCap system administrator contribution was calculated based on the average hourly wage times the hours spent creating the needs assessment survey in REDCap. Each of the salaries listed was presented in average hourly rates and calculated to display the total costs of participation in the emergency preparedness class and tabletop exercise. The nurses providing the emergency preparedness training and tabletop exercise have multiple responsibilities in their roles. As with the bedside registered nurses, the educator and the risk management positions are needed year-round. Through the year, the nurse educator and

additional team members will have time to develop, review, and facilitate the classes on an ongoing basis to provide enough courses for the emergency nurses to fulfill their mandated educational requirements.

Start-up costs include office supplies such as copy paper, folders, and pens to facilitate the class and were calculated at \$25.00 per class for six courses per year, for a total of \$150.00. There is no cost for the use of REDCap at BHSF. The software is offered at no cost for not-for-profit organizations that join the REDCap consortium (REDCap, n.d.).

Capital costs include the costs of equipment to facilitate emergency preparedness and tabletop exercises. The equipment includes laptops, projectors, tables, chairs, and PPE, for an estimated total of \$7,000.00. The calculation included the recent substantial increase in prices for PPE (Diaz et al., 2020).

The classes are held in the hospital; a classroom in the hospital is considered part of the hospital's occupancy expense (Becker's Healthcare, 2013). The Doctors Hospital occupancy expense is \$3,229,168.00 (Cause IQ, n.d.). The occupancy rate was not included as part of the program expenses, because they are an existing expense. The project expenses combined total \$15,185.50.

Program revenue is calculated based on average savings resulting from the emergency preparedness and tabletop exercises education benefits. The program revenue items include the average annual total savings per nurse and reductions in nursing turnover to \$52,100.00 per nurse (NSI Nursing Solutions, Inc., 2020); reduction in nursing hiring and onboarding expenses of \$169,049.00 (Lingo, 2017); reduction in the use of travel registered nurses of \$166,400.00 (NSI Nursing Solutions, Inc., 2020); and the reduction of hiring of new graduate nurses onboarded through a nursing residency program for \$45,000.00 (Hansen, 2013).

The total program benefits and losses were calculated by subtracting the total expenses of \$15,185.50 from the total revenue of \$424,824.00. The total potential revenue of this program is \$409,638.50. The long-term benefits of an emergency preparedness educational program and tabletop exercise significantly outweigh the expenses of the costs. In addition, nurse vacancies could increase during a disaster situation (Veenema et al., 2020). The current RN vacancy rate in the United States is 9%, impacting quality outcomes and patient experience (NSI Nursing Solutions, Inc., 2020). Additional consequences of nursing vacancies include a loss of patient volume, travel nurses' cost, overtime wages, bonus payments, and poor patient experience circumstances (Pollick, 2018). Nursing staffing needs usually increase during a disaster event. It is essential to have nurses trained for a disaster event to respond in an organized, competent, safe manner (Langan & Krieger, 2019).

Many nurses remain inadequately prepared to respond to disaster situations. They are unfamiliar with their institutional disaster plans and unclear about their role during a disaster and how to execute the disaster plan (Labrague et al., 2018). During a disaster situation, 66% to 93% of patients present themselves to healthcare facilities before the facility receives notification of the event (Worrall, 2012). The ED nurses are at the forefront during a disaster and play a vital role in mitigation (Baack & Alfred, 2013). Some physicians and nurses indicated that they are more willing to attend a natural disaster event than a radiological incident (Garbutt et al., 2008). However, the nurses who are eager to undertake greater risk during a disaster event are those more confident in their skills (Baack & Alfred, 2013). Emergency preparedness involves more than education on resources, materials, and skills. It also involves the influence of factors such as emotional and practical problems (Worrall, 2012). Lack of experience in disaster events can cause fear and stress (Lee & Kim, 2018), and lack of proper nursing education and training to

respond to a disaster event can lead to provider burnout and an increased rate of patient morbidity and mortality (Georgino et al., 2015). Some nurses who lack the knowledge or the resources needed for their job have decided to leave the nursing profession (Veenema et al., 2020). In contrast, nurses who have received appropriate emergency response training have increased self-confidence and the skills to respond to a disaster. Adequate training also helps decrease the nurses' vulnerability to unpredictable events (Seyedin et al., 2015).

A need exists to revise the disaster nursing training curricula and incorporate regular training that includes different methods of practice, such as tabletop exercises (Taskiran & Baykal, 2019). The use of disaster tabletop exercises is recommended as an activity directed to solve problems and transfer learning gained (Evans et al., 2019).

### **Data Analysis**

The needs assessment will be conducted using a survey that includes questions about the participants' demographics, the adapted EPIQ (Wisniewski et al., 2004), and the ProQOL questionnaire (Stamm, 2010). The authors granted written consent to use the EPIQ and ProQOL questionnaires. The survey will be distributed to the Doctors Hospital ED nurses twice, before and after an educational intervention. The survey was created in the browser-based software REDCap, which presents data in tabular format and allows the project manager to export data for detailed analysis, such as data visualizations (Patridge & Bardyn, 2018). The data exported will be shared with the BHSF statistician for a paired sample *t*-test analysis to evaluate the impact of a disaster tabletop exercise on nursing knowledge of emergency preparedness and its influence on the professional quality of life. In addition, qualitative data collected as part of the hot wash will be used to evaluate participants' transfer of knowledge related to the emergency preparedness education and possible gaps identified related to the hospital policy or procedures.



#### **Section 4: Evaluation and Sustainability**

A survey and an educational intervention will be utilized as the method to evaluate the project's expected outcomes. The outcomes of this quality improvement project will be presented to the appropriate leaders to ensure sustainability and standardization of the use of disaster tabletop exercises for the ED nurses throughout BHSF.

##### **Evaluation**

The project results to be evaluated are based on the expected outcomes of the project described in the PICO question: For emergency department nurses, does the use of a tabletop exercise on emergency preparedness education increase the knowledge of emergency preparedness and change the perception of professional quality of life during a disaster event compared to nurses who receive only standard emergency preparedness education? The expected outcomes are the ED nurses' increased knowledge of emergency preparedness and a change in perception of their professional quality of life.

The results will be collected after the ED nurses participate in an educational intervention on emergency preparedness and a disaster tabletop exercise based on Doctors Hospital's emergency operational plan. The nurses will register for the class using the Baptist Health University (BHU) learning management platform. BHU will generate a roster with the participant names and class dates they chose to attend. The participants will sign the roster upon arrival to the class to confirm their participation. Participation in the tabletop exercise will provide nurses with the opportunity to evaluate their ability to apply their emergency preparedness knowledge and concepts related to their response during a disaster event. The nurses' emergency preparedness knowledge evaluation will be performed through the hot wash discussion after each tabletop exercise is facilitated. Four classes for emergency preparedness

and disaster tabletop exercises were planned, each scheduled on different dates and times to ensure that all 33 ED nurses can attend. The emergency preparedness class and disaster tabletop exercises aim to provide Doctors Hospital ED nurses with up-to-date evidence-based information on responding to a disaster event that involves their hospital based on the individualized emergency operational plan. The hot wash section of the disaster tabletop exercise will serve as a data source to evaluate the outcomes on the nurses' ability to apply the concepts learned during the class. The disaster tabletop exercises are endorsed in the literature as an effective method to evaluate emergency preparedness transfer of knowledge (Evans et al., 2019). They also promote critical thinking and problem solving during the exercise and group discussion and self-reflection during the hot wash. The hot wash also helps identify possible gaps in knowledge on policy, procedures, or competency (Evans & Schwartz, 2019). Discussion themes derived from the hot wash sessions will be reported qualitatively in the results section of this paper.

The Emergency Preparedness Information Questionnaire (EPIQ), which measures nurses' knowledge, will be distributed to the nurses before and after the emergency preparedness educational intervention. The survey will be distributed electronically, using the browser-based software Research Electronic Data Capture (REDCap), which will generate a Quick Response (QR) code and link to allow the nurses to access the survey. The EPIQ results collected before and after the educational intervention will serve as outcome indicators of the increase in nurses' emergency preparedness knowledge. A report of the EPIQ results in REDCap will be exported and shared with the BHSF statistician to perform a paired *t*-test analysis to determine if there is a statistically significant difference in mean values before and after the emergency preparedness class and tabletop exercise. The goal is to increase the mean value of the second EPIQ by 20% compared to the initial survey. The valid, reliable EPIQ was selected as the instrument of choice

for its ability to measure nurses' self-perception of knowledge related to eight core competencies of emergency preparedness (Wisniewski et al., 2004). The EPIQ tool has been used in multiple studies to measure nurses' emergency preparedness knowledge, providing results that identify the nurses' emergency preparedness educational needs (Baack & Alfred, 2013; Garbutt et al., 2008; Georgino et al., 2015; Hodge et al., 2017; Labrague et al., 2018; Nash, 2017; Seyedin et al., 2015; Wisniewski et al., 2004; Worrall, 2012).

To evaluate the results for change in the nurses' perception of their professional quality of life, the valid, reliable Professional Quality of Life (ProQOL) instrument was selected. The ProQOL measures compassion satisfaction and compassion fatigue, which are positive and negative effects on individuals who work helping others. The compassion fatigue category is divided into burnout and secondary traumatic stress (Stamm, 2010). Like the EPIQ, the ProQOL survey will be completed by the nurses before and after the emergency preparedness and disaster tabletop exercise. Outcomes will be measured based on compassion satisfaction, burnout, and secondary traumatic stress scores. High compassion satisfaction scores and low burnout and secondary stress scores represent a positive, engaged employee (Stamm, 2010). Studies have found a significant positive correlation between disaster preparedness and compassion satisfaction (Lee & Kim, 2018). The BHSF statistician will perform further analysis of the REDCap report.

### **Sustainability**

The plan to sustain the project and replicate best practices related to the use of disaster tabletop exercises to increase ED nurses' emergency preparedness knowledge includes support from the Doctors Hospital senior leadership. The chief nursing office, the hospital safety manager, and the ED director and manager approved implementation of an emergency

preparedness class and disaster tabletop exercise for these nurses. As part of the sustainability plan, project outcomes will be presented to the leaders with the suggestion to add the tabletop exercise as an option in education for bedside nurses. Approval for this change involved the BHSF corporate Emergency Preparedness Department manager's support. After the required leaders approve the initiative, the policy changes must be presented to the appropriate hospital committees for final approval. Once they are approved, the ED leaders will ensure nurses' annual compliance with education. Both the Emergency Preparedness Department manager and educator, as subject matter experts on the emergency preparedness topic, could assist in overseeing potential revisions to the educational content, and the content could be delivered by the ED educator.

### **Strengths and Areas of Opportunity**

Areas of opportunity for change related to disaster preparedness in the acute healthcare setting must take into account ethical, legal, socioeconomic, and cultural implications. Ethical components of emergency preparedness education for ED nurses consist of the professional obligation to provide the same level of care for all patients. Nurses must understand their roles and responsibilities within their organization during a disaster event; those who are not well prepared provide a lower quality of patient care (American Nurses Association, 2017).

The legal responsibilities of healthcare institutions and nurses during a disaster include local and national regulatory agencies' mandate for a hospital-specific emergency operational plan, education, and training for human-made and natural disasters. Lack of preparation and understanding could lead to negligent care (Centers for Medicare and Medicaid Services, 2019).

Socioeconomic implications include vulnerable and low socioeconomic patients' difficulties in adequately preparing for a disaster event and properly caring for themselves during

an emergency. This population is more likely to suffer severe consequences related to the impact of a disaster (Substance Abuse and Mental Health Services Administration, 2017). No cultural weaknesses have been correlated with the project.

Educating nurses in emergency preparedness must include its ethical, legal, and socioeconomic implications to ensure that they will be mindful of what is expected of them before, during, and after a disaster event. The nurse's role during a disaster event goes beyond providing first aid for the victims. It includes understanding both how to intervene in a determined situation and the rationale behind the interventions.

### **Section 5: Results and Outcomes**

The results of this project were evaluated based on the objectives of the project by examining criteria that included performance indicators, targets, and outcomes. A description of the outcomes on the use of evidence-based measures such as the use of disaster tabletop exercises and the reliable and valid EPIQ and ProQOL instruments was offered. In addition, a report was provided on additional components such as barriers and unintended consequences and its implications on the project. Use of the PDSA and Kirkpatrick's model provided guidance to the project and assisted in the process for the outcome analysis. The results of this project on the use of disaster tabletop exercises for emergency preparedness education and the impact on the professional quality of life of the ED nurses aligned with findings from the literature review.

#### **Evaluation and Outcomes**

The project was based on six objectives that were created to provide direction in the planning and implementation and that correlated with the eight DNP Essentials (American Association of Colleges of Nursing, 2006).

The first project objective was to assemble an interprofessional team at Doctors Hospital to evaluate the current practice related to emergency preparedness education for the ED nurses in June 2020. This objective was met by the participation of members who play various roles at Doctors Hospital and the emergency preparedness corporate department. The interprofessional team included ED Director Dr. Griselle Pastor, who also served as preceptor and expert for the project and who transitioned to the role of assistant vice president of Nursing during project implementation. Additional members were ED Manager Monica Jurysta, ED Clinical Nurse Educator Marla Geltner, Emergency Preparedness Manager Richard Whitehurst, Emergency

Preparedness Educator Emilio Xiques, Hospital Emergency Respond Team member Marie Pestana, Nurse Scientist Dr. Roberto Roman, and Safety Officer Manager Nancy Acebal.

During meetings to discuss the current practice related to ED nurses' emergency preparedness education, the team recognized the lack of disaster tabletop exercises. Mandatory classes for emergency preparedness included annual augmented biological PPE and hazmat classes, but none included tabletop exercises. Also, disaster tabletop exercises were not being conducted as part of ED bedside nursing education at a corporate level or hospital-specific education. Meeting notes were saved and shared electronically with the team members.

Team members' willingness to participate and to support the project helped to achieve this objective. The likelihood that all team members would be available to attend scheduled meetings was identified as a barrier; however, this challenge did not affect the outcome, because active communication took place via phone or electronic messaging as needed. The extensive collaboration among the team members led to identifying the emergency preparedness educational gaps and collaborating on the design of the disaster tabletop exercise (see Appendix J). The outcomes of this collaboration contributed to positive feedback in the class evaluation from the ED nurses who participated in the disaster tabletop exercise. Class evaluation responses to the question, "What did you like best?" included "great class," "it was engaging," "interaction and interesting information," "interaction between each other," and "the tabletop exercise." Positive outcomes of nurses' learning from the disaster tabletop exercise could improve patient care and outcomes by reducing delays in patient care during a disaster event due to lack of knowledge of the hospital policies, according to participants' responses to the question, "As a result of this activity, what do you intend to do differently?" Comments included "prepare or

plan better for disaster/be ready for possible disaster,” “review/know work policies,” “more organized/knowledgeable,” and “triage better.”

The second objective of the project was to assess ED nurses’ self-perception of knowledge in emergency preparedness using the EPIQ instrument and to measure compassion satisfaction, compassion fatigue, burnout, and secondary traumatic stress using the ProQOL instrument delivered via REDCap and in paper in October 2020. This objective was met using the REDCap platform as the method to develop and deliver a survey created using demographics and the EPIQ and the ProQOL instruments (see Appendix I). The initial announcement of the survey was conducted during the ED staff meeting. Subsequently, flyers were posted in the unit, and emails were sent periodically using the ED nurses’ work email address. In addition, the project manager periodically visited the ED to promote the survey face-to-face with the nurses and to answer their questions about the survey. This initiative promoted a better response from the nurses to complete the survey. From the original 30 participating ED nurses (one was away from work under the Family and Medical Leave Act), 26 surveys were collected electronically via REDCap. The participants did not use the paper format option to answer the survey. Lack of participation was an initial barrier that was later overcome. To ensure more participation in completing the survey during each scheduled session for the disaster tabletop exercise, participants were asked to voluntarily complete it. Most nurses completed the survey right before the intervention on emergency preparedness education.

An additional barrier was not understanding two of the survey questions that were created to better organize data collection. For the question, “Have you completed this survey in paper or electronically (REDCap) recently?” a “yes/no” option caused confusion. One participant answered “yes,” which automatically ended the survey. Because no paper survey was submitted,



it is unknown if the participant actually completed the survey. The second question was about selecting a unique identifier. It provided the following example for how to answer: “last 4 digits of your cell phone plus first digit of your house address ex. cell number 305-123-4567 and House address 5000 University Drive, unique identifier = 45675” (see Appendix I). Only 20 completed surveys had a matching unique identifier. The absence of these identifiers caused six of the preintervention surveys and nine of the postintervention surveys to be dismissed from the analysis. Another barrier related to the survey was incomplete surveys. Although all survey questions had the required answer feature applied to avoid omitted answers, one preintervention survey result was missing race and marital status, and another was missing educational level.

The third objective was to analyze the collected data to identify knowledge gaps related to emergency preparedness in the ED nurse population in December 2020. This objective was not met as initially planned. The purpose was to assess ED nurses’ emergency preparedness knowledge prior to implementation of the intervention, so the intervention could be tailored to their learning needs. However, the inability to get nurses to complete the preintervention surveys resulted in receiving only nine responses by the time the first emergency preparedness class and tabletop exercise were offered. Analysis of the pre- and postintervention surveys was conducted simultaneously.

The fourth objective was to develop and facilitate evidence-based emergency preparedness education using a tabletop exercise to fill knowledge gaps identified among ED nurses in November 2020. This objective was met by developing a 3-hour live class that included three components related to disaster and emergency preparedness, an augmented biological PPE use demonstration, a PowerPoint presentation, and a disaster tabletop exercise. The educational intervention was facilitated on four dates and times. The classes were announced during the ED

staff meeting, via email, and by posting flyers in the unit and the staff lounge (see Appendix G). Registration for the classes was completed via the electronic learning management system Baptist Health University (BHU), which generated a class roster with participants' names. Class participation was recorded in the nurses' BHU transcripts. Out of 30 ED nurses, 29 participated in the live class. The class was initiated discussing the class agenda, collection of preintervention surveys, and a description of the DNP project. In the first section of the class, hospital emergency response team members demonstrated the proper use of augmented biological PPE gear, which took about 45 minutes. The second component was a 1-hour PowerPoint presentation (see Appendix M) describing the eight core dimensions of the EPIQ instrument and tailored to the hospital's Emergency Operational Plan protocol. Finally, a disaster tabletop exercise (see Appendix J) was performed in which all participants were given a specific number of minutes to answer questions based on the provided scenario. Participants' answers were then discussed as a group, giving each participant the opportunity to share their responses.

Following the disaster tabletop exercise, a hot wash was conducted by asking the participants about the strengths and opportunities for improvement in the disaster tabletop exercise and for additional comments. They commented on the strengths of the disaster tabletop exercise related to an incident command system, available disaster education and other resources, the organization, an effective ED team, having an emergency preparedness department, and having a clear plan and process in place in the event of a disaster. Suggested improvements included staffing assignment according to the unit size, overall perception of ED nurses to wait for leadership in the event of a disaster, proactive rather than reactive approach for PPE use, and disaster drills for all disciplines that are announced so off-duty nurses have the choice to participate. One participant commented, "The information provided in the disaster and

emergency preparedness class was an eye-opener to know how much I didn't know related to the emergency preparedness information that is expected for the ED nurses to know." All participants were asked about their awareness of a hospital-specific Emergency Operational Plan and where to find it. Of 29 participants, only one—the former hospital ED manager—verbalized knowing about the plan but was not sure how to locate it. The hot wash outcomes demonstrated an effective transfer of knowledge per participants' remarks. A list of themes was created as part of the qualitative analysis of the disaster tabletop exercise hot wash (see Table 1).

**Table 1**

*Disaster Tabletop Hot Wash Analysis/Themes*

Strengths	Improvements	Comments
<ul style="list-style-type: none"> <li>Disaster and emergency preparedness organizational plan and resources</li> <li>Emergency preparedness education for nurses</li> </ul>	<ul style="list-style-type: none"> <li>Work and education related ED nurses' autonomy</li> <li>Staffing</li> <li>Multidisciplinary disaster preparedness education</li> </ul>	Reality of ED nurses' disaster preparedness expectations

After completion of the disaster tabletop exercise and hot wash, the nurses were asked to complete the postintervention survey (see Appendix I). In addition, 28 electronic class evaluations were collected using REDCap (see Appendix H). The class evaluation included quantitative and qualitative data collection. The quantitative analysis included four questions to evaluate participants' reaction to the education, as recommended by Kirkpatrick's model: "My educational needs were met"; "The teaching strategies were appropriate for the activity"; "Were the learning objectives achieved?" and "The instructor was effective in teaching." Outcomes of all four indicated that 96% of participants believed that educational needs were met, teaching strategies were appropriate, learning objectives were achieved, and the project manager was an effective instructor.

The qualitative data included four questions. The first was, “What do you intend to do differently?” Responses were “prepare or plan better for disaster,” “be ready for possible disaster,” “review/know work policies,” “more organized/knowledgeable,” and “triage better.” The second question was, “What do you think would improve the class?” Responses included “videos with scenarios,” “more facts/classes for disaster preparedness,” “include supervisors,” and “content was relevant, interesting, and well presented.” The third question was, “What did you like best? What did you like least?” Responses included “interaction,” “tabletop exercise,” and “learning.” The last question was, “What other topics would help improve your job performance?” Some of the responses were “physical practice (hands-on practice),” “Trauma Nursing Core Course,” and “disaster triage.” Similarities and differences from the qualitative data collected from the class evaluation were analyzed and grouped in themes (see Table 2). Using Kirkpatrick’s model to measure the reaction of participants using a class evaluation demonstrated that the intervention was well received and valuable.

**Table 2**

*Qualitative Class Evaluation Analysis/Themes*

As a result of this activity, what do you intend to do differently?	What do you think would improve the class?	What did you like best? What did you like least?	What other topics would help improve your job performance?
<ul style="list-style-type: none"> <li>• Self-motivation for disaster preparedness</li> <li>• Policy review</li> </ul>	<ul style="list-style-type: none"> <li>• Visuals</li> <li>• Class availability</li> <li>• Multidisciplinary approach</li> </ul>	Discussion-based learning	Disaster-related education and drills

The fifth objective was to assess emergency preparedness knowledge and professional quality of life changes after the implementation of emergency preparedness education using the EPIQ and ProQOL instruments, delivered via REDCap and paper format in November 2020. This objective was met in January 2021. The data analysis of the survey that included participant

demographics and the EPIQ and ProQOL instruments was completed by Ryan Williams, Institutional Effectiveness and Assessment Specialist for Saint Francis Medical Center College of Nursing. Of 29 surveys collected via REDCap after the intervention, 20 were used to conduct the analysis due to the lack of matching unique identifiers. The nonparametric statistical hypothesis, or Wilcoxon signed-rank, test was used for the EPIQ and ProQOL analyses.

The demographic analysis showed a study population that fell equally into two age groups, 36–20 (30%) and 41–45 (30%). The majority of the participants were female (70%). The race/ethnicity with the highest percentage (70%) was Hispanic or Latino group. The highest percentage for the marital status groups was married (50%). The highest degree group was BSN (70%). The average number of years of nursing experience was 7.8 (lowest 1/highest 22). The average number of years of ED nursing experience was 8 (lowest 1/highest 20). Finally, the average number of disaster events that the participants had attended in the past was 1 (lowest 0/highest 2). Table 3 provides additional demographic details.

**Table 3**

*Participant Demographic Summary*

<b>Age Groups</b>	<b>Number</b>	<b>% of total</b>
20–25	2	10%
26–30	3	15%
31–35	2	10%
36–40	6	30%
41–45	6	30%
46–50	1	5%
Total	20	100%
<b>Gender</b>		
	<b>Number</b>	<b>% of total</b>
Female	14	70%
Male	6	30%
Total	20	100%
<b>Race/Ethnicity</b>		
	<b>Number</b>	<b>% of total</b>
Asian	2	10%

Black or African American	1	5%	
Hispanic or Latino	14	70%	
White	3	15%	
Total	20	100%	
<b>Marital Status</b>	<b>Number</b>	<b>% of total</b>	
Divorced	4	20%	
Married	10	50%	
Never married	3	15%	
Separated	2	10%	
(blank)	1	5%	
Total	20	100%	
<b>Highest Degree</b>	<b>Number</b>	<b>% of total</b>	
ASN	1	5%	
BSN	14	70%	
MSN/MBA	4	20%	
(blank)	1	5%	
Total	20	100%	
<b>Experience</b>	<b>Average</b>	<b>Lowest</b>	<b>Highest</b>
Years of nursing experience	7.8	1	22
Years of emergency department experience	8	1	20
Number of disaster events that you have participated in the past	1	0	2

For the EPIQ results, of the 18 questions, 13 showed a statistically significant ( $P = < .05$ ) improvement in mean familiarity score between the pre- and postsurveys. The triage and basic first aid; accessing critical resources and reporting; the incident command system; isolation, quarantine, and decontamination; psychological issues; epidemiology and clinical decision; and communication and connectivity core competencies had statistical significance ( $P = < .05$ ) in all

respective questions of the listed core competencies. No statistical significance was seen in the biological agent detection competency. These results indicate the need to assess ED nurses' knowledge specifically regarding biological agent detection to improve the emphasis on the topic during emergency preparedness training and to provide educational opportunities to practice and apply the content learned. This plan can be accomplished in collaboration with the BHSF Emergency Preparedness Department. Table 4 provides detailed information about the EPIQ core competencies and questions and the statistical analysis.

**Table 4***EPIQ Wilcoxon Signed-Rank Test Summary*

Questions	Test Statistic	Standard Error	Standardized Test Statistic	Asymptotic sig. (2-sided test)
<b>Triage and basic first aid</b>				
1. Performance of a rapid physical and mental assessment	51.000	9.441	2.489	.013
2. Assisting with triage (START model)	105.000	15.025	3.494	.000
3. Basic first aid in a large-scale emergency event	66.000	10.747	3.071	.002
<b>Biological agent detection</b>				
4. Recognition of relevant signs and symptoms	61.000	11.906	1.848	.065
5. Modes of transmission	36.500	8.008	1.748	.080
6. Appropriate antidote and prophylactic medicine	32.500	8.008	1.249	.212
7. Possible adverse reactions/complications	42.500	9.441	1.589	.112
8. Signs/symptoms of exposure to different biological agents	54.000	12.278	1.222	.222
<b>Accessing critical resources and reporting</b>				
9. When to report an unusual set of symptoms to the local and state health departments	62.000	10.874	2.667	.008
<b>The Incident Command System (ICS)</b>				
10. Knowledge of an Emergency Operation Plan (EOP)	66.000	11.074	2.980	.003
11. Processes of the ICS	87.000	14.018	2.961	.003
12. Agency preparedness information	88.500	13.730	3.132	.002

13. The content of the Emergency Operational Plan at hospital	92.000	15.370	2.570	.010
Isolation, quarantine, and decontamination				
14. Isolation procedures for persons exposed to biological or chemical agents	102.500	17.048	2.493	.013
Psychological issues				
15. Signs/symptoms of posttraumatic stress following a disaster	82.000	13.847	2.636	.008
16. Appropriate psychosocial needs/resources for victims	114.000	16.771	3.220	.001
Epidemiology and clinical decision making				
17. Ability to discern and treat persons with comorbidities who are exposed to chemical agents, biological agents, and/or radiation	91.000	13.906	3.272	.001
Communication and connectivity				
18. Procedures for communicating critical patient information for transporting patients during a disaster	91.000	13.906	3.272	.001

The total percentage increase in nurses' emergency preparedness familiarity following the disaster tabletop exercise was 20%. The increased percentage of familiarity with emergency preparedness for each of the EPIQ core competencies is displayed in Table 5.

**Table 5**

*EPIQ Core Competencies Categories*

EPIQ Core Competencies Categories	Pre-Emergency Preparedness Total Scores	Post-Emergency Preparedness Total Scores	Percentage Increase
Triage and basic first aid	220	256	16%
Biological agent detection	344	378	9%
Accessing critical resources and reporting	70	83	18%
Incident Command System (ICS)	252	329	30%
Isolation, quarantine, and decontamination	72	87	20%
Psychological issues	136	167	22%
Epidemiology and clinical decision making	63	83	31%
Communication and connectivity	66	85	28%
Total Percentage Increase			20%



The data collected from the ProQOL was also analyzed using the Wilcoxon signed-rank test. Of the 30 questions from the ProQOL survey portion, only three showed statistical significance ( $P = < .05$ ). The question, “I am pleased with how I am able to keep up with nursing techniques and protocols” had a statistically significant result ( $P = .046$ ). This question was one of those that measure compassion satisfaction. The other two questions with statistical significance were part of the burnout section questions: “I am the person I always wanted to be” ( $P = .034$ ), and “I feel worn out because of my work as a nurse” ( $P = .014$ ). Table 6 shows all of the questions of the ProQOL instrument and the statistical analysis.

**Table 6***ProQOL Wilcoxon Signed-Rank Test Summary*

Questions	Test Statistic	Standard Error	Standardized Test Statistic	Asymptotic sig. (2-sided test)
I am happy.	12.00	3.354	1.342	.180
I am preoccupied with more than one person I nurse.	35.000	13.551	-.775	.438
I get satisfaction from being able to nurse people.	9.000	3.354	.447	.655
I feel connected to others.	15.000	4.500	1.000	.317
I jump or am startled by unexpected sounds.	23.500	6.955	.791	.429
I feel invigorated after working with those I nurse.	13.500	4.637	.647	.518
I find it difficult to separate my personal life from my life as a nurse.	3.000	3.354	-1.342	.180
I am not as productive at work because I am losing sleep over traumatic experiences of a person I nurse.	3.500	4.287	-1.633	.102
I think that I might have been affected by the traumatic stress of those I nurse.	20.000	7.500	-.333	.739
I feel trapped by my job as a nurse.	6.000	3.354	-.447	.655
Because of my nursing, I have felt “on edge” about various things.	20.000	5.292	1.134	.257
I like my work as a nurse.	9.000	4.500	-.333	.739
I feel depressed because of the traumatic experiences of the people I nurse.	7.500	4.637	-.647	.518

I feel as though I am experiencing the trauma of someone I have nursed.	1.500	2.716	-1.289	.197
I have beliefs that sustain me.	18.000	4.500	1.667	.096
I am pleased with how I am able to keep up with nursing techniques and protocols.	10.00	2.500	2.000	.046
I am the person I always wanted to be.	31.500	6.364	2.121	.034
My work makes me feel satisfied.	4.000	1.732	.577	.564
I feel worn out because of my work as a nurse.	.000	4.287	-2.449	.014
I have happy thoughts and feelings about those I nurse and how I could help them.	8.000	2.646	1.134	.257
I feel overwhelmed because my case [work] load seems endless.	16.000	4.623	1.190	.234
I believe I can make a difference through my work.	12.000	3.354	1.342	.180
I avoid certain activities or situations because they remind me of frightening experiences of the people I nurse.	16.000	5.852	.342	.733
I am proud of what I can do to nurse	7.500	3.536	.000	1.000
As a result of my nursing, I have intrusive, frightening thoughts.	19.000	5.701	.877	.380
I feel “bogged down” by the system.	27.00	7.794	.577	.564
I have thoughts that I am a “success” as a nurse.	21.000	5.534	1.265	.206
I can’t recall important parts of my work with trauma victims.	32.000	12.450	-.562	.574
I am a very caring person.	20.000	5.292	1.134	.257
I am happy that I chose to do this work.	14.000	4.287	.816	4.14

The analysis of the ProQOL survey questions was conducted according to recommendations from the ProQOL manual following a scoring system created to measure compassion satisfaction, burnout, and secondary traumatic stress (Stamm, 2010). The sum of the scores is to determine if the levels in any of the categories measured low, moderate, or high. The scores revealed an increase of 15% to high levels of compassion satisfaction scores on the postintervention survey compared to the preintervention survey results. Another change between the pre- and postintervention surveys was an increase of 95% on moderate levels of burnout, for a total of 100%. The secondary traumatic stress section did not have any changes, with low

levels of 75% on the pre-and postintervention surveys. The project manager’s perspective on the ProQOL results of an increase in compassion satisfaction and burnout levels is that the changes were part of the participants’ reaction due to their commitment to the nursing profession.

Compassion satisfaction is about the pleasure of being able to do the work well or to contribute to the work setting (Stamm, 2010).

Positive feelings from the ED nurses who participated in the class might have been reflected in the question from the compassion satisfaction category that showed statistical significance: “I am pleased with how I am able to keep up with nursing techniques and protocols.” In contrast, burnout is an element of compassion fatigue and is associated with feelings of difficulties in dealing with work or in doing the job effectively. The burnout score could reflect a person’s mood on a particular day (Stamm, 2010). The statistically significant questions from the burnout category, “I am the person I always wanted to be” and “I feel worn out because of my work as a nurse,” could have been a reaction of the ED nurses’ feelings after the disaster and emergency preparedness class. Some comments during class included participants’ surprise at learning what is expected from an ED nurse during a disaster that they had not known previously. The survey was conducted during the COVID-19 pandemic, which might have had an impact on the results. Table 7 provides details on the ProQOL levels for the compassion satisfaction, burnout, and secondary traumatic stress questions.

**Table 7**

*ProQOL Results*

Level	Compassion Satisfaction Pre-education #	Compassion Satisfaction Pre-education %	Compassion Satisfaction Post-education #	Compassion Satisfaction Post-education %
Low	0	0%	0	0%

Moderate	16	80%		13	65%
High	4	20%		7	35%
Level	Burnout pre-education #	Burnout pre-education %		Burnout Post-education #	Burnout Post-education %
Low	19	95%		0	0%
Moderate	1	5%		20	100%
High	0	0%		0	0%
Level	Secondary Traumatic Stress Pre-education #	Secondary Traumatic Stress Post-education %		Secondary Traumatic Stress Pre-education #	Secondary Traumatic Stress Post-education %
Low	15	75%		15	75%
Moderate	5	25%		5	25%
High	0	0%		0	0%

The last objective was to review the emergency preparedness hospital-specific policy and amend as necessary based on findings from the emergency preparedness evidence-based education outcomes. This objective was intended to change policy, but it was not met due to the amount of time required to finalize hospital policy changes. Adding the use of disaster tabletop exercises with bedside nurses to the emergency operational plan will be recommended based on the 20% improvement of familiarity with emergency preparedness core competencies from the EPIQ survey compared to the preintervention survey and participants' class evaluation comments expressing their satisfactory learning experience.

### **Unintended Consequences**

Two unintended consequences were identified during project implementation: the ED nurses' desire to learn more about disaster-related topics and the recognition of their autonomy to perceive a disaster event and initiate appropriate communication during the event. These unintended consequences were identified based on class evaluation responses to the question, "As

a result of this activity, what do you intend to do differently?": "be more prepared. Always have a plan"; "be more prepared and review my policies"; "more organized in what I am to do if an emergency would happen"; and "read more." In addition, there was a comment from the hot wash activity: "The information provided in the disaster and emergency preparedness class was an eye-opener to know how much I didn't know related to the emergency preparedness information that is expected for the ED nurses to know." Most of the participants agreed, during the hot wash as an area of improvement, about their overall perception that ED nurses should wait for direction from leadership in the event of a disaster. They had believed that in the event of a disaster, they had no authority to expedite the process for response until they received approval from a leader. This conclusion was supported by responses to the class evaluation question, "As a result of this activity what do you intend to do differently?" Comments included "prepare or plan better for disaster/be ready for possible disaster," "review/know work policies," "more organized/knowledgeable," and "triage better."

### **Plan Deviation**

The action plan created during the planning phase of the PDSA format provided reliable guidance during project implementation. However, because participation in completing the preintervention survey before the intervention was low, a change was made to promote completion of the survey at the beginning of each disaster and emergency preparedness class. This change made it possible to collect 25 preintervention surveys.

### **Guidance of the Plan-Do-Study-Act and Kirkpatrick's Models**

The PDSA served as an excellent model to test the impact of disaster tabletop exercises to improve ED nurses' emergency preparedness knowledge. The plan phase provided guidance about which elements to include while developing the action plan. The action plan included

specific information about the project objectives, who would be on the interprofessional team, how the data would be collected and analyzed, when and how the project would be implemented, and plans to standardize and sustain the use of disaster tabletop exercises for the ED nurses' emergency preparedness education. The do phase provided insight on the importance of documenting unexpected observations or challenges during the implementation process, which was especially helpful because multiple components were directed to data collection. During the study phase, data analysis found in similar projects from the completed literature review was compared. Finally, the act phase guided consideration of potential modifications for future project implementation and strategies for sustainability.

Using Kirkpatrick's model guided the evaluation of the project training component. The reaction level for training evaluation explained how to evaluate participant reactions to the project intervention. The behavioral level assisted understanding of how to measure transfer of knowledge using the instruments selected for the project and intervention implementation. Both levels of training evaluation provided a method to concurrently collect quantitative and qualitative data and to measure transfer of knowledge.

### **Congruence of Results with Review of Literature**

Similarities related to the use of EPIQ, awareness of a workplace disaster plan, and compassion satisfaction scores were found between project results and those in the research literature, including highest ranked mean familiarity scores on the triage and basic first aid core competency (Garbutt et al., 2008; Georgino et al., 2015; Wisniewski et al., 2004; Worrall, 2012). The lowest ranked mean familiarity scores for core competencies included the biological agent detection and the incident command system, which coincided with two of the lowest ranked core competencies (Georgino et al., 2015). In addition, Georgino et al. (2015) and Worrall (2012)

conducted their studies utilizing the EPIQ instrument before and after emergency preparedness education. Georgino et al. (2015) also used a disaster tabletop exercise as part of the emergency preparedness education, and Worrall (2012) had a small sample size. Table 8 compares the studies that utilized the EPIQ instrument and the highest and lowest ranked mean familiarity scores for core competencies with this project.

**Table 8**

*Literature Review of Highest and Lowest Ranked Mean Familiarity Scores for Core Competencies Using EPIQ*

Authors	n	Highest Mean Familiarity Score Competencies	Lowest Mean Familiarity Score Competencies
Wisniewski et al. (2004) (Qualitative and quantitative descriptive research design)	877	1. Triage and basic first aid 2. Detection 3. Accessing critical resources and reporting	1. Psychological issues 2. Epidemiology and clinical decision making 3. Communication and connectivity
Garbutt et al. (2008) (Quantitative instrument analysis design)	776	1. Triage 2. Biologic agents 3. Reporting and accessing critical resources	1. Psychological issues and special populations 2. Epidemiology and clinical decision making 3. Communication and connectivity
Worrall, J. (2012) (Quantitative descriptive study design)	41	1. Incident Command System 2. Triage 3. Reporting and accessing critical resources	1. Epidemiology and clinical decision making 2. Psychological issues and special populations
Georgino et al. (2015) (Quantitative and qualitative descriptive study design)	63	1. Triage and basic first aid 2. Psychological issues 3. Accessing critical resources and reporting	1. Epidemiology and clinical decision making 2. Biological agent detection 3. Incident Command System
Fuentes, V. (2021) (Quantitative and qualitative descriptive study design)	20	1. Triage and basic first aid 2. Epidemiology and clinical decision making 3. Communication and connectivity	1. Biological agent detection 2. Isolation, quarantine, and decontamination 3. Incident Command System

Another similarity between this project and the literature results is nurses' lack of awareness of their workplace disaster plans. A systematic review on disaster preparedness among nurses by Labrague et al. (2018) established that seven studies noted the lack of awareness of workplace disaster plans and where to locate them. This project revealed a similar lack of awareness about the availability and location of the Doctors Hospital Emergency Operational Plan.

A third similarity between the literature and findings from this project was participants' disaster preparedness status and levels of compassion satisfaction. This project saw an increase in compassion satisfaction and in emergency preparedness knowledge. Emergency preparedness knowledge is associated with higher levels of compassion satisfaction (Lee & Kim, 2018).

In conclusion, this project's results on nurses' knowledge of emergency preparedness correlate with findings from the literature. The disaster tabletop intervention was a well-received, low-cost, successful method of disaster education to ensure transfer of knowledge to the participants. The compassion satisfaction scores from the ProQOL survey also has similarities to results found in the literature. Recent events could influence individual ProQOL scores, and the implementation of this study during the COVID-19 pandemic could have had an impact on the participants' responses.



## **Section 6: Recommendations and Conclusions**

Recommendations for this DNP project are focused on implementing disaster tabletop exercises as part of the annual emergency preparedness education for ED nurses. Conclusions describe the influence that the completion of a DNP project has on the DNP student's goals and its correlation with the DNP Essentials. A conclusion for the project results is provided based on the PICO question formulated to guide the study.

### **Recommendations**

The recommendation for Doctors Hospital based on the study results is to incorporate the use of tabletop exercises as part of the annual mandatory emergency preparedness education for ED nurses. The ED can accomplish this initiative by collaborating with the ED clinical nurse educator and the emergency preparedness nurse educator to create a disaster tabletop scenario for the ED nurses to apply the Emergency Operational Plan concepts. As part of the yearly emergency preparedness classes at Doctors Hospital, the tabletop exercise can be added to the Augmented Biological PPE class.

Furthermore, tabletop exercises can be implemented at a system-wide level for BHSF with the emergency preparedness department's collaboration by regularly offering disaster tabletop exercises for the BHSF ED nurses. Although the Emergency Operational Plans among the BHSF hospitals do vary, the disaster and emergency preparedness protocols are the same. Variations include specifics related to which leaders would represent the different roles in the incident command system and the organizational location of resources such as PPE, medical supplies, and equipment. Differences pertaining to organizational hierarchy and structural resources are usually included in other hospital or unit-specific educational components. A yearly application of the Emergency Operational Plan concepts through tabletop exercises will

improve quality of care and patient safety during a disaster event, reducing delays commonly caused by lack of knowledge about proper initiation of the disaster protocol.

General recommendations for the implementation of disaster tabletop exercises are directed to the educational content and logistics of the activities. Creating a realistic scenario based on the institution's resources should include allowing the nurses to apply their knowledge of the emergency preparedness core competencies. The correct answers of the tabletop exercise should match the institution's Emergency Operational Plan to enhance participants' experience with the policy and to ensure knowledge. Sessions to facilitate the tabletop exercises should consist of 10 participants to promote discussion and allow them to learn from each other. Dates for disaster tabletop sessions should be communicated at least one month in advance, and disciplines besides nursing could be considered for participation.

### **Conclusions**

Planning for and implementation of this DNP project have contributed to my personal goals concerning leadership, practice, and education. The multiple activities involving interprofessional collaboration to ensure the project's achievement have allowed me to experience the process of executing the eight foundational DNP Essentials competencies as an advanced practice registered nurse.

### **Contribution of DNP Project to Personal Leadership Goals**

The process of carrying out the DNP project allowed me to achieve personal goals to further develop my leadership skills. These goals included the opportunity to incorporate innovative, evidence-based practices to improve patients' outcomes. Another goal was developing and leading an interprofessional team to plan and conduct the study to meet the project objectives. Implementation of the project intervention allowed me to practice

transformational leadership skills by serving as an inspiration to the staff for self-motivation to review hospital policy and engage in emergency preparedness education. The DNP project also influenced the process of advocating for incorporating evidence-based practices supported by the outcomes of the project.

### **Contribution of DNP Project to Personal Practice Goals**

Implementing the DNP project set the cornerstone for scholarly practice to improve health care and built my self-confidence to identify nursing practices that could benefit from evidence-based improvements. I now have the confidence to conduct a comprehensive literature review and determine an appropriate source of data to fulfill a needs assessment that collects and interprets data to implement evidence-based interventions. The experience will allow me to serve as a mentor and collaborator for others in the process of conducting evidence-based projects.

### **Contribution of DNP Project to Personal Educational Goals**

Conducting the DNP project helped me apply the knowledge and skills acquired while in the DNP program and plan for a project considering health care needs. I was also able to attain comprehensive knowledge on emergency preparedness, the subject of interest for the project, including regulatory, ethical, and legal aspects. The knowledge gained has assisted in expanding my contribution as an educator in the hospital setting.

### **Correlation of DNP Project With DNP Essentials**

The process of completing a DNP project requires a solid understanding of the Essentials of Doctoral Education for Advanced Nursing Practice (American Association of Colleges of Nursing, 2006). The DNP curriculum provided preparation for organizational leadership, systems, and policy to prepare the DNP student with the skills necessary to lead an interprofessional team and delineate a plan for the study utilizing evidence-based guidelines. The

broader perspective related to health care practice and policy provided in the DNP curriculum helped expand the knowledge to improve nursing practice and patient and health care outcomes. In addition, the academic preparation included finance principles to analyze the cost-effectiveness of the implementation of new evidence-based practices.

Scientific Underpinnings for Practice (DNP Essential I) is correlated with the implementation of the DNP project through the integration of scientific knowledge to improve nursing practice. Applying the use of disaster tabletop exercises was an effective method to improve the emergency preparedness knowledge of ED nurses.

DNP Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking correlates because the DNP project implemented a quality improvement initiative to evaluate the current emergency preparedness knowledge of the ED nursing specialty and to provide effective strategies to improve nurses' response to a disaster event.

DNP Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice reflects fundamental skills needed to effectively plan and implement the DNP project. The DNP curriculum includes the resources necessary to learn how to translate research into practice and evaluate the outcomes. Implementation of the project provided the opportunity to conduct a literature review, design a method of evaluation and implementation, and analyze outcomes.

The use of REDCap to collect data for the needs assessment and for the evaluation of outcomes of the DNP project correlates with DNP Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care.

The opportunity to change institutional policy by implementing evidence-based practices to improve quality and efficacy in health care by incorporating the use of disaster tabletop exercises as a method of education among bedside nurses correlates with DNP Essential V: Health Care Policy for Advocacy in Health Care.

A crucial component of implementing a DNP project is practical interprofessional collaboration. Guided by DNP Essential VI, Interprofessional Collaboration for Improving Patient and Population Health Outcomes, the DNP graduate must demonstrate the ability to establish and effectively lead interprofessional teams with the purpose to involve knowledgeable individuals from multiple disciplines to accomplish safe, effective, patient-centered care. For this project, ED leaders from all levels, including senior leadership and leaders from the emergency preparedness department, were indispensable members of the interprofessional team to ensure project success.

This initiative also aligns with DNP Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health. The collaboration of subject matter experts on emergency preparedness helped improve ED nurses' knowledge of emergency preparedness, thus contributing to reducing risk and preventing illness for the community we serve.

DNP Essential VIII: Advanced Nursing Practice describes the ability of the advanced practice nurse to demonstrate the skills and expertise by integrating the knowledge acquired during DNP education to implement the DNP project. The culmination of the project represents the advanced practice nurse's ability to apply all of the concepts learned in the DNP program and provides a foundation for assessing and identifying areas in the health care setting that would benefit from improvement or change. Furthermore, the curriculum instills a sense of self-reliance to serve as a mentor to other nurses on their journey to implement evidence-based practices.

**PICO Question and DNP Project Findings**

The PICO question created for this DNP project was: For Emergency Department nurses, does the use of a tabletop exercise on emergency preparedness education increase the knowledge of emergency preparedness and change the perception of professional quality of life during a disaster event compared to nurses who receive only standard emergency preparedness education?

Analysis of the data collected before and after the disaster tabletop exercise, using the valid and reliable EPIQ instrument, concluded that the use of disaster tabletop exercises is an evidence-based tool that contributed to a 20% increase in emergency preparedness knowledge among ED nurses. Data analysis from the valid and reliable ProQOL instrument revealed changes in the participants' professional quality of life: a 15% increase in high levels of compassion satisfaction and a 95% increase in moderate levels of burnout (one of the compassion fatigue elements). No changes were seen in the secondary traumatic stress category. Qualitative data analysis from the disaster tabletop exercise hot wash and the class evaluation concluded that the participants enjoyed the discussion-based format of the disaster tabletop activity, and the training met its objectives. In conclusion, disaster tabletop exercise is a reliable, evidence-based practice method to increase emergency preparedness knowledge among ED nurses.

## References

- Agency for Healthcare Research and Quality. (2013). *Plan-Do-Study-Act (PDSA) cycle*.  
<https://innovations.ahrq.gov/qualitytools/plan-do-study-act-pdsa-cycle#:~:text=The%20Plan-Do-Study-Act%20%28PDSA%29%20cycle%20is%20part%20of%20the,simple%20yet%20powerful%20tool%20for%20accelerating%20quality%20improvement>
- American Association of Colleges of Nursing. (2006). *The essentials of doctoral education for advanced nursing practice*.  
<https://www.aacnnursing.org/Portals/42/Publications/DNPEssentials.pdf>
- American Nurses Association. (2017). *Who will be there? Ethics, the law, and a nurse's duty to respond in a disaster*.  
[https://www.nursingworld.org/~4af058/globalassets/docs/ana/ethics/who-will-be-there\\_disaster-preparedness\\_2017.pdf](https://www.nursingworld.org/~4af058/globalassets/docs/ana/ethics/who-will-be-there_disaster-preparedness_2017.pdf)
- Baack, S., & Alfred, D. (2013). Nurses' preparedness and perceived competence in managing disasters. *Journal of Nursing Scholarship*, 45(3), 281–287.  
<https://doi.org/10.1111/jnu.12029>
- Baron, A., & Armstrong, M. (2007). *Human capital management: Achieving added value through people*. Kogan Page Ltd.
- Becker's Healthcare. (2013, July 23). 5 considerations that can help hospitals manage occupancy cost. *Becker's Hospital CFO Report*. <https://www.beckershospitalreview.com/finance/5-considerations-that-can-help-hospitals-manage-occupancy-costs.html>
- CAMEO Chemicals. (n.d.). *Chlorine*. National Oceanic and Atmospheric Administration.  
<https://cameochemicals.noaa.gov/chemical/2862>

- Cause IQ. (n.d.). *Doctors Hospital*. <https://www.causeiq.com/organizations/doctors-hospital,043775926/>
- Centers for Medicare and Medicaid Services. (2019, November 5). *Emergency preparedness rule*. <https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertEmergPrep/Emergency-Prep-Rule>
- Chemical Hazards Emergency Medical Management. (2020a). *Chlorine: Emergency department/hospital management*. U.S. Department of Health and Human Services. Retrieved October 6, 2020, from [https://chemm.nlm.nih.gov/chlorine\\_hospital\\_mmg.htm](https://chemm.nlm.nih.gov/chlorine_hospital_mmg.htm)
- Chemical Hazards Emergency Medical Management. (2020b). *JumpSTART pediatric triage algorithm*. U.S. Department of Health and Human Services. Retrieved October 6, 2020, from <https://chemm.nlm.nih.gov/startpediatric.htm>
- Chemical Hazards Emergency Medical Management. (2020c). *START adult triage algorithm*. U.S. Department of Health and Human Services. Retrieved October 6, 2020, from <https://chemm.nlm.nih.gov/startadult.htm>
- Department of Emergency Management. (n.d.). *Tabletop*. City and County of San Francisco. <https://sfdem.org/tabletop>
- Diaz, D., Sands, G., & Alesci, C. (2020, April 16). *Protective equipment costs increase over 1,000% amid competition and surge in demand*. CNN Politics. <https://www.cnn.com/2020/04/16/politics/ppe-price-costs-rising-economy-personal-protective-equipment/index.html>
- Evans, C. A., Baumberger-Henry, M., Schwartz, R., & Veenema, T. (2019). Nursing students' transfer of learning during a disaster tabletop exercise. *Nurse Educator*, 44(5), 278–283. <https://doi.org/10.1097/NNE.0000000000000602>



- Evans, C. A., & Schwartz, R. (2019). Using tabletop exercise as an innovative and practical teaching strategy in response to external disaster scenarios. *Nursing Education Perspectives, 40*(1), 62–64. <https://doi.org/10.1097/01.NEP.0000000000000308>
- Federal Emergency Management Agency. (2020, August 5). *Homeland Security Exercise and Evaluation Program*. Retrieved October 6, 2020, from <https://www.fema.gov/emergency-managers/national-preparedness/exercises/hseep>
- Garbutt, S. J., Peltier, J. W., & Fitzpatrick, J. J. (2008). Evaluation of an instrument to measure nurses' familiarity with emergency preparedness. *Military Medicine, 173*(11), 1073–1077. <https://doi.org/10.7205/MILMED.173.11.1073>
- Georgino, M. M., Kress, T., Alexander, S., & Beach, M. (2015). Emergency preparedness education for nurses: Core competency familiarity measured utilizing an adapted emergency preparedness information questionnaire. *Journal of Trauma Nursing, 22*(5), 240–248. <https://doi.org/10.1097/JTN.0000000000000148>
- Hansen, J. (2013). Nurse residency programs: A critical part of the future of nursing, part 2. *Journal for Nurses in Professional Development, 29*(3), 157–158. <https://doi.org/10.1097/NND.0b013e318291bea5>
- Hodge, A. J., Miller, E. L., & Skaggs, M. K. D. (2017). Nurse self-perceptions of emergency preparedness at a rural hospital. *Journal of Emergency Nursing, 43*(1), 10–14. <https://dx.doi.org/10.1016/j.jen.2015.07.012>
- Hunsaker, S., Chen, H.-C., Maughan, D., & Heaston, S. (2015). Factors that influence the development of compassion fatigue, burnout, and compassion satisfaction in emergency department nurses. *Journal of Nursing Scholarship, 47*(2), 186–194. <https://doi.org/10.1111/jnu.12122>

- Klappa, S. G., Crocker, R., Hughes, L. C., Thompson, J. A. I., & Kloppo, S. P. (2016). Compassion fatigue: A conceptual model for re-entry after disaster relief work in Haiti. *HPA Resource, 15*(4), 1–18. <https://doi.org/10.1186/s13030-018-0133-0>
- Labrague, L. J., Hammad, K., Gloe, D. S., McEnroe-Pettite, D. M., Fronda, D. C., Obeidat, A. A., Leocadio, M. C., Cayaban, A. R., & Mirafuentes, E. C. (2018). Disaster preparedness among nurses: A systematic review of literature. *International Nursing Review, 65*(1), 41–53. <https://doi.org/10.1111/inr.12369>
- Langan, J. C., & Krieger, M. M. (2019). Staffing needs and associated costs in times of disaster: An integrative review. *Nursing Economics 37*(5), 221–229. <http://www.nursingeconomics.net/necfiles/2019/SO19/221.pdf>
- Lee, M.-H., & Kim, K.-H. (2018). The disaster preparedness and professional quality of life among nurses in emergency rooms of Regional Emergency Medical Center. *Journal of the Chosun Natural Science, 11*(4), 184–191. <https://doi.org/10.13160/ricns.2018.11.4.184>
- Lingo, A. (2017, March 15). *The real cost of nurse turnover*. PassportUSA. <https://passportusa.com/nurse-turnover-costs/#:~:text=Nurse%20turnover%20is%20expensive.%20When%20you%20consider%20salary,of%20hidden%20expenses%20that%20factor%20in%20worth%20considering>
- Lu, M.-H., Weng, L.-T., Chen, Y.-L., Lin, C., Wang, C.-H., & Pan, H.-H. (2020). Predictors of professional quality of life among nursing staff following the Taiwan Formosa Fun Coast explosion. *Burns, 46*(2), 423–429. <https://doi.org/10.1016/j.burns.2019.02.010>
- McCarthy, N. (2019, September 12). *This is the staggering cost of disasters around the world*. World Economic Forum. <https://www.weforum.org/agenda/2019/09/cost-of-disasters>

- Melnyk, B. M., & Fineout-Overholt, E. (2019). *Evidence-based practice in nursing & healthcare: A guide to best practice* (4th ed.). Wolters Kluwer
- Mind Tools. (n.d.-a). *Kirkpatrick's four-level training evaluation model: Analyzing learning effectiveness*. <https://www.mindtools.com/pages/article/kirkpatrick.htm>
- Mind Tools. (n.d.-b). *Plan-Do-Check-Act (PDCA): Continually improving, in a methodical way*. [https://www.mindtools.com/pages/article/newPPM\\_89.htm](https://www.mindtools.com/pages/article/newPPM_89.htm)
- Minnesota Department of Health. (n.d.). *PDSA: Plan-Do-Study-Act*. <https://www.health.state.mn.us/communities/practice/resources/phqitoolbox/pdsa.html#:~:text=PDSA%2C%20or%20Plan-Do-Study-Act%2C%20is%20an%20iterative%2C%20four-stage%20problem-solving,provide%20feedback%20about%20what%20works%20and%20what%20doesn%27t.>
- Mirzaei, S., Eftekhari, A., Mohammadinia, L., Dehghani Tafti, A. A., Norouzinia, R., & Nasiriani, K. (2020). Comparison of the effect of lecturing and tabletop exercise methods on level of preparedness of nurses against natural disasters. *Journal of Holistic Nursing and Midwifery*, 30(1), 17–26. <https://doi.org/10.32598/JHNM.30.1.3>
- Moran, K., Burson, R., & Conrad, D. (2020). *The doctor of nursing practice scholarly project: A framework for success* (3rd ed.). Jones & Bartlett Learning.
- Nash, T. J. (2017). A guide to emergency preparedness and disaster nursing education resources. *Health Emergency and Disaster Nursing*, 4(1), 12–25. <https://doi.org/10.24298/hedn.2015-0017>

National Centers for Environmental Information. (2020). *Billion-dollar weather and climate disasters: Overview*. National Oceanic and Atmospheric Administration.

<https://www.ncdc.noaa.gov/billions/>

NSI Nursing Solutions, Inc. (2020). *2019 NSI national health care retention & RN staffing report*.

[https://www.nsinursingsolutions.com/Documents/Library/NSI\\_National\\_Health\\_Care\\_Retention\\_Report.pdf](https://www.nsinursingsolutions.com/Documents/Library/NSI_National_Health_Care_Retention_Report.pdf)

Patridge, E. F., & Bardyn, T. P. (2018). Research Electronic Data Capture (REDCap). *Journal of the Medical Library Association*, 106(1), 142–144. <https://doi.org/10.5195/jmla.2018.319>

Petrone, P. (2017, May 26). The best way to use the Kirkpatrick model. *LinkedIn*.

<https://learning.linkedin.com/blog/learning-thought-leadership/the-best-way-to-use-the-kirkpatrick-model--the-most-common-way-t>

Pollick, D. (2018, August 31). RN recruitment: The cost of doing nothing is costly. *Becker's Hospital Review*. <https://www.beckershospitalreview.com/hospital-management-administration/rn-recruitment-the-cost-of-doing-nothing-is-costly.html>

Public Health Foundation. (n.d.). *Evaluating emergency preparedness and response trainings: A knowledge repository*.

[http://www.phf.org/programs/preparednessresponse/evaluationrepository/Pages/Evaluation\\_Repository\\_Introduction.aspx](http://www.phf.org/programs/preparednessresponse/evaluationrepository/Pages/Evaluation_Repository_Introduction.aspx)

QSEN Institute. (2020). *Graduate QSEN competencies*. <https://qsen.org/competencies/graduate-ksas/>

Ready. (2016, January 21). *Exercises*. <https://www.ready.gov/business/testing/exercises>

REDCap. (n.d.). *Join & get REDCap*. <https://projectredcap.org/partners/join/>

Setou, N., Fukumori, T., Nokao, K., & Maeda, M. (2018). Factors related to the fatigue of relief workers in areas affected by the Great East Japan Earthquake: Survey results 2.5 years after the disaster. *BioPsychoSocial Medicine*, *12*, Article 14.

<https://doi.org/10.1186/s13030-018-0133-0>

Seyedin, H., Dolatabadi, Z. A., & Rajabifard, F. (2015). Emergency nurses' requirements for disaster preparedness. *Trauma Monthly*, *20*(4), e29033.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4727476/pdf/traumamon-20-29033.pdf>

So, M., Dziuban, E. J., Franks, J. L., Cobham-Owens, K., Schonfeld, D. J., Gardner, A. H., Krug, S. E., Peacock, G., & Chung, S. (2019). Extending the reach of pediatric emergency preparedness: A virtual tabletop exercise targeting children's needs. *Public Health Reports*, *134*(4), 344–353. <https://doi.org/10.1177%2F0033354919849880>

Stamm, B. H. (2010). *The Concise ProQOL Manual* (2nd ed.). ProQOL.org.

<https://proqol.org/uploads/ProQOLManual.pdf>

Stryckman, B., Grace, T. L., Schwarz, P., & Marcozzi, D. (2015). An economic analysis and approach for health care preparedness in a substate region. *Disaster Medicine and Public Health Preparedness* *9*(4), 344–348. <https://doi.org/10.1017/dmp.2015.37>

Substance Abuse and Mental Health Services Administration. (2017, July). Greater impact: How disasters affect people of low socioeconomic status. *Disaster Technical Assistance Center Supplemental Research Bulletin*.

[https://www.samhsa.gov/sites/default/files/programs\\_campaigns/dtac/srb-low-ses.pdf](https://www.samhsa.gov/sites/default/files/programs_campaigns/dtac/srb-low-ses.pdf)

Taskiran, G., & Baykal, U. (2019). Nurses' disaster preparedness and core competencies in Turkey: A descriptive correlational design. *International Nursing Review*, *66*(2), 165–175. <https://doi.org/10.1111/inr.12501>

U.S. Bureau of Labor and Statistics. (2020, July 6-a). *Occupational employment and wages, May 2019: 25-1072 nursing instructors and teachers, postsecondary.*

<https://www.bls.gov/oes/current/oes251072.htm>

U.S. Bureau of Labor and Statistics. (2020, July 6-b). *Occupational employment and wages, May 2019: 29-1141 registered nurses.* <https://www.bls.gov/oes/current/oes291141.htm>

Veenema, T. G., Meyer, D., Bell, S. A., Couig, M. P., Friese, C. R., Lavin, R., Stanly, J., Martin, E., Montague, M., Toner, E., Schoch-Spana, M., Cicero, A., & Inglesby, T. (2020). *Recommendations for improving national nurse preparedness for pandemic response: Early lessons from COVID-19.* Center for Health Security.

[https://www.centerforhealthsecurity.org/our-work/pubs\\_archive/pubs-pdfs/2020/nurse-preparedness-report.pdf](https://www.centerforhealthsecurity.org/our-work/pubs_archive/pubs-pdfs/2020/nurse-preparedness-report.pdf)

Watson, C., Toner, E. S., Shearer, M. P., Rivers, C., Meyer, D., Hurtado, C., Watson, M., Gronvall, G. K., Adalja, A. A., Sell, T. K., Inglesby, T., & Cicero, A. (2019). Clade X: A pandemic exercise. *Health Security, 17*(5), 410–417.

<https://doi.org/10.1089/hs.2019.0097>

Wisniewski, R., Dennik-Champion, G., & Peltier, J. W. (2004). Emergency preparedness competencies: Assessing nurses' educational needs. *Journal of Nursing Administration, 34*(10), 475–480.

<https://doi.org/10.1097/00005110-200410000-00009>

Worrall, J. (2012). Are emergency care staff prepared for disaster? *Emergency Nurse, 19*(9), 31–

37. <https://doi.org/10.7748/en2012.02.19.9.31.c8943>

ZipRecruiter. (n.d.-a). *RN risk management salary in Florida.*

<https://www.ziprecruiter.com/Salaries/RN-Risk-Management-Salary--in-Florida>

ZipRecruiter. (n.d.-b). *Senior systems administrator salary in Florida.*

<https://www.ziprecruiter.com/Salaries/How-Much-Does-a-Senior-Systems-Administrator-Make-a-Year--in-Florida>

### Appendix A: Literature Review Critique

Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>1. (2004). Emergency preparedness competencies: Assessing nurses' educational needs. <i>Journal of Nursing Administration</i> 34(10), 475–480.</p> <p><b>Authors:</b> Wisniewski, R., Dennik-Champion, G., &amp; Peltier, J. W.</p>	<p>1. Identified critical competency components of first-responder capabilities in response to large-scale emergency events.</p> <p>2. Assessed how well Wisconsin nurses feel they are prepared on these first responder capabilities.</p> <p>3. Determined nurses' most preferred education methods.</p>	<p><b>Setting:</b> Wisconsin Nurses Association, U.S.</p> <p><b>Sample:</b> 877 nurses responded to the survey.</p> <p><b>Design:</b> Qualitative and quantitative descriptive research</p> <p><b>Procedure:</b> The EPIQ survey was placed online from July to August 2003 using the Wisconsin Health Alert Network communication system for public health departments. Communication to complete the survey was conducted through major nursing organizations, organizations that employ nurses, and educational leaders.</p>	<p><b>Independent:</b> NA</p> <p><b>Dependent:</b> Emergency preparedness education development and delivery method</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> Emergency Preparedness Information Questionnaire (EPIQ). The EPIQ contained 44 knowledge-based questions related to the eight dimensions of emergency preparedness competency. The cumulative variance explained from the Equamax factor analysis was 73.5%. The resulting coefficient alphas ranged from .827 to .94, indicating high levels of internal reliability.</p>	<p>Nurse familiarity overall score of 2.29/5 indicated a low level of self-reported familiarity with emergency preparedness. Nurses were more familiar with triage and basic first aid issues, detection, accessing critical resources and reporting, and incident command systems. Nurses were less familiar with communication and connectivity, epidemiology and clinical decision making.</p> <p>Refer to findings and results section.</p>	<p>No limitations were discussed in the article.</p>	<p><b>Level of Evidence: VI</b> After the September 11, 2001, attacks and in preparation to comply with the new CDC guidelines on public health emergency preparedness, a research study was conducted in an effort to better understand the self-perception of first responders' familiarity with the eight core competencies of emergency preparedness. The results were used to develop appropriate educational opportunities.</p>



Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>2. (2008). Evaluation of an instrument to measure nurses' familiarity with emergency preparedness. <i>Military Medicine</i>, 173(11), 1073–1077.</p> <p><b>Authors:</b> Garbutt, S. J., Peltier, J. W., &amp; Fitzpatrick, J. J.</p>	<p>Second data analysis of the Emergency Preparedness Information Questionnaire (EPIQ) was conducted, to assess nurses' self-reported level of familiarity with emergency preparedness.</p>	<p><b>Setting:</b> Wisconsin, U. S.</p> <p><b>Sample:</b> 776 nurses</p> <p><b>Design:</b> Quantitative. instrument analysis</p> <p><b>Procedure:</b> The EPIQ was placed online by using the Wisconsin Health Alert Network.</p>	<p><b>Independent:</b> NA</p> <p><b>Dependent:</b> Identifying emergency preparedness training needs</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> Emergency Preparedness Information Questionnaire (EPIQ). The results of this second study using EPIQ has confirmed the validity, reliability, and thoroughness of the psychometric characteristics of the instrument.</p>	<p>Nurse respondents reported an average overall emergency preparedness familiarity score of 2.3/5. Nurses reported the greatest familiarity with triage dimension, with a score of 3.2/5. The dimensions scoring the lowest were communication and connectivity, with a score of 2.1/5. Each of the eight dimensions had a significant impact in overall familiarity (<math>p &lt; 0.001</math>). Refer to findings and results section.</p>	<p>No limitations were discussed in the article.</p>	<p><b>Level of Evidence: VI</b> This research study was conducted to collect a second set of data analysis on the EPIQ instrument, to better understand the self-perception of nurses' familiarity with the eight core competencies of emergency preparedness. The results are to be used to develop appropriate educational opportunities based on the results.</p>

Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>3. (2012). Are emergency care staff prepared for disaster? <i>Emergency Nurse</i> 19(9), 31–37.</p> <p><b>Author:</b> Worrall, J.</p>	<p>The research study was conducted to establish whether an assessment tool based on the EPIQ can be adapted to support emergency preparedness training for healthcare staff in the UK.</p>	<p><b>Setting:</b> Minor injury unit in Wiltshire, United Kingdom</p> <p><b>Sample:</b> 41 registered nurses and 8 healthcare assistants</p> <p><b>Design:</b> Quantitative, descriptive study</p> <p><b>Procedure:</b> Participants completed the EPIQ survey and took part in a learning intervention. The postsurvey was completed by 80% of the participants.</p>	<p><b>Independent:</b> NA</p> <p><b>Dependent:</b> Necessary emergency preparedness training for healthcare professionals</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> Adapted version of the Emergency Preparedness Information Questionnaire (EPIQ). The changes included terminology and the removal of three questions. Use of paired <i>t</i>-test for statistical analysis and comparison of the before and after education EPIQ responses.</p>	<p>Minor injury unit staff emergency preparedness familiarity overall mean score was 1.2114. The staff were most familiar with dimensions related to incident command system, triage, and reporting and assessing clinical reports. Low familiarity scores were found in the epidemiology and clinical decision making and psychological issues and special populations. The study compared the before and after EPIQ results for overall familiarity with emergency preparedness and demonstrated improvement and statistical significance on the two-tailed <i>p</i> value (<math>p &lt; 0.0001</math>). Refer to findings and results section.</p>	<p>The limitations are the sample size and the inability to include demographic data to maintain anonymity. The view of the participants from a nurse-led minor injury unit that is not affiliated with an emergency department. Also, the scoring system adapted is represented by lower scores instead of higher scores as the original EPIQ scoring system.</p>	<p><b>Level of Evidence: VI</b> The EPIQ tool was used by the staff from a nurse-led minor injury unit to evaluate the adaptability of the tool in the UK and to measure the emergency preparedness familiarity self-perception before and after a learning intervention.</p>

Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>4. (2015). Emergency preparedness education for nurses. <i>Journal of Trauma Nursing</i>, 22(5), 240–248.</p> <p><b>Authors:</b> Georgino, M. M., Kress, T., Alexander, S., &amp; Beach, M.</p>	<p>The purpose of the project was to measure trauma nurse improvement in familiarity with emergency preparedness and disaster response core competencies before and after emergency preparedness education as an addendum in the Trauma Nurse Course.</p>	<p><b>Setting:</b> Level I trauma center in Pittsburgh, PA, U.S.</p> <p><b>Sample:</b> 63 trauma specialty nurses</p> <p><b>Design:</b> Quantitative and qualitative descriptive study</p> <p><b>Procedure:</b> Trauma nurses responded to the adapted EPIQ survey before and after a 2-hour emergency preparedness education including a tabletop exercise. The use of a unique identifier was necessary to compare before and after education results.</p>	<p><b>Independent:</b> NA</p> <p><b>Dependent:</b> Nurse's emergency preparedness competency and self-perception of familiarity before and after education</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> Adapted version of Emergency Preparedness Information Questionnaire (EPIQ) approved by original authors. Instrument was adapted from 44 to 18 questions, the demographic questions were removed, and two questions were added in the posttest. One of the questions was for a free response. Reliability and validity were performed during the implementation of the initial research using EPIQ.</p>	<p>Overall, statistically significant improvement in mean familiarity scores between the pre- and postsurveys (<math>p &lt; 0.001</math>; 98% confidence interval). Psychological issues, and triage and basic first aid had some of the highest overall familiarity. The top three most improved familiarity scores included the ICS; accessing critical resources and reporting; and isolation, quarantine, and decontamination. Refer to findings and results section.</p>	<p>Subjective, ordinal reporting system versus an objective test. Limited time between pre- and posttest. No validity or reliability of the adapted 18 items instrument. Limited time to discuss further or include a case study on biological agents.</p>	<p><b>Level of Evidence: VI</b> In respond to an initiative for the increased emphasis on the U.S. emergency preparedness and disaster management education for healthcare providers, a Level I trauma center conducted a pre- and postemergency preparedness education adapted EPIQ survey. The education included a tabletop exercise. The author recommended the use of disaster preparedness training as a feasible education program that can be incorporated into new nurse or continuing nursing education program nationwide.</p>

Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>5. (2015). Emergency nurses' requirements for disaster preparedness. <i>Trauma Monthly</i>, 20(4), e29033.</p> <p><b>Authors:</b> Seyedin, H., Dolatabadi, Z. A., &amp; Rajabifard, F.</p>	<p>The study was done to assess the level of knowledge on disaster readiness among emergency departments (ED) nurses, to assess their role in disaster response, and to associate the demographic variables with level of readiness among the emergency nurses.</p>	<p><b>Setting:</b> Teaching hospitals affiliated to Iran University of Medical Sciences, Tehran, Iran</p> <p><b>Sample:</b> From a study population of 460 from eight hospitals, 110 emergency nurses were selected using convenient sample. The inclusion criteria were employment in ED for at least 6 months, and having a bachelor or higher degree in nursing.</p> <p><b>Design:</b> Cross-sectional study</p> <p><b>Procedure:</b> Questionnaires were distributed to the nurses by the researchers. Nurses signed a consent form. The questionnaire was completed in the wards in about 30 minutes.</p>	<p><b>Independent:</b> NA</p> <p><b>Dependent:</b> ED Nurses emergency preparedness readiness</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> Demographics information including age, gender, educational level, work experience, years of ED experience, and number of disasters attended in the hospital. Emergency Preparedness Information Questionnaire (EPIQ). Validity tested by the research team and 15 experts. A pilot study was conducted with a sample (<math>n = 30</math>). The Cronbach's Alpha test indicated that items were internally consistent (<math>\alpha = 0.92</math>).</p>	<p>Participants were aged 30–39 years old. 84% were females and 97.3% had a bachelor's degree. Only 3 participants had a postgraduate degree. 59 nurses had less than 5 years' experience in EDs. The EPIQ showed average perceived knowledge of nurses was <math>2.43 \pm 1.01</math>. Highest familiarity with triage and the lowest in assessing the effectiveness of their activities in responding to the large-scale disasters. No relationship between nurses' demographics data and their emergency preparedness level of knowledge. See findings and results section.</p>	<p>Lack of cooperation from nurses to participate in the study.</p>	<p><b>Level of Evidence: IV</b> A cross-sectional study was conducted in Iran to associate participant demographics with level of knowledge on disaster readiness among emergency departments nurses. A convenience sample of 110 nurses was selected, and the participants completed the EPIQ questionnaire in about 30 minutes in their wards after signing a participation consent. The author recommends continuous education on disaster preparedness that includes drill for nurses to become more familiar with the appropriate response to a disaster.</p>

Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>6. (2013). Nurses' preparedness and perceived competence in managing disasters. <i>Journal of Nursing Scholarship</i>, 45(3), 281–287.</p> <p><b>Authors:</b> Baack, S., &amp; Alfred, D.</p>	<p>1. What is the perceived competence of rural nurses regarding their disaster preparedness?</p> <p>2. Which of the variables—individual differences (age, years of experience, and previous disaster experience), self-regulation, and healthcare climate—most influence perceived competence in disaster preparedness?</p> <p>3. Is there a predictive relationship between self-regulation scores and perceived competence in disaster preparedness?</p>	<p><b>Setting:</b> Rural healthcare systems in Panhandle, Texas.</p> <p><b>Sample:</b> 620 nurses</p> <p><b>Design:</b> Descriptive correlational</p> <p><b>Procedure:</b> A link was emailed using the hospital intranet sites.</p>	<p><b>Independent:</b> NA</p> <p><b>Dependent:</b> Nurse's competence in disaster preparedness (EPIQ score)</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> Fifty-eight question survey divided into four main sections including multiple instruments used for this study and demographic information such as age, years of experience, and previous disaster experience. Additionally, a three-question self-regulation (SR) scale, the Emergency Preparedness Information Questionnaire (EPIQ), the Nurse Assessment of Readiness (NAR) scale, and the Job Satisfaction Scale.</p>	<p>The nurses averaged 42 years of age and 15 years of nursing experience. Most respondents were registered nurses (84%) and White (86%). Predominantly represented by medical surgical (19.8%). The nurses' perceived competence in disaster preparedness had a low overall score (median 82.5 &amp; mean of 90). The sum scores of the NAR indicates that nurses do not feel prepared to effectively respond in a disaster situation (<math>n = 618</math>; <math>M 4.2</math>; <math>SD = 1.85</math>; range = 2–10). Previous participation in a major disaster event (<math>r = 0.347</math>, <math>p &lt; .001</math>) and post disaster shelter (<math>r = 0.226</math>, <math>p &lt; .001</math>) were significantly correlated with EPIQ total score. The SR scale score was statically significant for willingness to assume risk of biologic event (<math>t = 3.88</math>, <math>p &lt; .001</math>). See findings and results section.</p>	<p>Results are from a single geographical area. The sample of the study represented only 25% of the accessible population and 4% of all rural nurses in Texas.</p>	<p><b>Level of Evidence: VI</b> In a response on global influences for natural and human-induced disaster and the role of nurses in a disaster event, a study was conducted to analyzed nurses' self-perception of emergency preparedness readiness and factors that may influence their perception. The study was conducted in a rural area of Texas. The results of the study concluded that nurses do not feel prepared to deal with disasters. An aspect of influence for readiness for nurses is having prior experience with disaster management. The author recommends increasing the frequency of disaster preparedness educational activities and for nurses to advocate for more disaster preparedness education in their workplace, community, and colleges.</p>

Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>7. (2017). Nurse self-perceptions of emergency preparedness at a rural hospital. <i>Journal of Emergency Nursing</i>, 43(1), 10–14.</p> <p><b>Authors:</b> Hodge, A. J., Miller, E. L., &amp; Skaggs, M. K. D.</p>	<p>1. Do commonalities exist in perceptions of rural nurses concerning emergency preparedness? 2. Are demographic influences present?</p>	<p><b>Setting:</b> Southern Ohio Medical Center (SOMC), a rural hospital in southeast Ohio</p> <p><b>Sample:</b> Total of 307 nurses (RN, LPN, and APRN)</p> <p><b>Design:</b> Quantitative descriptive study</p> <p><b>Procedure:</b> After the completion of a needs assessment and the identification of gaps in disaster education, the anonymous EPIQ and NAR surveys link were provided to all nurses via the organizational email with a letter explaining the purpose of the study. The email remained available for completion for 30 days.</p>	<p><b>Independent:</b> NA</p> <p><b>Dependent:</b> Nurse’s self-perception of familiarity with emergency preparedness</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> Emergency Preparedness Information Questionnaire (EPIQ) and Nursing Assessment of Readiness (NAR). Two additional questions were added to gain insight on the recent Ebola events. Per the author, the reliability and validity were of the instrument were assessed in previously conducted studies. Additional questions were related to age, experience, and professional status.</p>	<p>Participants were 85% registered nurses, 11.04% LPN, and 3% APRN. Majority were between 21 and 39 years. 31.6% had less than 5 years of service. A correlation between age, experience, and familiarity with emergency preparedness was found. Less than familiar with emergency preparedness = 44.6%. Commitment to participate in emergency preparedness in their community was 53.8%. ED nurses more familiar with emergency preparedness than other nursing specialties. A majority said they had never participated in a major disaster event.</p>	<p>The majority of the nurses were rural RNs; the principal investigator is an employee of the organization, potentially affecting nurses’ participation; and some respondents did not answer all of the survey questions (for statistical analysis, the assumption was made of unfamiliarity with the question). The survey was conducted during the 2014 Ebola crisis.</p>	<p><b>Level of Evidence: VI</b> Inexperience and self-perception of lack of preparedness during a disaster was identified among nurses in SOMC using the EPIQ and NAR instruments. The results identified the risk of ineffective organizational response. Emergency preparedness education was going to be developed and facilitated for the SOMC nurses. The educational components include self-study modules, simulation of disaster triage, allocation of resources, ethical decision making, and debriefing.</p>

Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>8. (2017). A guide to emergency preparedness and disaster nursing education resources. <i>Health Emergency and Disaster Nursing</i>, 4(1), 12–25.</p> <p><b>Author:</b> Nash, T. J.</p>	<p>Explore nurses' emergency preparedness for disaster response and described a variety of educational resources to support nurses' preparedness competencies for disaster situations.</p>	<p><b>Setting:</b> School of Nursing, University of Texas at Tyler, College of Nursing and Health Sciences, Tyler, Texas</p> <p><b>Sample:</b> 686 publications</p> <p><b>Design:</b> Systematic review of descriptive studies</p> <p><b>Procedure:</b> Literature search on eight major databases using terms <i>disaster prep</i> or <i>emergency prep</i> and <i>nursing continuing education</i> from 2005–2015. 686 findings in the literature were evaluated. The applicable literature was organized according to the EPIQ domains. A comprehensive emergency preparedness and disaster nursing training and education guide was created based on this literature search and evaluation.</p>	<p><b>Independent:</b> Nurses' preparedness for disaster response</p> <p><b>Dependent:</b> Nursing emergency preparedness educational resources</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> Emergency Preparedness Information Questionnaire (EPIQ) was used as a conceptual framework for search of emergency preparedness educational resources.</p>	<p>Evidence supports that nurses are not prepared and do not feel comfortable responding to a disaster situation. A reference guide was created with detailed information about resources related to emergency preparedness for nursing professionals.</p>	<p>No limitations were listed in this study.</p>	<p><b>Level of Evidence: V</b> This study was conducted to design a guide with access to emergency preparedness education for nursing professionals in a response to findings in the literature on lack of nursing emergency preparedness to respond to a disaster. The educational content was organized based on the EPIQ core competencies.</p>

Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>9. (2018). Disaster preparedness among nurses: A systematic review of literature. <i>International Nursing Review</i>, 65(1), 41–53.</p> <p><b>Authors:</b> Labrague, L. J., Hammad, K., Gloe, D. S., McEnroe-Pettite, D. M., Fronda, D. C., Obeidat, A. A., Leocadio, M. C., Cayaban, A. R., &amp; Mirafuentes, E. C.</p>	<p>Explored peer-reviewed publications that measure nurses' preparedness for disaster response.</p>	<p><b>Setting:</b> Muscat, Sultanate of Oman</p> <p><b>Sample:</b> 17 articles were selected for the review.</p> <p><b>Design:</b> Systematic review of descriptive studies</p> <p><b>Procedure:</b> Explored peer-reviewed publications that measure nurses' preparedness for disaster response. The electronic databases utilized for search of literature were SCOPUS, MEDLINE, PubMed, CINAHL, and PsychINFO. Keywords included the following: <i>emergency, disaster, disaster preparedness, disaster competencies, disaster nursing, disaster role and nurse</i>. Inclusion criteria: peer-reviewed, English language, published 2006–2016. Exclusion criteria: articles that did not attempt to measure emergency preparedness of nurses.</p>	<p><b>Independent:</b> Nurses' preparedness for disaster response</p> <p><b>Dependent:</b> Emergency preparedness education and health policy</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> Quality of the articles was examined using the appraisal checklist for quantitative studies by Kmet et al. (2004).</p>	<p>It is widely reported that nurses are insufficiently prepared and do not feel confident responding effectively to disasters. Factors that increase preparedness for disaster response include prior experience in a disaster event and disaster-related training.</p>	<p>The one limitation listed is that only studies published in English were reviewed, potentially excluding relevant research published in other languages.</p>	<p><b>Level of Evidence: V</b> Despite the increased focus on disaster preparedness of nurses in recent years, evidence shows that nurses remain inadequately prepared to respond to disasters and are uncertain of their roles. The findings of the review placed emphasis on hospitals to implement policies to address the lack of preparedness. Emergency preparedness education that includes drills and mock exercises is recommended for academic and hospital settings.</p>



Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>10. (2016). Compassion fatigue: A conceptual model for re-entry after disaster relief work in Haiti. <i>HPA Resource</i>, 15(4), 1–18.</p> <p><b>Authors:</b> Klappa, S. G., Crocker, R., Hughes, L. C., Thompson, J. A. I., &amp; Kloppo, S. P.</p>	<p>1. What is the return experience of physical therapists and other health care providers who volunteered in Haiti during disaster relief work?</p> <p>2. Where on the compassion satisfaction/compassion fatigue continuum does this population lie, and specifically, what are their experiences of the compassion fatigue components of secondary traumatic stress and burnout?</p> <p>3. Can risk factors for development of compassion fatigue be identified during the reentry process?</p>	<p><b>Setting:</b> Electronic communications</p> <p><b>Sample:</b> 90 participants completed the ProQOL, and 15 participated in the interviews.</p> <p><b>Design:</b> Descriptive quantitative and qualitative</p> <p><b>Procedure:</b> Potential participants were invited by posting an invitation on the Health Policy and Administration website. Criteria for participation included participation in the disaster relief in Haiti for at least 1 week and at least 21 year of age. Those who accepted the invitation received the link for the ProQOL survey. An additional email was sent to all potential participants with an informed consent for the phenomenological interviews. The interviews were conducted via Skype using an alias. Interviews were recorded and transcribed.</p>	<p><b>Independent:</b> NA</p> <p><b>Dependent:</b> Compassion satisfaction, compassion fatigue, burnout, and secondary traumatic stress</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> The Professional Quality of Life (ProQOL) instrument is a 30-item self-report measure of positive and negative aspects of caring to assess levels of compassion fatigue, burnout, and secondary traumatic stress. Additionally, phenomenological interviews on return experience themes were conducted with a subset of subjects.</p>	<p>The ProQOL results displayed high levels of compassion satisfaction among the participants of the study (<math>M = 43.4</math>, <math>SD = 5.9</math>). Participants scored low for the secondary traumatic stress (<math>M = 21.0</math>, <math>SD = 7.6</math>), and burnout (<math>M = 19.25</math>, <math>SD = 6.6</math>). The qualitative results were divided into two main themes: reentry challenges (personal, family, and professional) and reentry coping strategies.</p>	<p>Two limitations were identified. The external validity of the results may not be robust because they may not apply to other disaster relief work situations. The timing of the data collection: the study aimed for 30 days from return from Haiti, but some responses were received 18 months after returning.</p>	<p><b>Level of Evidence: VI</b> Healthcare professionals who volunteered to assist in Haiti after a 7.0 magnitude earthquake in January 2010 were invited to a study to measure reentry compassion fatigue, burnout, and secondary traumatic stress and other challenges. Understanding the experience of reentry after disaster relief work may assist with developing support measures to mitigate negative consequences.</p>

Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>11. (2018). The disaster preparedness and professional quality of life among nurses in emergency rooms of Regional Emergency Medical Center. <i>Journal of the Chosun Natural Science</i>, 11(4), 184–191.</p> <p><b>Authors:</b> Lee, M.-H., &amp; Kim, K.-H.</p>	<p>The study was conducted to determine the level of disaster preparedness and professional quality of life for emergency room (ER) nurses in regional emergency medical centers.</p>	<p><b>Setting:</b> Regional emergency centers, South Korea</p> <p><b>Sample:</b> 56 emergency nurses</p> <p><b>Design:</b> Descriptive study</p> <p><b>Procedure:</b> After approval by the Institutional Review Board and ER leadership permission, an anonymous questionnaire was distributed. Criteria selection for the study were the ability to communicate and understand the questions, voluntarily agree to participate, and more than 6 months of emergency room experience and trauma events.</p>	<p><b>Independent:</b> NA</p> <p><b>Dependent:</b> Compassion satisfaction, burnout, and secondary traumatic stress</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> In addition to general characteristics of the participants, two instruments were used in the study. The Disaster Preparedness Questionnaire for Nurses (DPQ-N), which consists of 50 questions in nine areas related to disaster management. The second instrument was the Korean Version 5 of the Professional Quality of Life Scale, which consists of 10 questions for each domain on compassion satisfaction, burnout, and secondary traumatic stress.</p>	<p>Participants' disaster preparedness was different according to position, type of working, and frequency of traumatic events. There were significant differences by gender, desire for continuous work in the emergency room, and job satisfaction in compassion satisfaction. Burnout differed according to gender, choice of an emergency department, desire for continuous work in the emergency room, and job satisfaction. Disaster preparedness and compassion satisfaction had positively significant correlations. See findings and results section.</p>	<p>The study limitations include generalization of the results because it was conducted only for the nurses working in the ER in two regions. The author also recommends interviews with the ER nurses to acquire more in-depth information.</p>	<p><b>Level of Evidence: VI</b> A study was conducted in two regions in South Korea among 56 ER nurses to determine the correlation between emergency preparedness and professional quality of life. Results showed that there is a positively significant correlation between disaster preparedness and compassion satisfaction that should be considered to improve disaster preparedness among nurses.</p>

Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>12. (2018). Factors related to the fatigue of relief workers in areas affected by the Great East Japan Earthquake: Survey results 2.5 years after the disaster. <i>BioPsychoSocial Medicine</i> 12(4), e29033.</p> <p><b>Authors:</b> Setou, N., Fukumori, T., Nokao, K., &amp; Maeda, M.</p>	<p>To identify personal stressors related to the fatigue of relief workers</p>	<p><b>Setting:</b> Iwate and Miyagi, Japan</p> <p><b>Sample:</b> 119 relief workers including nurses, care managers, pharmacists, and psychologists</p> <p><b>Design:</b> Cross-sectional</p> <p><b>Procedure:</b> The ProQOL questionnaire was directly mailed or distributed to relief workers with the assistance of local governments and professional organizations. The surveys were anonymous and participation in the study was voluntary.</p>	<p><b>Independent:</b> Effects of earthquake</p> <p><b>Dependent:</b> Relief workers' fatigue</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> Kessler Psychological Distress Scale (K6) measures general psychological distress and includes symptoms of depression and anxiety in the previous 30 days. The Professional Quality of Life (ProQOL) measure to examine the relation of "fatigue" to psychological distress and compassion fatigue. Also, basic demographic characteristics, including gender, age, marital status, occupation, and living arrangements. Additionally, 11 items related to common complaints made by relief workers at the disaster site.</p>	<p>The results revealed that 48% of the participants were experiencing strong fatigue 2.5 years after the disaster. Significant differences were seen in items related to female gender, sleep disturbance, dietary problems, guilt over taking a break, no confidence to come to work, loss of important persons, loss of job, loss of one's own health or a family member, loss of community, and trust in others. See findings and results section.</p>	<p>The use of questionnaires instead of interviews. No clear validity in instrument used to measure fatigue with yes/no answers. Variables were created by authors and not from a standardized scale.</p>	<p><b>Level of Evidence: VI</b> In a study to better understand the factors related to fatigue in relief workers 2.5 years after an earthquake, results indicate that relief workers who complain of fatigue may have continued to experience deep feelings of loss even if they had recovered the material aspects. Long-term support is recommended to mitigate fatigue.</p>

Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>13. (2010). <i>The Concise ProQOL Manual</i> (2<sup>nd</sup> ed.). ProQOL.org</p> <p><b>Authors:</b> Stamm, B. H.</p>	<p>To identify levels of compassion satisfaction and compassion fatigue in people who care for others.</p>	<p><b>Setting:</b> Pocatello, Idaho</p> <p><b>Sample:</b> 1,187</p> <p><b>Design:</b> Descriptive</p> <p><b>Procedure:</b> Survey</p>	<p><b>Independent:</b> NA</p> <p><b>Dependent:</b> Compassion satisfaction and compassion fatigue</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> The Professional Quality of Life measure (ProQOL), used to identify levels of compassion satisfaction, burnout, and secondary traumatic stress in people who provide care for others. There is a scale to measure each component of the instrument. The instrument has 30 items. There have been over 200 published papers to prove validity of the instrument.</p>	<p>The inter-scale correlations show 2% shared variance with secondary traumatic stress and 5% shared variance with burnout. Although there is shared variance between burnout and secondary traumatic stress, the two scales measure different constructs, with the shared variance likely reflecting the distress that is common to both conditions. The shared variance between these two scales is 34%. See findings and results.</p>	<p>No limitations are listed.</p>	<p><b>Level of Evidence: VI</b> The ProQOL instrument measures positive and negative effects of working with people. It measures levels of compassion satisfaction and compassion fatigue in individuals who care for others. Compassion fatigue includes both burnout and secondary traumatic stress. The ProQOL is not a diagnostic tool for psychiatric diagnosis but could help identify high levels of burnout and secondary traumatic stress indicating the need for further medical evaluation.</p>

Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>14. (2020). Predictors of professional quality of life among nursing staff following the Taiwan Formosa Fun Coast explosion. <i>Burns</i>, 46(2), 423–429.</p> <p><b>Authors:</b> Lu, M.-H., Weng, L.-T., Chen, Y.-L., Lin, C., Wang, C.-H., &amp; Pan, H.-H.</p>	<p>The study aimed to explore the predictors of professional quality of life, including compassion satisfaction and compassion fatigue, among the nursing staff involved in the Formosa Fun Coast explosion.</p>	<p><b>Setting:</b> Medical center in Northern Taiwan</p> <p><b>Sample:</b> 165 nurses using convenience sample</p> <p><b>Design:</b> Cross-sectional</p> <p><b>Procedure:</b> Information not provided in the article, but it was a survey.</p>	<p><b>Independent:</b> Formosa Fun Coast explosion</p> <p><b>Dependent:</b> Nurses' professional quality of life, including compassion satisfaction and compassion fatigue</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> Demographics, work-related characteristics, the Perceived Stress Scale (PSS) and the Professional Quality of Life measure (ProQOL). The content validity index of the questionnaire used was 0.97.</p>	<p>The nurses' length of service in nursing (<math>p = 0.029</math>) and perceived stress level (<math>p = 0.020</math>) were identified as predictors of compassion fatigue. Nurses' age (<math>p = 0.044</math>) and perceived stress level (<math>p &lt; 0.001</math>) were key predictors of burnout. There were no statistically significant predictors of secondary trauma among nurses.</p>	<p>The study generalizability is limited because the data collection was from nursing staff from only one medical center.</p>	<p><b>Level of Evidence: VI</b> On June 27, 2015, an explosion in Formosa Fun Coast, Taiwan, resulted in 11 deaths and 488 injured victims. 85% of the victims experienced severe burns. The nurses in the medical center where the patients were treated expressed substantial amounts of stress. A study was conducted to examine the relationship between perceived stress and professional quality of life in nursing staff caring for burn patients during major disasters. This study showed that nursing staff with shorter length of service in nursing and higher level of perceived stress were likely to experience higher levels of compassion satisfaction while caring for the patients from the explosion. In addition, nurses who were older and perceived a higher level of stress tended to experience a higher level of compassion fatigue and burnout.</p>

Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>15. (2019). Clade X: A pandemic exercise. <i>Health Security</i>, 17(5), 410–417.</p> <p><b>Authors:</b>            Watson, C., Toner, E. S., Shearer, M. P., Rivers, C., Meyer, D., Hurtado, C., Watson, M., Gronvall, G. K., Adalja, A. A., Sell, T. K., Inglesby, T., &amp; Cicero, A.</p>	<p>The objective of Clade X was to create awareness of policy solutions that could substantially improve preparedness for a pandemic in the United States.</p>	<p><b>Setting:</b> Johns Hopkins Center for Health Security, Washington, DC</p> <p><b>Sample:</b> Nine high-ranking U.S. government officials</p> <p><b>Design:</b> Pandemic tabletop exercise</p> <p><b>Procedure:</b>            A pandemic tabletop exercise was created based on learning objectives derived from actual disease outbreaks from recent years.</p>	<p><b>Independent:</b>            Clade X pandemic tabletop exercise</p> <p><b>Dependent:</b>            Policy solutions</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b>            Pandemic tabletop exercise related to a novel pathogen moderately contagious through respiratory droplets that initiate in Germany and Venezuela. The virus spreads globally with cases doubling every 2 weeks. Crises pile up rapidly. The first U.S. case occurs with a foreign exchange student from Germany.</p>	<p>The identified areas for improvements are:</p> <ol style="list-style-type: none"> <li>1. Capability to produce new vaccines and drugs for novel pathogens within months, not years.</li> <li>2. A strong and sustainable global health security system accomplished by creating a better partnership with WHO and other nations.</li> <li>3. A highly capable national public health system that can manage the challenges of pandemic response.</li> <li>4. National plan to effectively harness all U.S. healthcare assets in a catastrophic pandemic.</li> <li>5. An international strategy for addressing research that increases pandemic risk.</li> <li>6. A national security community well prepared to prevent, detect, and respond to infectious disease emergencies.</li> </ol>	<p>No limitations were listed.</p>	<p><b>Level of Evidence: VII</b>            A tabletop case scenario was created to identify gaps in the process to respond to a pandemic in the United States. Nine players representing different U.S. government departments and agencies discussed how to respond to the case scenario.            Findings from the Clade X exercise were divided into themes on areas that require improvement for high-level policy goals to prevent or mitigate the effects of a pandemic.</p>

Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>16. (2019). Nurses' disaster preparedness and core competencies in Turkey: A descriptive correlational design. <i>International Nursing Review</i>, 66(2), 165–175.</p> <p><b>Authors:</b> Taskiran, G., &amp; Baykal, U.</p>	<p>1. What are nurses' experiences, opinions, and training needs regarding disasters?</p> <p>2. What are nurses' perceptions of their own disaster preparedness and core competencies?</p> <p>3. Is there a relationship between nurses' perceptions of disaster preparedness and core competencies?</p> <p>4. Are there any differences between nurses' sociodemographic characteristics and perceptions of disaster core competencies?</p>	<p><b>Setting:</b> University Hospital in Aegean Region, Turkey</p> <p><b>Sample:</b> Convenience sampling of 406 nurses with a bachelor's degree and a minimum of 6 months experience</p> <p><b>Design:</b> Descriptive correlational study</p> <p><b>Procedure:</b> Data was collected from June to October 2014 after collecting the nurses' consent to participate by completing a questionnaire provided.</p>	<p><b>Independent:</b> NA</p> <p><b>Dependent:</b> Disaster training and core competencies. Nurses sociodemographic, experiences, opinions and perceptions.</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> Data collection included three parts: An introductory information form that consisted of 13 questions of occupational and personal characteristics of the participants. A single-item Visual Scale and the Nurses' Perception of Disaster Core Competencies Scale (NPDCC). The NPDCC instrument includes 45 items and five subscale tools developed and validated in a Turkish sample.</p>	<p>Nurses' perceptions of their own disaster preparedness mean score was <math>4.62 \pm 1.74</math> (min–max: 0–10 points). The total mean score of NPDCC was <math>133.96 \pm 26.08</math>. Technical skills scored the highest (<math>44.52 \pm 9.53</math>), and critical thinking skills scored lowest (<math>10.47 \pm 2.94</math>). A positive and significant correlation was found between nurses' perceptions of their own disaster preparedness and the mean scores of NPDCC and subscales (<math>p &lt; 0.001</math>). Age of 33 and older, critical thinking, and communication skills had statistically significant (<math>p \leq 0.05</math>) compared to nurses between 28 and 32. Nurses with prior disaster experience had significantly higher total NPDCC scores than others (<math>p \leq 0.05</math>).</p>	<p>The study was conducted in a single hospital. Caution is recommended in generalizing the findings of this study to other regions. Additionally, the sample was selected with convenience sampling method, and many nurses did not have the opportunity to participate due to their vacation time.</p>	<p><b>Level of Evidence: VI</b> Nurses have been identified as first responders during a disaster event. However, the literature discusses the lack of disaster preparedness training among nursing. A descriptive study to correlate the nurses' sociodemographic characteristics, experiences, opinions, and perceptions of disaster preparedness was conducted in a hospital in Turkey. The study concluded that there is a low level of disaster preparedness, nurses do not consider themselves competent on disaster core competencies, and nurses had insufficient disaster experience. There is need to revise nursing theory and practice regarding disaster nursing and incorporate regular training, drills, and tabletop exercises. The author recommends the implementation of national and institutional policies and protocols for disaster management.</p>

Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>17. (2019). Using tabletop exercise as an innovative and practical teaching strategy in response to external disaster scenarios. <i>Nursing Education Perspectives</i>, 40(1), 62–64.</p> <p><b>Authors:</b> Evans, C. A., &amp; Schwartz, R.</p>	<p>Use of disaster tabletop exercise in the classroom to demonstrate foundational nursing education knowledge, skills, and abilities.</p>	<p><b>Setting:</b> Classroom for an academic elective senior course titled Role of the Disaster Nurse</p> <p><b>Sample:</b> 25 senior nursing students</p> <p><b>Design:</b> Disaster tabletop exercise</p> <p><b>Procedure:</b> 75-minute disaster tabletop exercise with no teaching or content review prior the exercise. A facilitator provided a scenario related to an external disaster that requires the increase of the hospital capacity, staff, resources, and supplies. Students were assigned roles as emergency operation contacts. The answers discussion took place during the after-exercise evaluation.</p>	<p><b>Independent:</b> Disaster tabletop exercise</p> <p><b>Dependent:</b> Nursing education knowledge, skills, and abilities</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> Tabletop exercises allow for open-ended experiences that promote thinking and problem solving during the exercise. The after exercise allows for group discussion and self-reflection to fill the gaps related to knowledge on policy, procedures, or competency.</p>	<p>The after-exercise evaluation included discussion to correct patient care decisions, learning transfer strengths and challenges. Overall, the nurses demonstrated transfer of knowledge from early coursework using the nursing process and evidence-based clinical judgement.</p>	<p>No limitations were listed.</p>	<p><b>Level of Evidence: VII</b> The use of tabletop exercises in the academic setting is designed to identify the ability of the participants to apply their knowledge to novel circumstances. Tabletop exercises do not replace real-life experiences but are vital to disaster preparedness and for students' assessments of their decisions in a disaster situation.</p>



Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>18. (2019). Nursing students' transfer of learning during a disaster tabletop exercise. <i>Nurse Educator</i>, 44(5), 278–283.</p> <p><b>Authors:</b> Evans, C. A., Baumberger-Henry, M., Schwartz, R., &amp; Veenema, T.</p>	<p>1. Score and describe the transfer of learning from basic medical-surgical coursework to student decisions made during a disaster scenario tabletop exercise.</p> <p>2. Identify students' attitudes regarding their use of their previous learning during the tabletop experience.</p>	<p><b>Setting:</b> Classroom at a mid-Atlantic metropolitan university</p> <p><b>Sample:</b> Convenience sample of 114 senior nursing students</p> <p><b>Design:</b> Descriptive study using a researcher-designed disaster scenario tabletop exercise to measure transfer of learning to students' decisions</p> <p><b>Procedure:</b> Instruction, consent, and demographic survey was completed during a previous class day in 10 minutes. A 50-minute tabletop exercise was conducted in which students were given a disaster knowledge test, a sample patient scenario to determine disposition, a Tabletop Matrix, and Tabletop Attitude Questionnaire.</p>	<p><b>Independent:</b> Disaster tabletop scenario</p> <p><b>Dependent:</b> Nursing students' attitudes and transfer of learning from basic medical-surgical</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> Demographic survey. The Disaster Knowledge Test to evaluate students' disaster-related basic medical-surgical learning. The results demonstrated a content validity index of 0.96. The Tabletop Matrix served as a decision guide for students. The evaluation of the instrument produced an interrater agreement of .95 to .98. Tabletop Attitude Questionnaire for students to self-evaluate their transferred basic medical-surgical learning during the tabletop exercise.</p>	<p>Tabletop Matrix scores were tallied for a possible score of 0 to 25. The mean (SD) students' scores are: Tabletop Matrix: infection, 17.61(6.03); bleeding, 14.93 (5.36); pain, 11.17 (5.08); electrolyte, 13.73 (6.19); disaster knowledge: 19.46 (3.08); and attitudes: 51.41 (5.43).</p>	<p>The study was conducted in one university with little gender and race diversity. It was a challenge to determine learning transfer because of the abstract nature of the exercise. The students' decisions might be different when treating actual patients.</p>	<p><b>Level of Evidence: VI</b> Disaster preparedness is an expected competency for new graduate nurses. The use of a tabletop exercise for disaster education is an activity directed to solve problems and transfer the learning gained from nursing courses such as medical-surgical. The study purpose was to score transfer of learning from the senior nursing students using a disaster tabletop exercise. The instruments used in the study provided learning transfer descriptions that were used to provide feedback to the participants to fill the learning gap.</p>

Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>19. (2019). Extending the reach of pediatric emergency preparedness: A virtual tabletop exercise targeting children’s needs. <i>Public Health Reports</i>, 134(4), 344–353.</p> <p><b>Authors:</b> So, M., Dziuban, E. J., Franks, J. L., Cobham-Owens, K., Schonfeld, D. J., Gardner, A. H., Krug, S. E., Peacock, G., &amp; Chung, S.</p>	<p>1. Exercise effectiveness: To what extent and how does participating in the virtual tabletop exercise (VTTX) result in improved pediatric preparedness capabilities at the state or local level?</p> <p>2. Follow-up actions: To what extent and in what ways do participants engage in actions that support improved planning as a result of participating in the VTTX?</p> <p>3. Strengths and weaknesses: What aspects of the VTTX structure, process, and/or logistics helped or hindered meeting VTTX objectives?</p>	<p><b>Setting:</b> Videoconferencing, Atlanta, Georgia</p> <p><b>Sample:</b> 26 pediatrician and public health practitioners from four states</p> <p><b>Design:</b> Virtual tabletop exercise</p> <p><b>Procedure:</b> CDC and AAP planning team selected participants from FEMA Region VII with at least 2 pediatricians and 2 local public health officials. Orientation provided via phone. A 4-hour exercise in a smallpox outbreak was conducted via Zoom.</p>	<p><b>Independent:</b> Pediatric VTTX</p> <p><b>Dependent:</b> Improved pediatric preparedness capabilities at the state or local level. Engage in actions that support improved planning.</p>
Measures/Reliability Validity	Results	Limitations	Summary: Decision/Reservations
<p><b>Instruments:</b> A survey was developed based on pediatric preparedness planning for self-rated knowledge and confidence to fulfill key preparedness capabilities, perceptions of state strengths and weaknesses, collaboration and communication strategies, intended changes after participation, perceived degree of collaboration between sectors, perception of the most and least beneficial aspects of the exercise, and set of questions probing participants about the extent to which stated exercise objectives were met. Also, the Strategic Alliance Formative Assessment Rubric (SAFAR).</p>	<p>Participants reported a greater ability to identify their state’s pediatric emergency preparedness (<math>p = .01</math>), strengths, and weaknesses after the exercise compared with before the exercise. There were significant changes on the knowledge and confidence of the participants (<math>p = .08</math>). There was a statistically significant increase (<math>p &lt; 0.05</math>) on the SAFAR domains related to collaboration between pediatrics and public health.</p>	<p>The sampling approach limited the generalization of the findings to other sectors. Difficulty understanding the respondent’s true intent during the analysis of the qualitative data from the open-ended sources. Social desirability bias was of concern because planning team members were involved in funding decisions. The power of the data analysis was limited due to the inability to collect data 1 month after the exercise.</p>	<p><b>Level of Evidence: VI</b> In February 2017, the American Academy of Pediatrics (AAP) and Centers for Disease Control and Prevention (CDC) hosted a virtual tabletop exercise using the Federal Emergency Management Agency (FEMA) models that simulated a multistate disease outbreak among children. The objectives of the VTTX were met, demonstrating statistically significant improvements immediately after the exercise and up to 6 months later.</p>

Author/Number	Research Questions/Hypothesis	Methods	Study Variables
<p>20. (2015). Factors that influence the development of compassion fatigue, burnout, and compassion satisfaction in emergency department nurses. <i>Journal of Nursing Scholarship</i>, 47(2), 186–194.</p> <p><b>Authors:</b> Hunsaker, S., Chen, H.-C., Maughan, D., &amp; Heaston, S.</p>	<p>1. What is the prevalence of compassion satisfaction (CS), compassion fatigue (CF), and burnout among emergency department (ED) nurses?</p> <p>2. What demographic characteristics such as age and gender are associated with the prevalence of CS, CF, and burnout among ED nurses?</p> <p>3. What work-related characteristics such as educational level, years in nursing, shift length, years worked in the ED, hours worked per week, and having adequate manager support are significantly associated with the prevalence of CS, CF, and burnout among ED nurses?</p> <p>4. To what extent do the variables of demographics and work-related characteristics predict the prevalence of developing CS, CF, and burnout among ED nurses, respectively?</p>	<p><b>Setting:</b> United States</p> <p><b>Sample:</b> 284 registered nurses who worked in EDs throughout the United States</p> <p><b>Design:</b> Nonexperimental, descriptive, and predictive study</p> <p><b>Procedure:</b> Survey packet that included a letter explaining the study, an informed consent letter, a copy of the demographic questionnaire and the ProQOL scale was mailed to 1,000 potential participants.</p>	<p><b>Independent:</b> NA</p> <p><b>Dependent:</b> CS, CF, and burnout</p>
<p><b>Measures/Reliability Validity</b></p>	<p><b>Results</b></p>	<p><b>Limitations</b></p>	<p><b>Summary: Decision/Reservations</b></p>
<p><b>Instruments:</b> Demographics and Professional Quality of Life (ProQOL) scale version 5 questionnaire. The level was set at 0.05 for statistical significance.</p>	<p>Overall low average levels of CF and burnout and average to high levels of CS among the ED nurses. Manager support led to a higher level of CS (<math>t = 3.99, p = .001</math>) and a lower level of compassion fatigue (<math>t = -2.89, p = .005</math>) and burnout (<math>t = -5.64, p = .001</math>). The older the nurse and longer working experience, the higher the levels of CS (<math>r = .260, p = .001</math>).</p>	<p>Small sample size was the first limitation identified. Another limitation was that CS, CF, and burnout were measured at a single point in time. The individuals' assessments of their perceptions could change over time based on work-related conditions.</p>	<p><b>Level of Evidence: VI</b> Legislative changes basing hospital reimbursements on patient experience have added additional demands to the fast-paced and complex patient loads of the ED specialty. A study to determine the prevalence of CS, CF, and burnout among U.S. ED nurses was performed. Results showed low levels of CF and burnout among ED nurses. However, age, nursing experience, and management support has an impact on CF.</p>

## **Appendix B: Statement of Mutual Agreement**

### **DNP Project Title**

The impact of disaster tabletop exercises on the nursing knowledge of emergency preparedness and the influence on professional quality of life.

### **Description of the DNP Project**

The DNP project is about the use of disaster tabletop exercise methodology as part of the emergency preparedness education for the Emergency Department (ED) nurses at Doctors Hospital in Coral Gables, Florida. The hospital is one of the ten entities from Baptist Health South Florida. The hospital has 20 ED rooms, and receives 22,000 visits a year. The literature discusses the steady increase in disasters and the lack of knowledge of emergency preparedness among nurses (See attached documentation). Nursing satisfaction can be negatively impacted and compassion fatigue is experienced by responders who are frontline providers during disaster, such as nurses. The use of tabletop exercises assists in clarifying roles and responsibilities during an emergency situation/ and identifying any preparedness gaps. Currently, all Doctors Hospital ED nurses attend an annual mandatory Hazmat and Augmented Personal Protective Equipment class. However, the courses do not include a tabletop exercise to evaluate the transfer of knowledge based on the eight-core competencies of emergency preparedness. After the ED nurses participate in the emergency preparedness tabletop exercises, the ED nurses may display an increased knowledge of emergency preparedness, which may influence their professional quality of life. There will be no use of facilities, personnel, consultants or other OSF resources.

### **Purpose**

The purpose of the study is to evaluate the emergency preparedness knowledge and professional quality of life of the ED nurses at Doctors Hospital to identify the nurses' learning needs and provide emergency preparedness education utilizing evidence-based practices, such as a tabletop exercise, with the intention to improve patient safety, and outcomes, and staff satisfaction.

### **On-site Activities**

On-site activities include project team meetings, ED staff meetings, shift huddles, and emergency preparedness classes. The role and level of participation of agency team members will include to oversee and approve the components and interventions related to the study. Access to the ED nurses' names and shifts will be obtained from the agency records as needed. All study outcomes will be disclosed in aggregate.

### **Products from DNP Project**

The intellectual property rights will be the ownership of the DNP student Vivian Fuentes. Doctors Hospital will hold the right to use the study information.

**Understanding of DNP Project**

Written and oral communication concerning the DNP Project includes the final report, abstract and publication, or oral presentation of any aspect of the DNP Project. Doctors Hospital will be mentioned within the DNP project. References may include a final report, abstract, professional presentations, and professional publications of the DNP Project. There will be no restrictions in the discussion of the DNP Project details with the Doctors Hospital Chief Nursing Officer or the ED leadership team. The outcomes will be disclosed in aggregates.

This Statement of Mutual Agreement was created by Vivian Fuentes MSN, RN, CEN, Dr. Griselle Pastor Agency Representative, and Dr. Kelly Cone DNP Project Advisor. Vivian is a DNP student who is conducting the DNP project for Saint Francis Medical Center College of Nursing. Dr. Kelly Cone DNP Project Advisor and Dr. Griselle Pastor is the Agency Representative.

The following agree to the terms and conditions of the DNP project on the impact of disaster tabletop exercises on the nursing knowledge of emergency preparedness and the influence of professional quality of life.

Vivian Fuentes MSN, RN, CEN  
Vivian Fuentes MSN, RN, CEN  
DNP Student  
June 26, 2020



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Dr. Griselle Pastor DNP, MBA, RN, NE-BC  
Agency Representative  
June 26, 2020

Kelly Jo Cone, RN, PhD, CNE  
Dr. Kelly Cone RN, PhD, CNE  
DNP Project Advisor  
June 26, 2020

## **Appendix C: DNP Project Summary for OSF College of Health Sciences President**

**Project Site:** Doctors Hospital in Coral Gables, Florida.

**Project Title:** The impact of disaster tabletop exercise on the nursing knowledge of emergency preparedness and the influence on professional quality of life.

**Project Manager:** Vivian Fuentes Sanchez, MSN, RN, CEN

### **Description of Project:**

Research studies have revealed a general lack of knowledge on emergency preparedness among nurses (Labrague et al., 2018), causing stress and fear while responding to a disaster situation increasing patient morbidity and mortality rates (Georgino et al., 2015). Frontline responders, such as emergency department nurses, are at risk of experiencing compassion satisfaction and compassion fatigue, which are the elements of professional quality of life (Stamm, 2010). As per Veenema et al., (2020), similar findings were gathered from the American Nurses Association survey related to the nursing response during the recent COVID-19 pandemic. Out of 32,000 participants in the study, only 11% felt prepared to respond to a disaster event. Also, nurses have reported being mentally, physically, and emotionally exhausted and being fearful of becoming infected or infecting a loved one (Veenema et al., 2020). Lee and Kim (2018) found a significant positive correlation between disaster preparedness and compassion satisfaction. Nurses' willingness to participate in a disaster event is associated with their perceived competence in emergency preparedness (Baack & Alfred, 2013). Mirzaei et al. (2020) demonstrated that participating in a tabletop exercises increased nurses' disaster preparedness. The use of tabletop exercises in emergency preparedness education allows the participant to demonstrate the transfer of knowledge, skills, and abilities during realistic case scenarios and identify any organizational emergency preparedness gap (Evans & Schwartz, 2019).

This DNP led quality improvement project aims to improve the Doctors Hospital emergency department nurse's knowledge of disaster preparedness and help reduce compassion fatigue and increase compassion satisfaction. The emergency preparedness education will be created in collaboration with the BHSF Emergency Preparedness Department.

The Emergency Preparedness Information Questionnaire (EPIQ) has been used in multiple research studies to evaluate the nurse's self-perception of knowledge on emergency preparedness (Labrague et al., 2018). The questionnaire consists of eighteen questions based on the eight core competency dimensions for readiness in a large-scale emergency. The dimensions include triage and basic first aid; detection; ability to access critical resources and reporting; the incident command system; isolation, quarantine, and decontamination; psychological issues, epidemiology, and clinical decision making; and communication and connectivity (Wisniewski et al., 2004). Also, Professional Quality of Life (ProQOL) has been used to measure compassion satisfaction and compassion fatigue among frontline providers (Stamm, 2010). These two tools have been tested by the authors and have shown to be valid and reliable instruments. They will be used to assess the impact of the quality improvement project.

**Needs Assessment:**

**Current practice:** The emergency preparedness education at Doctors Hospital consists of a yearly mandatory Hazmat and Augmented Personal Protective Equipment class. Class content includes information about only some of the eight dimensions. Classes combine lecture methodology and a hands-on practice in donning and doffing personal protective equipment but do not include tabletop exercises.

**Quality Improvement:** As part of the annual required training, the emergency department nurses will be required to attend a new emergency preparedness class. The class will be incorporating the eight dimensions of emergency preparedness and a new delivery method to include tabletop exercises to validate the transfer of knowledge. The classes will be offered for groups of no more than ten participants. The tabletop exercise is planned to be facilitated by the end of October through beginning of November 2020 at Doctors Hospital or virtually. Three dates and times will be offered to cover all shifts and for the nurses to register via the Baptist Health University in one of the classes.

The outcomes of the education will be measured using the Kirkpatrick training evaluation model. The first level of the model is the reaction of the participants and this level will be evaluated using a class evaluation. The second level of the Kirkpatrick model is the evaluation of the participants learning. This level will be measured using the tabletop exercise. The third level of the model is behavior. This level is evaluated by asking the participants about previous emergency preparedness education and their perception on the influence of that education on their current performance. The last level of the model is results, and it will not be measure in this project. Also, nurses who attend the annual required education will be provided the opportunity to participate in a pre/post survey to assess the effectiveness of the quality improvement project. The voluntary and anonymous survey includes questions about the participant's demographics, the EPIQ, and the ProQOL instruments (see Appendix D). A unique identifier will be requested to link the pre and post results of each participant. Approval to use the EPIQ and ProQOL instruments has been received from the authors.

- Pre-survey will be delivered August 2020 to the emergency department nurses by Vivian Fuentes (project lead), using a hardcopy or an electronic version via REDCap survey during the unit staff meeting and huddles before the nurse initiates their work shifts.
- Post-survey will be delivered to the nurses by the project lead using a hardcopy survey or an electronic version via REDCap after completing the emergency preparedness education and tabletop exercise.

Statistical analysis and pre/post survey results will be used to assess the impact of the emergency preparedness knowledge post education and to measure any changes in compassion satisfaction and compassion fatigue. The demographics will correlate with the participant's characteristics with elements related to emergency preparedness knowledge and professional quality of life.

**Documents Attached for Review:** Sections I and II of the DNP Project, literature review tables (see Appendix A), statement of mutual agreement (see Appendix B), action plan (see Appendix C), Baptist Health South Florida request for Institutional Review Board, and survey (see Appendix D).

Submitted By: Kelly Jo Cone, RN, PhD, CNE  
Project Advisor Signature Date

Project Manager: Vivian Fuentes, MSN, RN, CNE July 29, 2020  
Project Manager Signature Date

OSF College of Health Sciences President: *Audie Adewise* July 31, 2020  
OSF College of Health Sciences President Signature Date



**Appendix D: Peoria IRB Determination of Not Research Letter**

Peoria Institutional Review Board  
One Illini Drive  
Peoria, Illinois 61605

FWA 00005172

IRB #00000688  
IRB #00000689

DATE: September 16, 2020

TO: Vivian Fuentes Sanchez, MSN  
FROM: University of Illinois College of Medicine at Peoria IRB 1

STUDY TITLE: [1654318-1] The impact of disaster tabletop exercise on the nursing knowledge of emergency preparedness and the influence of professional quality of life.

IRB REFERENCE #:  
SUBMISSION TYPE: New Project

ACTION: DETERMINATION OF NOT RESEARCH  
DECISION DATE: September 16, 2020

Thank you for your submission of New Project materials for this research study. University of Illinois College of Medicine at Peoria IRB 1 has determined this project does not meet the definition of research under the purview of the IRB according to federal regulations.

We will put a copy of this correspondence on file in our office.

If you have any questions, please contact Mindy Reeter at 309 680 8631 or [mreeter@uic.edu](mailto:mreeter@uic.edu). Please include your study title and reference number in all correspondence with this office.

cc:

**Appendix E: BHSF Request for Determination Approval Letter**

8900 North Kendall Drive  
Miami, Florida 33176-2197  
Tel: 786-596-1980  
BaptistHealth.net

**Non-Human Subjects Research Determination**

October 11, 2020

Ms. Vivian Fuentes Sanchez  
Clinical Learning Educator  
Department of Clinical Learning  
Corporate  
9163 SW 227<sup>th</sup> Street  
Unit 3  
Cutler Bay, FL 33190

Title of Project: The impact of disaster tabletop exercise on the nursing knowledge of emergency preparedness and the influence on professional quality of life

Dear Ms. Fuentes Sanchez,

On October 11, 2020, an IRB Administrator reviewed and approved your above-referenced request for determination if planned activity constitutes human subjects research. Based on the information submitted for review, the purpose of your project is to improve the emergency department nurses' knowledge of disaster preparedness at Doctors Hospital; this is a quality improvement project. As such, your project **does not constitute human subjects research.**

The materials submitted and considered for review of this project included:

1. Request for Determination if Planned Activity Involves Human Subjects Research (application received 9/16/2020)
2. Survey
3. University of Illinois College of Medicine Not Research Determination Letter dated 9/16/2020

This review and determination is based only on the information provided to the IRB Office and is not valid if the proposed project is not exactly as described, or if additional information (including grants, contracts or other information) has been withheld.

The IRB Office must be notified if the proposed activity changes and becomes research. Research involving human subjects must receive IRB review and approval prior to implementation.

You may contact the IRB Office at 786-527-9280 if you have any questions or require further information.

Sincerely,

A handwritten signature in black ink that reads "Natalie James".

Natalie James  
IRB Manager  
BHSF Institutional Review Board

/nj

### Appendix F: Action Plan

Student Name: Vivian Fuentes Sanchez

Purpose: This action plan outlines specific components of a plan to promote:

For Emergency Department nurses, does the use of a tabletop exercise on emergency preparedness education increase the knowledge of emergency preparedness and change the perception of professional quality of life during a disaster event compared to nurses who receive only standard emergency preparedness education?

SECTION	OBJECTIVES	ACTION STEPS	ACCOUNTABLE PERSON(S)/ PROJECTED COMPLETION DATES
I.	I. To identify potential topics for an evidence-based practice project.	A. Potential topics will be elicited from current literature review.	VFS, June 2020
		B. Topics will be prioritized based on the research of the literature and based on priority for nursing and the organization and the likelihood to improve quality and safety of care.	VFS, June 2020
		C. Contact key stakeholders outside team to elicit their support. <ul style="list-style-type: none"> <li>• Chief Nursing Officer</li> <li>• Emergency Department (ED) leaders: Director, Manager, and Patient Care Supervisors.</li> <li>• ED Clinical Nurse Educator</li> <li>• Emergency Preparedness Manager and Educator</li> <li>• Nurse Scientist</li> <li>• Safety Manager</li> <li>• Performance Improvement</li> <li>• Staff nurse</li> </ul>	VFS June, 2020

SECTION	OBJECTIVES	ACTION STEPS	ACCOUNTABLE PERSON(S)/ PROJECTED COMPLETION DATES
	<p>II. To find and critique evidence on the topic of the impact of disaster tabletop exercises on the nursing knowledge of emergency preparedness and the influence of professional quality of life.</p>	<p>A. Do an electronic search.            -Databases: CINAHL, Ovid, PubMed, and Google Scholar            -Keywords: emergency preparedness, disaster preparedness, emergency preparedness information questionnaire, emergency preparedness tabletop, disaster preparedness education, and professional quality of life.            -Years: 2015–2020</p>	VFS, June 2020
<p>B. Retrieve articles other written materials identified in search.            See Appendix A.</p>		VFS, June 2020	
<p>C. Critique of evidence-based practice guidelines.</p>			
		<p>D. Critique of systematic reviews.            Labrague, L. J., Hammad, K., Gloe, D. S., McEnroe, P. D. M., Fronda, D. C., Obeidat, A. A., Leocadio, M. C., Cayaban, A. R., &amp; Mirafuentes, E. C. (2018). Disaster preparedness among nurses: a systematic review of literature. <i>International Nursing Review</i>, 65(1), 41–53.  <a href="https://doi.org/10.1111/inr.12369">https://doi.org/10.1111/inr.12369</a></p> <p>Nash, T. J. (2017). A guide to emergency preparedness and disaster nursing education resources. <i>Health Emergency and Disaster Nursing</i>, 4(1), 12-25.  <a href="https://doi.org/10.24298/hedn.2015-0017">https://doi.org/10.24298/hedn.2015-0017</a></p>	VFS, June 2020

SECTION	OBJECTIVES	ACTION STEPS	ACCOUNTABLE PERSON(S)/ PROJECTED COMPLETION DATES
		<p>E. Critique and synthesis of primary research articles.</p> <p>A systematic review was completed on emergency preparedness nursing knowledge, disaster tabletop exercise, and the influence on professional quality of life.</p>	VFS, June 2020
		<p>F. Contact experts (if needed) for information.</p> <p>ED Director, Manager, and Emergency Preparedness Educator have been contacted to gather information on the current practice for emergency preparedness education for ED nurses.</p>	VFS, June 2020

SECTION	OBJECTIVES	ACTION STEPS	ACCOUNTABLE PERSON(S)/ PROJECTED COMPLETION DATES
		<p>G. Write summary recommendations/evidence-based practice guideline from c, d, e, f.</p> <ul style="list-style-type: none"> <li>• Evidence-based practice guidelines: <ul style="list-style-type: none"> <li>- Emergency preparedness education should be created based on the eight core competencies of disaster preparedness.</li> <li>- The education should also involve the use of simulation, drills, and tabletop exercise.</li> </ul> </li> <li>• Critique of systematic reviews: <ul style="list-style-type: none"> <li>- Delivery of disaster-related training and exercise are seen as an effective method to properly prepared nurses for disaster response. There is a worldwide lack of knowledge on emergency preparedness among nurses (Labrague et al., 2017).</li> <li>- There are still gaps in the emergency preparedness education of the United States. A guide with emergency preparedness and disaster nursing continuing education was created based on free online educational resources (Nash, 2017).</li> </ul> </li> <li>• Critique and synthesis of primary research articles: <ul style="list-style-type: none"> <li>- A systematic review was completed on emergency preparedness nursing knowledge, disaster tabletop exercise, and the influence on professional quality of life. See Appendix A.</li> </ul> </li> <li>• Information from experts: <ul style="list-style-type: none"> <li>- Per the hospital policy, ED nurses are to attend a mandatory Hazmat and Augmented PPE class every year. In addition, there are annual mandatory disaster drill in the ED.</li> </ul> </li> </ul>	VFS, June 2020

SECTION	OBJECTIVES	ACTION STEPS	ACCOUNTABLE PERSON(S)/ PROJECTED COMPLETION DATES
II.	III. To determine if there is enough evidence to guide practice.	<p>A. Discuss strength of evidence. The level of evidence (LOE) hierarchy used was based on the criteria by Melnyk and Fineout-Overholt (2019). Eighteen studies selected had an LOE of VI and were of descriptive design with a combination of quantitative and qualitative. Two studies were systematic reviews of descriptive studies with an LOE of V.</p>	VFS, June 2020
		<p>B. Contact additional experts as necessary.</p>	
		<p>C. Use other sources of evidence as necessary. - Research articles of systematic review of descriptive studies, and descriptive quantitative and qualitative studies.</p>	VFS, June 2020
		<p>D. Decide if conduct of research is necessary and feasible. The ED administration has offered their full support for the project. There is an established culture that supports evidence-based practices.</p>	VFS, June 2020
		<p>E. If enough evidence to proceed, draft/revise policy, procedure, standards using information from III. The literature provides enough evidence to revise the emergency operational plan policy to reflect changes related to evidence practices in emergency preparedness education.</p>	VFS, June 2020

SECTION	OBJECTIVES	ACTION STEPS	ACCOUNTABLE PERSON(S)/ PROJECTED COMPLETION DATES
	<p>IV. Set clear objectives for project implementation and align with the DNP Essentials.</p>	<p>A. How will objectives be measured?</p> <ol style="list-style-type: none"> <li>1. Meeting minutes will be provided to all team members electronically.</li> <li>2. Statistical analysis of the data collection from the EPIQ and ProQOL instruments.</li> <li>3. Results from the EPIQ and ProQOL statistical analysis to develop educational resources to fill the gap in emergency preparedness knowledge.</li> <li>4. The Kirkpatrick model four- levels training evaluation model will be implemented. The reaction level will be measured with a post class evaluation. The learning level will be measured through the post education EPIQ results and tabletop exercise. The behavioral level will be measured a year after the project implementation through a post-tabletop survey to evaluate the influence of the emergency preparedness class on the participants performance. Results, the last level of the model can be measured as ROI based on the nurse's disaster readiness if transfer of knowledge is measured on the first three levels.</li> <li>5. Statistical analysis of the data collection from the EPIQ and ProQOL instruments post emergency preparedness education. At least a 20% improvement from initial EPIQ survey is expected post tabletop exercise.</li> <li>6. Policy changes recommended will be approved by pertinent committees.</li> </ol>	<p>VFS, June 2020</p> <p>VFS, December 2020</p> <p>VFS, December 2020</p> <p>VFS, November-December 2020</p> <p>VFS, December 2020</p> <p>VFS, January-February 2021</p>



III.	V. Implement evidence-based changes in practice.	<p>A. Form a team for the project.</p> <ul style="list-style-type: none"><li>• Project Leader- Vivian Fuentes</li><li>• ED Director- Dr. Griselle Pastor</li><li>• ED Manager- Monica Jurysta</li><li>• ED Clinical Nurse Educator- Marla Geltner</li><li>• Emergency Preparedness Manager- Richard Whitehurst</li><li>• Emergency Preparedness Educator- Emilio Xiques</li><li>• Hospital Emergency Respond Team- Marie Pestana</li><li>• Nurse Scientist- Dr. Roberto Roman</li><li>• Safety Manager- Nancy Acebal</li></ul> <p>B. List the following with names and responsibilities:</p> <ul style="list-style-type: none"><li>▪ Project leader- Vivian Fuentes-<ul style="list-style-type: none"><li>▪ Responsible to do literature review and present the findings.</li><li>▪ Plan and present the idea of the EBP project.</li><li>▪ Create the interprofessional team needed to accomplished the project.</li><li>▪ Announce, explain, and collect data for the project.</li><li>▪ Develop and facilitate disaster tabletop exercise.</li><li>▪ Collect post exercise data and analyze</li><li>▪ Report outcomes and recommend practice change according to project results.</li></ul></li><li>▪ Expert advisor- Dr. Griselle Pastor<ul style="list-style-type: none"><li>▪ Oversee the project and approve initiatives</li><li>▪ Coach the project leader</li><li>▪ Appoint additional team members needed</li></ul></li><li>▪ Coordinator- Monica Jurysta<ul style="list-style-type: none"><li>▪ Oversee the project initiatives</li><li>▪ Determine dates of the project initiatives implementation within the timeline established</li><li>▪ Ensure nurses participation</li></ul></li><li>▪ Educator- Marla Geltner and Marie Pestana<ul style="list-style-type: none"><li>▪ Assist with education / tabletop exercise development</li><li>▪ Support sustainability of the EBP initiatives</li></ul></li></ul>	<p>VFS, June 2020</p> <p>VFS, June 2020</p>
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SECTION	OBJECTIVES	ACTION STEPS	ACCOUNTABLE PERSON(S)/ PROJECTED COMPLETION DATES
		<ul style="list-style-type: none"> <li>▪ Specialist- Richard Whitehurst and Emilio Xiques</li> <li>▪ Provide expert opinion on current emergency preparedness education</li> <li>▪ Assist with education/tabletop exercise development</li> <li>▪ EBP Expert- Dr. Roberto Roman</li> <li>▪ Oversee the components of every EBP step and make recommendations as necessary</li> <li>▪ Assist with statistical analysis</li> <li>▪ Safety Expert- Nancy Acebal</li> <li>▪ Oversee the components that affect the current process related to emergency preparedness and make recommendations as needed.</li> </ul> <p>C. Team Activities</p> <ul style="list-style-type: none"> <li>• Set meeting times and location as needed- weekly meetings scheduled via Zoom as needed.</li> <li>• Method to keep team members informed- electronic mail.</li> </ul> <p>Educate Nurses</p> <ul style="list-style-type: none"> <li>• Revise current emergency preparedness curriculum and compare to EBP standards.</li> <li>• Develop new classes and notify ED nurses of available class dates.</li> <li>• Decide on length of “trial” before collecting post implementation data- survey will be provided after class.</li> </ul>	
		<p>D. Select, collect and analyze outcome and process indicator data. Use of EPIQ and ProQOL instruments to collect data.</p> <p>E. Refine/revise policy and procedure standards. Revise Emergency Operational Plan policy based on recent EBP findings and pilot outcomes.</p>	<p>VFS, October- November 2020</p> <p>VFS, January 2021</p>

SECTION	OBJECTIVES	ACTION STEPS	ACCOUNTABLE PERSON(S)/ PROJECTED COMPLETION DATES
	VI. Implement evidence-based practice changes in practice beyond pilot.	<p>E. Education plan for project.</p> <p>1. Methods</p> <ul style="list-style-type: none"> <li>-Communication to ED nurses during the monthly ED department staff meeting and during huddles before beginning of their shift for completion of the survey pre- and posteducation via paper or electronic.</li> <li>-Disaster tabletop exercise will be facilitated in person or virtually with groups of 9 nurses at a time after a review of the Doctors Hospital emergency operations plan and an outline created based on the EPIQ instrument eight core competencies.</li> </ul> <p>2. When</p> <ul style="list-style-type: none"> <li>-Distribution of the survey completion will take place in October and is expected that nurses complete the survey ASAP after information is provided.</li> <li>-Tabletop exercise is planned to be facilitated by the beginning of November through beginning of December 2020 at Doctors Hospital Valencia Classroom or virtually. Three dates and times will be offered to cover all shifts and for the nurses to register via the Baptist Health University in one of the classes.</li> </ul>	<p>VFS, October 2020</p> <p>VFS, October 2020</p> <p>VFS, November-December 2020</p>
		B. Plan for education of new nurses. New hires will attend the emergency preparedness annual classes as previously scheduled in the entity.	ED Clinical Nurse Educator
		C. Plan for annual competency review. The emergency preparedness classes will continue to be offered ongoing throughout the year.	ED Clinical Nurse Educator

SECTION	OBJECTIVES	ACTION STEPS	ACCOUNTABLE PERSON(S)/ PROJECTED COMPLETION DATES
		<p>E. Decide on written resources needed for implementation, such as:</p> <ol style="list-style-type: none"> <li>1. A PowerPoint that will be use to present the emergency preparedness content and additionally will be available in the learning management system for individual review post class as needed.</li> <li>2. Post-class evaluation in paper and electronic format to measure the learners' reaction and behavioral level from the Kirkpatrick model.</li> <li>3. Quick reference START and JumpSTART Triage algorithm will be created and posted in the ED triage area and medication room for future reference.</li> </ol>	VFS, November-December 2020
		<p>E. Plan for and make system changes as needed (e.g., documentation forms, etc.) Modify existing augmented PPE classes to include information related to the eight core competencies of emergency preparedness. Some of the additional information is the inclusion of specific information related to Doctors Hospital such as how to locate the Emergency Operational Plan policy and the leaders and departments that are to be involved in the event of a disaster.</p>	VFS, August 2020
IV.	VII. Evaluate the change in practice.	A. Plan baseline data collection and analysis method.	

SECTION	OBJECTIVES	ACTION STEPS	ACCOUNTABLE PERSON(S)/ PROJECTED COMPLETION DATES
		<ol style="list-style-type: none"> <li>1. Process indicators (indicators that note that progress in practice change is occurring)               <ol style="list-style-type: none"> <li>a. Data Source: number of participants for the tabletop exercise</li> <li>b. Collection process: roster generated by the Baptist Health University after participant enrollment for the emergency preparedness class</li> <li>c. Frequency: at each scheduled tabletop exercise</li> <li>d. Tool: EPIQ &amp; ProQOL instruments and roster</li> </ol> </li> </ol>	VFS, November-December 2020
		<ol style="list-style-type: none"> <li>2. Outcome indicators (final outcomes that you plan to see a change in upon completion of the project)               <ol style="list-style-type: none"> <li>a. Data Source: post emergency preparedness education EPIQ and ProQOL survey, disaster tabletop exercise hot wash, and class evaluation.</li> <li>b. Collection process: postsurvey and class evaluation delivered in an electronic and paper format. The electronic format is using the REDCap software program. The hot wash will be completed at the end of the tabletop exercise to identify the strengths and weaknesses of the exercise.</li> <li>c. Frequency: A class evaluation, a post survey and hot wash will be conducted with each group that attends the tabletop exercise.</li> </ol> <p>Tool: EPIQ and ProQOL instruments and disaster tabletop exercise, hot wash, and class evaluation.</p> </li> </ol>	VFS, November-December 2020
		<ol style="list-style-type: none"> <li>3. Frequency A mandatory disaster tabletop exercise will be facilitated in yearly basis for all ED nurses once DNP Project is completed.</li> </ol>	ED Clinical Nurse Educator

SECTION	OBJECTIVES	ACTION STEPS	ACCOUNTABLE PERSON(S)/ PROJECTED COMPLETION DATES
		<p>4. Initial feedback to staff</p> <ul style="list-style-type: none"> <li>• Graphs The results of the initial EPIQ survey will be shared with staff during the ED staff meeting. ProQOL before and after results will be shared after all data is compared and analyzed.</li> <li>• Who The project leader will present the results to the ED staff after presenting to the project team.</li> <li>• When After data analysis and before the implementation of the emergency preparedness class, tabletop exercise, and second EPIQ survey.</li> <li>• Posting A graph with results will be explained to the staff during the ED staff meeting and an electronic mail will be sent with the information to reach to all participants.</li> </ul>	VFS, August January 2021
		<p>B. Audit and feedback of data</p> <ul style="list-style-type: none"> <li>• Graphs Results of the EPIQ and ProQOL surveys completed pre and post emergency preparedness education will be analyzed and results will be shared in a graph with all participants.</li> <li>• Frequency Data will be presented once when collected.</li> <li>• Where to post The information will be shared during the ED staff meeting and via electronic mail.</li> </ul>	VFS, January 2021

SECTION	OBJECTIVES	ACTION STEPS	ACCOUNTABLE PERSON(S)/ PROJECTED COMPLETION DATES
	VIII. Plan for sustainability	<p>A. Discuss how the project will be sustained.</p> <ul style="list-style-type: none"> <li>• Ensure that senior leadership support the implementation of disaster tabletop exercises as part of the emergency preparedness class.</li> <li>• Ensure that the Emergency Department leadership, the Emergency Preparedness Department, and the hospital Safety Manager oversees the annual emergency preparedness curriculum and revisions are done every year as needed.</li> <li>• ED leadership to continue to monitor compliance for annual mandatory emergency preparedness class.</li> </ul> <p>Emergency preparedness classes must be offered year-round to ensure that enough classes are available for the nurses to attend.</p>	VFS, January 2021

SECTION	OBJECTIVES	ACTION STEPS	ACCOUNTABLE PERSON(S)/ PROJECTED COMPLETION DATES
		<p>B. Identify strengths and areas of opportunity related to the following areas:</p> <ol style="list-style-type: none"> <li>1. Ethics: Nurses have an ethical obligation to care for patients and themselves. Nurses are to understand their role and responsibilities within their organization during a disaster event. Research identified that nurses who are not well prepared for an emergency event provide a lower quality of patient care.</li> <li>2. Legal: During a disaster nurses could be working in crisis mode. Local and national regulatory agencies mandate hospital specific emergency operational plan, education, and training for man-made and natural disasters. Lack of preparation and understanding may lead to negligent care.</li> <li>3. Cultural: There are no cultural weaknesses correlated with the project.</li> <li>4. Socioeconomics: Socioeconomics has a profound impact on the ability of patients to prepared adequately for a disaster and understand how to properly care for themselves during an emergency.</li> </ol>	VFS, June 2020



**Appendix G: Emergency Preparedness Class Flyer**

# DH Disaster & Emergency Preparedness Class



**ED Nurses:**

This year your emergency preparedness annual requirements will be fulfilled by attending one of the interactive classes listed below.

The class is indented to provide an overview on emergency preparedness guided by the DH Emergency Operational Plan.

**Please register via BHU. Only 9 participants per class.**

For questions contact Vivian Fuentes Clinical Learning Educator, [vivianfu@baptisthealth.net](mailto:vivianfu@baptisthealth.net)

Date	Time	Location
11/11/2020	12:00pm - 3:00pm	DH- Valencia Room
11/18/2020	8:00am - 11:00am	DH- Coco Plum Side 1
11/20/2020	1:00pm - 4:00pm	DH- Coco Plum Side 1
12/4/2020	8:00am - 11:00am	DH- Valencia Room



**Appendix H: Class Evaluation**

**Standard Class Evaluation**



*Please take a few minutes to complete.  
Your comments are important and will be used to make ongoing improvements in this class.*

Program Title: \_\_\_\_\_ Date: \_\_\_\_\_

**Content / Instructional Methods / Setting**

Poor Fair Average Good Excellent

- 1. The content was related to my job.  1  2  3  4  5
- 2. The class met the objective(s).  1  2  3  4  5
- 3. The instructor(s) were effective in teaching.  1  2  3  4  5
- 4. The content extended my knowledge of the topic.  1  2  3  4  5
- 5. The handouts are likely to be used for future reference.  1  2  3  4  5
- 6. The instructional material was well organized.  1  2  3  4  5
- 7. The teaching strategies were appropriate for the activity.  1  2  3  4  5

8. As a result of what you learned during this activity, what do you intend to do differently?

9. What did you like best? Least?

10. Please list two additional topics you believe would help you to improve your job performance.

**Your Name (optional)** \_\_\_\_\_

## Appendix I: Cover Letter and Survey

### Cover Letter

Dear Participant:

My name is Vivian Fuentes and I am a DNP student at Saint Francis Medical Center College of Nursing. For my DNP project, I am examining the impact of disaster tabletop exercises and the nursing knowledge of emergency preparedness and the influence on professional quality of life. Because you are an Emergency Department nurse and first responder in the event of a disaster, I am inviting you to participate in this project by completing a survey.

The questionnaire is anonymous. To ensure confidentiality, please do not add your name in the survey. There is no compensation for responding to the survey or any known risk. Your participation is voluntary. If you agree to participate in this project please answer the questions as best as you can. You may refuse to participate at any time. The questionnaire it should take approximately 15 minutes to complete.

Thank you for taking the time to assist me in my educational endeavors. The data collected will provide useful information regarding emergency preparedness educational gaps and the professional quality of life of the Emergency Department nurses.

For questions about the project please contact Vivian Fuentes MSN, RN, CEN via email to [vivianfu@baptisthealth.net](mailto:vivianfu@baptisthealth.net)

### Survey

Have you completed this survey in paper or electronically (REDCap) recently?

Yes (= Thank you for your participation)

No (= proceed)

- Select a unique identifier (last 4 digits of your cell phone plus first digit of your house address ex. cell number 305-123-4567 and House address 5000 University Drive, unique identifier = 45675):

---

### Demographics

- Age:
  - 20-25
  - 26-30
  - 31-35
  - 36-40
  - 41-45
  - 46-50
  - 51-55
  - 56+

- Gender:
  - Female
  - Male
  - Other (Specify) \_\_\_\_\_
  - Prefer not to answer
  
- Race:
  - Hispanic or Latino
  - American Indian or Alaska Native
  - Asian
  - Black or African American
  - Native Hawaiian or Other Pacific Islander
  - White
  
- Marital status:
  - Married
  - Widowed
  - Divorced
  - Separated
  - Never married
  
- Educational level
  - Diploma
  - ASN
  - BSN
  - MSN/MBA
  - DNP
  - PhD
  
- Years of nursing experience \_\_\_\_\_
- Years of emergency department experience \_\_\_\_\_
- Number of disaster events that you have participated in the past \_\_\_\_\_

### **Emergency Preparedness Information Questionnaire (EPIQ)**

Please circle the number of your level of familiarity with the following topics.

Key:

1. I have never heard of this topic before.
2. I have heard the terminology but have no knowledge of this information.
3. I know the terminology but have limited knowledge of this topic.
4. I am familiar with this topic but not extremely proficient in all subject matter.

5. I am very familiar with this topic; I am an expert in proficiency on this topic.

- I. Triage and basic first aid
  1. Performance of a rapid physical and mental assessment 12345
  2. Assisting with triage (START model) 12345
  3. Basic first aid in a large-scale emergency event 12345
  
- II. Biological agent detection
  4. Recognition of relevant signs and symptoms 12345
  5. Modes of transmission 12345
  6. Appropriate antidote and prophylactic medicine 12345
  7. Possible adverse reactions/complications 12345
  8. Signs/symptoms of exposure to different biological agents 12345
  
- III. Accessing critical resources and reporting
  9. When to report an unusual set of symptoms to the local and state health departments 12345
  
- IV. The Incident Command System (ICS)
  10. Knowledge of an Emergency Operation Plan (EOP) 12345
  11. Processes of the ICS 12345
  12. Agency preparedness information 12345
  13. The content of the Emergency Operational Plan at hospital 12345
  
- V. Isolation, quarantine, and decontamination
  14. Isolation procedures for persons exposed to biological or chemical agents 12345
  
- VI. Psychological issues
  15. Signs/symptoms of posttraumatic stress following a disaster 12345
  16. Appropriate psychosocial needs/resources for victims 12345
  
- VII. Epidemiology and clinical decision making
  17. Ability to discern and treat persons with comorbidities whom are exposed to chemical agents, biological agents and/or radiation. 12345
  
- VIII. Communication and connectivity
  18. Procedures for communicating critical patient information for transporting patients during a disaster transporting 12345

### **Professional Quality of Life (ProQOL)**

Compassion Satisfaction and Compassion Fatigue Version 5 (Stamm, 2009).

When you nurse people, you have direct contact with their lives. As you may have found, your compassion for those you nurse can affect you in positive and negative ways. Below are some questions

about your experiences, both positive and negative, as a nurse. Consider each of the following questions about you and your current work situation. Select the number that honestly reflects how frequently you experienced these things in the last 30 days.

1=Never 2=Rarely 3=Sometimes 4=Often 5=Very Often

1. I am happy. 12345
2. I am preoccupied with more than one person I nurse. 12345
3. I get satisfaction from being able to nurse people. 12345
4. I feel connected to others. 12345
5. I jump or am startled by unexpected sounds. 12345
6. I feel invigorated after working with those I nurse. 12345
7. I find it difficult to separate my personal life from my life as a nurse. 12345
8. I am not as productive at work because I am losing sleep over traumatic experiences of a person I nurse. 12345
9. I think that I might have been affected by the traumatic stress of those I nurse. 12345
10. I feel trapped by my job as a nurse. 12345
11. Because of my nursing, I have felt "on edge" about various things. 12345
12. I like my work as a nurse. 12345
13. I feel depressed because of the traumatic experiences of the people I nurse. 12345
14. I feel as though I am experiencing the trauma of someone, I have nurse. 12345
15. I have beliefs that sustain me. 12345
16. I am pleased with how I am able to keep up with nursing techniques and protocols. 12345
17. I am the person I always wanted to be. 12345
18. My work makes me feel satisfied. 12345
19. I feel worn out because of my work as a nurse. 12345

20. I have happy thoughts and feelings about those I nurse and how I could help them. 12345
21. I feel overwhelmed because my work load seems endless. 12345
22. I believe I can make a difference through my work. 12345
23. I avoid certain activities or situations because they remind me of frightening experiences of the people I nurse. 12345
24. I am proud of what I can do to nurse. 12345
25. As a result of my nursing, I have intrusive, frightening thoughts. 12345
26. I feel "bogged down" by the system. 12345
27. I have thoughts that I am a "success" as a nurse. 12345
28. I can't recall important parts of my work with trauma victims. 12345
29. I am a very caring person. 12345
30. I am happy that I chose to do this work. 12345

## **Appendix J: Disaster Tabletop Exercise**

### **Purpose Statement:**

The purpose of the disaster tabletop exercise is to promote critical thinking and the opportunity for the Doctors Hospital ED nurses to practice incorporating the guidelines of the DH Emergency Operational Plan (EOP) during an unexpected disaster situation.

### **Objectives:**

By participating in the disaster tabletop exercise the participants will have the opportunity to demonstrate their knowledge on the Doctors Hospital EOP during a disaster situation by:

- Identifying the need to initiate the Doctors Hospital EOP protocol by following the established protocol of communication.
- Illustrating how to apply the disaster phases of preparedness, response, mitigation, and recovery according to the case scenario provided.
- Recognizing the necessary equipment, medications, staff, and resources needed according to the case scenario provided.
- Expediting the disposition of ED patients to open space for incoming patients.
- Establishing roles and a performance plan with the staff on duty on how to manage the emergency.
- Indicating the appropriate triaging protocol and basic first aid treatment appropriate for the case scenario.
- Listing suitable resources to manage psychological issues for the victims.
- Discussing the protocol to follow for patient tracking and transfer.



**Scope of the Exercise:**

- Type of emergency: explosion caused by chlorine
- Location: University of Miami dining hall
- Functions: Frontline ED nurses to function as: triage RN, Incident Commander, resource RN to expedite flow for patients in the ED, identify and collect resources needed.
- Participants: facilitator (Vivian Fuentes), ED Educator, emergency preparedness educator and ED nurses.

**Case scenario:**

It is 13:10, the charge nurse just received a call from the Coral Gables fire rescue department notifying that there was an explosion in the University of Miami dining hall. A yellow-green vapor cloud was seen in the area of the explosion causing a suspicion that the hazardous material, chlorine, got mixed with cleaning products causing the incident. Approximately 2 deaths and more than 100 injured have been identified at the moment. They are advising that about 20 victims have been identified to have minor burns, sore throat, coughing, eye and nasal irritation and other minor injuries. Medical personal from the hospital will receive the patients after decontamination already occurred by the Hazmat team. The victims are on route to Doctors Hospital ED, ETA 2 minutes. About 4 patients walked-in that were involved in the explosion and are already arriving without a previous health assessment. The across the room assessment from the triage nurse identified 3<sup>rd</sup> degree burns in patients, noting a more than 1% of TBSA, and are presenting with shortness of breath.

**Scenario events:**

- Fire rescue notify the DH ED Charge nurse via radio to be prepared to receive about 20 victims that were involved in a dining hall explosion in UM that seems to be related to

chlorine due to the presence of green vapor over the explosion area. ETA 2 minutes.

(Scenario time 2 minutes)

- Preparedness:
  - Communication
  - Assign roles
  - Resources needed
  - ED patients' disposition
- Fifteen patients involved in the explosion arrived to the ED. Eleven walked-in patients arrived complaining of sore throat, cough, eye and nasal irritation, and there are visible second degree burns in the face and arms. Six of the patients also have 3 cm lacerations on the face and forearms due to glass shards. Four patients arrived via ambulance complaining of shortness of breath, have visible burns of various degrees on face, neck, and arms, and lacerations on the face, arms, legs, and head. The patients were inside the cafeteria on the way out when the explosion occurred. (Scenario time 5 minutes).
- Response:
  - Triage
  - Identified areas to send patients per color coded tag and resources needed/  
patient & family traffic
  - First aid/treatment needed
  - Patient tracking and transfer process
- Patients involved in the explosion continue to arrive to the ED by ambulance and walked-in. Family members are lining up waiting to see or hear about their love ones. Now the total number of patients to be triaged are 20 including pediatric patients. What color

would you tag each patient and what initial basic aid would you initiate? (Scenario time 10 minutes).

- A. Five pediatric patients who were in the perimeter of the explosion of ages 4, 10, 13, 16, and 17 are complaining of sore throat, cough, eye, and nasal irritation. Abrasions are seen on the face and forearms of all 5 patients. The patients arrived in an ambulance. All patients are able to walk. The parents of the children are also patients in the ED and were tagged as minor (green), but the 4-year-old child's mother is unconscious at the moment.
- B. An approximately 8-month-old female patient was found crying in a stroller, no adult was identified as a parent or legal representative. The baby is inconsolable although there are no evident injuries at the moment and vital signs are within normal limits.
- C. Four patients walked-in arrived limping and in pain due to blast injuries (abrasions and lacerations on arms and legs) bleeding controlled, capillary refill < 2 seconds. One of the patients is experiencing difficulty hearing and is confused.
- D. Another 3 walked-in patients arrived experiencing shortness of breath (RR 24-30 but able to speak), eye and nose irritation, and verbalized to be wet with a substance that splashed them when the explosion occurred. Patients verbalized that no medical evaluation was performed in the explosion scene.
- E. Another 2 ambulance patients arrived. One of the patients is unconscious and has partial amputation of the right leg caused by flying debris, capillary refill of 4 seconds. The other patient has a total amputation of annular finger of the left hand. The patient is carrying the finger. In addition, both patients have second and third degree burns on greater than 10% of the TBSA.

F. Two more ambulances arrived to the ED. Two of the patients have a bleeding tourniquet, bleeding is still present with a capillary refill of 10 seconds, agonal respirations and a GCS score of 3.

G. The last 2 patients arrived in an ambulance. One of the patients is presenting with burns of various degrees on the upper body, shortness of breath, absence of lung sounds on the left side, and a RR of 38 per minute. The other patient is very anxious because her best friend was unconscious and transported in a helicopter to another facility. The patient is alert and oriented times 3, and able to follow commands.

- All victims involved in the UM explosion have been transported to a nearby healthcare facility for evaluation and treatment. What components indicate that the recovery phase has been initiated? (Scenario time 3 minutes).

Recovery: All patients at DH ED have been evaluated and treatment has been initiated. Some patients were admitted and some were transported to other facilities for specialized treatment.

- What aspects could be considered as part of the mitigation phase? (to be prepared, fast intervention, reduce delays in communication and patient treatment) (Scenario time 3 minutes).
- What aspects could be considered as part of the evaluation phase? (what worked well and what could be improved related to the disaster response on communication, security and safety, triage, patient evaluation, patient first aid, available resources such as MSDS sheets). (Scenario time 3 minutes)

Hot wash- will be completed after the discussion of each scenario by ensuring participants have a good understanding on the correct components for each scenario and during the evaluation phase discussion.

## Appendix K: EPIQ Instrument Author Permission to Use

Re: Request Permission to Use EPIQ Instrument



Peltier, Jimmy W <peltierj@uwv.edu>  
6/6/2020 11:29 AM



To: Vivian Fuentes

Permission given. Good luck!

Jimmy

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**From:** Vivian Fuentes <vividrn@hotmail.com>  
**Date:** Saturday, June 6, 2020 at 9:54 AM  
**To:** "Peltier, Jimmy W" <peltierj@uwv.edu>  
**Subject:** RE: Request Permission to Use EPIQ Instrument

**EXTERNAL EMAIL**

Good morning Dr. Peltier,  
As per faculty direction I'm requesting written approval to use the 18 items EPIQ instrument for my DNP capstone project.

Please reply to this email at your earliest convenience.

Thank you for your assistance.  
Vivian Fuentes MSN, RN, CEN

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**From:** Vivian Fuentes  
**Sent:** Friday, May 29, 2020 10:20 AM  
**To:** Peltier, Jimmy W  
**Subject:** RE: Request Permission to Use EPIQ Instrument

Good morning,  
Thank you for your prompt response.  
I'm interested on using the 18 items adapted EPIQ questionnaire that Dr. Georgino used for her study.  
I will need a letter or email for my project with your approval to use the EPIQ instrument and a copy of the instrument please.

Thank you,  
Vivian Fuentes MSN, RN, CEN

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**From:** Peltier, Jimmy W  
**Sent:** Wednesday, May 27, 2020 9:56 AM  
**To:** Vivian Fuentes  
**Subject:** RE: Request Permission to Use EPIQ Instrument

Hi Vivian, both scales have been validated. I would use the newer version.

Good luck,

Jimmy

---

**From:** Vivian Fuentes <vividrn@hotmail.com>  
**Sent:** Wednesday, May 27, 2020 8:55 AM  
**To:** Peltier, Jimmy W <peltierj@uwv.edu>  
**Subject:** Request Permission to Use EPIQ Instrument

**EXTERNAL EMAIL**

Good morning Dr. Peltier,  
My name is Vivian Fuentes. I am a student in the DNP program at Saint Francis Medical Center College of Nursing. I'm initiating my capstone project, and I would like to request permission to use your EPIQ instrument. I want to conduct an assessment on emergency preparedness knowledge of the emergency department and intensive care unit nurses in a hospital located in Coral Gables, Florida.

I would also like to inquire about the 18 items EPIQ instrument that Madeline Georgino et al. (2015) used in her study title; Emergency Preparedness Education for Nurses Core Competency Familiarity Measured Utilizing an Adapted Emergency Preparedness Information Questionnaire. As per Georgino, the adapted EPIQ instrument was initially used by Jennifer Worrall (2012) on Are emergency care staff prepared for disaster?. According to Georgino, the process for validity and reliability has not been completed for the adapted 18 items EPIQ instrument. What is your opinion on the use of the 18 items EPIQ instrument?

Thank you for your assistance.

Vivian Fuentes MSN, RN, CEN

## Appendix L: Permission to Use the ProQOL

### Permission to Use the ProQOL

Thank you for your interest in using the Professional Quality of Life Measure (ProQOL). Please share the following information with us to obtain permission to use the measure:

Please provide your contact information:

**Email Address**

vividirn@hotmail.com

**Name**

Vivian Fuentes

**Organization Name, if applicable**

SFMCCON

**Country**

United States

**Please tell us briefly about your project:**

PICO Question: For the Emergency department nurses, does the use of tabletop simulation on emergency preparedness education increase the knowledge of emergency preparedness and reduce the risk of compassion fatigue, burnout, and secondary traumatic stress during a disaster event compared to nurses who only receive standard emergency preparedness education?

**What is the population you will be using the ProQOL with?**

Emergency department nurses

**In what language/s do you plan to use the ProQOL?**

Listed here are the languages in which the ProQOL is currently available (see [https://proqol.org/ProQol\\_Test.html](https://proqol.org/ProQol_Test.html)). If you wish to use a language not listed here, please select "Other" and specify which language/s.

English

The ProQOL measure may be freely copied and used, without individualized permission from the ProQOL office, as long as:

You credit The Center for Victims of Torture and provide a link to [www.ProQOL.org](http://www.ProQOL.org);

It is not sold; and

No changes are made, other than creating or using a translation, and/or replacing "[helper]" with a more specific term such as "nurse."

**Note that the following situations are acceptable:**

You can reformat the ProQOL, including putting it in a virtual format

You can use the ProQOL as part of work you are paid to do, such as at a training: you just cannot sell the measure itself

Does your use of the ProQOL abide by the three criteria listed above? (If yes, you are free to use the ProQOL immediately upon submitting this form. If not, the ProQOL office will be in contact in order to establish your permission to use the measure.)


Yes

Thank you for your interest in the ProQOL! We hope that you find it useful. You will receive an email from the ProQOL office that records your answers to these questions and provides your permission to use the ProQOL.


We invite any comments from you about the ProQOL and the experience of using it at [proqol@cvt.org](mailto:proqol@cvt.org). Please also contact us if you have any questions about using the ProQOL, even if you noted them on this form. Note that unfortunately, our capacity is quite limited so we may not be able to respond to your note: however, we greatly appreciate your engagement.

**Appendix M: Disaster and Emergency Preparedness PowerPoint Presentation**

Disaster and Emergency Preparedness



Vivian Fuentes MSN, RN, CEN, DNP Student  
 Saint Francis Medical Center College of Nursing  
 828.2 DNP II



Objectives

- Discuss the concepts related to disaster and emergency preparedness.
- Review the role of the Doctors Hospital emergency department nurses during a disaster event and emergency preparedness.
- Explain the eight emergency preparedness domains.
- Demonstrate the proper steps for donning and doffing of personal protective equipment.
- Examine the ability of the participants to apply the concepts learned using a tabletop exercise.

Disaster

**Definition**

“A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability, and capacity, leading to one or more of the following: human, material, economic, and environmental losses and impacts”

(Veenema, 2019)

**Types**

- Natural
  - Floods
  - Hurricanes
  - Tornadoes
  - Wildfires
- Man-made
  - Biological or biochemical terrorism
  - Chemical spills
  - Radiological events
  - Fire
- Categorized: Onset, duration, effect, and recovery period.
- Classify: External or internal

(Veenema, 2019)




(Britannica.com & Businessofgovernment.org)




Emergency Preparedness

Refers to planning and response to a disaster.

(Puryear & Gnugnoli, 2019)



Disaster Phases



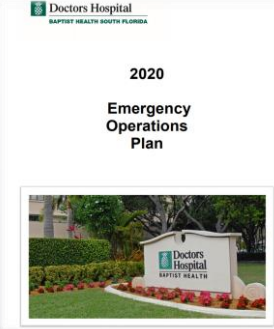
(Quora.com, 2018)

- Preparedness- planning efforts to organize the response.
- Mitigation- measures to reduce harmful effects.
- Response- implementation of the disaster plan.
- Recovery- stabilizing and returning organization to normal.
- *Evaluation*- evaluate what work and what didn't from the planning and response phases.

(Veenema, 2019)


DH Emergency Operational Plan

- Where and how to find it?
- What it is about?
- Who is the DH Safety Manager?
- Emergency Response Team (ERT)




Role of the ED Nurse During a Disaster

- ANA- legal and ethical aspects of a nurses decision to respond (ANA, 2017)
- ENA- disaster training and preparation (ENA, 2019).
- DH- call BHSF Employee Hotline or unit leader to know when to report according to the department emergency management plan established (DH-EOP, 2019)



(ENA, 2019)

Triage and Basic First Aid



(Microsoft.com, 2020)


- Initiation of disaster response at DH:
  - Leadership is notify of a potential disaster
  - Staff identify concerning internal or external situation
    - Code delta internal/external – moderate to severe impact for hospital or the community
  - What happens next?

(DH-EOP, 2019)

Triage and Basic First Aid

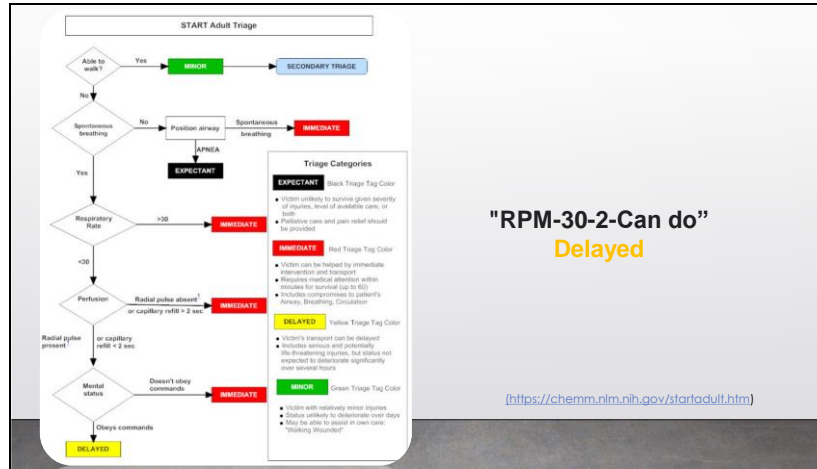
*“Doing the greatest good for the greatest amount of people”*

- During a disaster is necessary to immediately discharge home stable patients.
- New patients will be prioritize depending on symptoms and clinical needs:
  - Minor
  - Delayed
  - Immediate
  - Expectant



(Slideshare.net, 2012)

(DH-EOP, 2019)



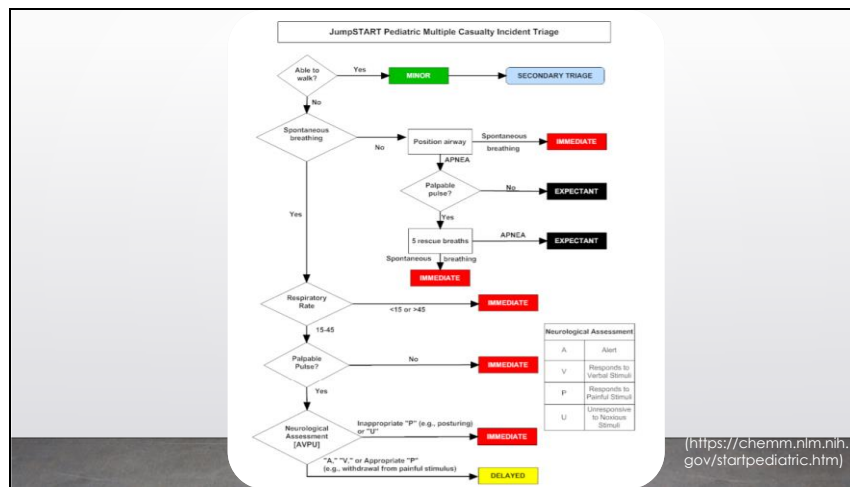
### Triage and Basic First Aid

The image shows a detailed first responder triage tag form. It includes a 'TRIAL TAG' section with a color-coded scale (Red, Yellow, Green, Black) and a 'CONTAMINATED' warning. The form has fields for patient name, address, and vital signs. It also features a 'MORGUE' section with checkboxes for 'IMMEDIATE', 'DELAYED', and 'MINOR' categories. A 'Neurological Assessment' table is included at the bottom right.

**Neurological Assessment**

A	Alert
V	Responds to Verbal Stimuli
P	Responds to Painful Stimuli
U	Unresponsive to Noxious Stimuli

<https://simplelife.com/products/first-responder-triage-tags>



## Triage and Basic First Aid

- Transport to designated casualty collection point or field treatment site.
- Basic first aid includes techniques to stabilize ABCD and/or decontamination initiation.



(Orlandosentinel.com, 2019)

## Biological Agent Detection

- Includes bacteria, viruses, fungi, and other microorganisms.
  - Examples: Anthrax, Botulism, Ebola, Measles, Plague, Zika, COVID-19
- Recognition of relevant signs and symptoms (delay symptoms)
- Modes of transmission – contact, inhalation, ingestion, puncture, absorption
  - Can be weaponized for bioterrorism
- Appropriate antidote and prophylactic medicine- (poison control, CDC)
- Consider possible adverse reactions, complications, co- morbidities, type of exposure, and developmental age.

(OSHA, n.d.)

## Accessing Critical Resources and Reporting

- Reporting cases of disease reside in the respective states legislature.
- Important for planning, disease prevention and control (vaccines), assurance of appropriate medical therapy, and detection of outbreaks.
- Vital to prevent the spread of the communicable diseases.

(CDC, 2001)



### Reportable Diseases/Conditions in Florida Practitioner List (Laboratory Requirements Differ)

Florida Department of Health

**Did you know that you are required to report certain diseases to your local county health department (CHD)?**

You are an invaluable part of disease surveillance in Florida! Please visit our Practitioner-portal for more information. To report a disease to your local CHD, please call your CHD reporting center. If you are a practitioner in a Florida CHD, please call the Department's Bureau of Epidemiology at (850) 245-1400.

**Reportable Diseases/Conditions:**

- Adenovirus
- Adenovirus serotype 41
- Adenovirus serotype 4
- Adenovirus serotype 14
- Adenovirus serotype 21
- Adenovirus serotype 3
- Adenovirus serotype 36
- Adenovirus serotype 47
- Adenovirus serotype 55
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- Adenovirus serotype 95
- Adenovirus serotype 96
- Adenovirus serotype 97
- Adenovirus serotype 98
- Adenovirus serotype 99
- Adenovirus serotype 100

**Outbreaks of any disease, any case, cluster of cases, or exposure to an infectious or non-infectious disease, condition, or agent found in the general community or any defined setting (e.g., hospital, school, other institution) not listed that is of urgent public health significance**

[http://www.floridahealth.gov/diseases-and-conditions/disease-reporting-and-management/\\_documents/reportable-diseases-list-practitioners.pdf](http://www.floridahealth.gov/diseases-and-conditions/disease-reporting-and-management/_documents/reportable-diseases-list-practitioners.pdf)

## The Incident Command System (ICS)

Activation levels:

- Level 3: Monitoring and assessment
- Level 2: Partial activation
- Level 1: Full activation

```

graph TD
    Commander[Commander] --- Liaison[Liaison Officer]
    Commander --- Medical[Medical / Technical Specialist]
    Liaison --- Information[Information Officer]
    Medical --- Safety[Safety Officer]
    Information --- Logistics[Logistics Section]
    Information --- Planning[Planning Section]
    Information --- Finance[Finance Section]
    Information --- Operations[Operations Section]
    
```

(OSHA.gov, 2006)

## The Incident Command System (ICS)

- Incident Commander- provides direction to the hospital (CEO, VP, administrator on duty, or nursing supervisor).
- Operations Section- develop and implement strategy tactics to carry out the Incident Commander objectives (CNO or designee).
- Logistic Section Chief- directing physical environment and human resources operations.
- Planning Section Chief- oversee all incident-related data gathering and analysis regarding incident operations.

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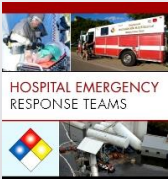
### The Incident Command System (ICS)

- Liaison Officer- hospital representative to coordinate with external agencies (can be combined w other positions).
- Finance Section Chief- addresses funding and reimbursement issues.
- Medical / Technical Specialist- advises the IC and OS on issues related to the specific expertise demanded by the situation (MD, Infection Control, Radiological, etc.)
- Public Information Officer- communicates with the public and media.
- Safety Officer- ensure the safety of the staff, patients, and visitors. Has authority to halt operations that poses immediate threat to life and health.

////////////////////////////////////

### Isolation, Quarantine, and Decontamination

- ERT
  - Decontamination area/equipment and process for patient decontamination
  - Hazmat 1<sup>st</sup> responders / Hospital 1<sup>st</sup> receivers
  - Specialized PPE
  - Preservation of evidence




(Elsevier.com, 2009)

////////////////////////////////////

### Isolation, Quarantine, and Decontamination

- Protocol according to the type of Hazmat incidents
  - Radioactive-ED entrance shower for primary patient decontamination. Radiation Safety Officer or designee to respond this type of emergencies.
  - Biological- upon identification, area is confined. Recirculation of ventilation systems or fan shutdown by engineering. ED and ID physician, IC manager, & Department of Health will be involved in the response plan.
  - Chemical- attempt to isolate contaminated patient and prevent contamination to patients or property. Decontamination outside the ED as possible. Unknown exposures are referred to local fire department Hazmat team.



(Nasa.gov, 2019)

(DH-EOP, 2019)

## Isolation, Quarantine, and Decontamination

- Identify hazardous substances if possible
- Understand your role in your facility
  - RAIN
- Realize the needs for additional resources
  - Poison Control
  - WEBWISER
  - CAMEO Chemicals
  - MSDS / PSDS



## Psychological Issues: Adults


- Signs/symptoms of posttraumatic stress following a disaster
  - Distressing feelings, thoughts, and physical symptoms (immediately or after some time)
  - Risky behaviors to cope
- Notify social services department when mental health services for a patient has been identify (DH-EOP, 2019)
- Appropriate psychosocial needs/resources for victims
  - Mental health professional support- mental health evaluation and treatment, coping and managing stress, dealing with grief
  - Maintain a healthy lifestyle- good nutrition and routine exercise
  - Engage in fun and restoring activities or hobbies
  - Limit exposures to social media on content related to the disaster
  - Stay connected with friends and family

(Morganstein, 2019)

## Psychological Issues



## Psychological Issues Pediatrics




- Good news: most children are resilient.
- To reduce anxiety and fear:
  - Maintain an environment of safety, allow time for Q & A, make them feel that their concerns are being heard.
- Common reactions after a disaster:
  - Hyperactivity, sadness, irritability, anger, bed wetting, lack of appetite, or eating all the time.
- How to help children after a disaster
  - Let the child know there are people helping keep safe the community
  - Limit exposure to television or social media
  - Provide opportunities for the child to express their feelings. Use words appropriated for the child age understanding.
  - Find ways of distraction.

(Morganstein, 2019)

## Epidemiology and Clinical Decision Making

- When aggravation of preexisting comorbidities such as chronic lung disease and myocardial ischemia, patients will need to be treated according to established medical principles, including the ABCDs of acute care.
- Casualties will also be individuals to whom sustained secondary trauma during exposure to chemical agents, falls, blunt trauma, motor vehicle injuries, or burns.



(Kumar et al., 2010)

## Communication and Connectivity

- Alternate care sites are decided between the BHSF Area Command Center and DH Incident Command Center.
- The BHSF Transfer Center will assist on patient transportation arrangements and communication with the Emergency Support Function (ESF) #8 – Public Health and Medical Services of Florida Department of Health.
- Depending on the nature of the situation, alternate care sites will be first within BHSF, other healthcare facilities will be secondary.
- The staff is responsible to ensure that medical records, patient medications and medical equipment necessary are transferred along with the patient.
- Tracking and documentation of patients using back up data systems and paper forms (Doctors patient Tracking Form).

(DH-EOP, 2019)



Personal Protective Equipment (PPE)

Four Levels of PPE



Biological Augmented PPE




Tabletop Exercise


Case Scenario

It is 13:10, the charge nurse just received a call from the Coral Gables fire rescue department notifying that there was an explosion in the University of Miami dining hall. A yellow-green vapor cloud was seen in the area of the explosion causing a suspicion that the hazardous material, chlorine, got mixed with cleaning products causing the incident. Approximately 2 deaths and more than 100 injured have been identified at the moment. They are advising that about 20 victims have been identified to have minor burns, sore throat, coughing, eye and nasal irritation and other minor injuries. Medical personal from the hospital will receive the patients after decontamination already occurred by the Hazmat team. The victims are on route to Doctors Hospital ED, ETA 2 minutes. About 4 patients walked-in that were involved in the explosion and are already arriving without a previous health assessment. The across the room assessment from the triage nurse identified 3<sup>rd</sup> degree burns in patients, noting a more than 1% of TBSA, and are presenting with shortness of breath.

Please scan the QR code to complete a class evaluation

<https://redcap.baptisthealth.net/surveys/?s=XPMRWMEC43>





Emergency  
Preparedness  
Survey

<https://redcap.baptisthealth.net/surveys/?s=7KELDC4YEY>

## References

American Nurses Association. (2017). Who will be there? Ethics, the law, and a nurse duty to respond in a disaster. [https://www.nursingworld.org/~4af058/globalassets/docs/ano/ethics/who-will-be-there\\_disaster-preparedness\\_2017.pdf](https://www.nursingworld.org/~4af058/globalassets/docs/ano/ethics/who-will-be-there_disaster-preparedness_2017.pdf)

Centers for Disease Control and Prevention. (2001). Mandatory report of infectious disease by clinicians. <https://www.cdc.gov/mmwr/preview/mmwrhtml/00001665.htm>

Chemical Hazards Emergency Medical Management. (2020, September 14). JumpSTART pediatric triage algorithm. <https://chemm.nlm.nih.gov/startpediatric.htm>

Chemical Hazards Emergency Medical Management. (2020, September 14). START adult triage algorithm. <https://chemm.nlm.nih.gov/startadult.htm>

Clarkson, L. & Williams, M. (2019). EMS, mass casualty triage. <https://www.ncbi.nlm.nih.gov/books/NBK459369/>

Doctors Hospital. (2019). Emergency Operational Plan. <http://intranet.bhssf.org/en/policy-administration/management/Pages/DHAdministrativePolicies.aspx>

Florida Department of Health. (2016). Reportable disease/ conditions in Florida. <http://www.floridahealth.gov/diseases-and-conditions/disease-reporting-and-management/documents/reportable-diseases-list-practitioners.pdf>

## References

Kumar, V., Goel, R., Chawla, R., Silambarasan, M., & Sharma, R. K. (2010). Chemical, biological, radiological, and nuclear decontamination: Recent trends and future perspective. *Journal of Pharmacy & Bioallied Sciences*, 2(3), 220-238. <https://doi.org/10.4103/0975-7406.68505>

Morganstein, J. C. (2019). Coping after disaster. American Psychiatric Association. <https://www.psychiatry.org/patients-families/coping-after-disaster-trauma>

Nadworny, D. (2019). Emergency Nurses Association position statement: The role of emergency nurses in emergency preparedness and response. <https://www.ena.org/docs/default-source/resource-library/practice-resources/position-statements/allhazardspreparedness>

Occupational Safety & Health Administration. (n.d.). Biological agents. <https://www.osha.gov/biological-agents>

Purveyar, B & Gnugnoli, D. M. (2019). Emergency Preparedness. <https://www.ncbi.nlm.nih.gov/books/NBK537042/>

Veenema, T. G. (2019). *Disaster nursing and emergency preparedness: For chemical, biological, and radiological terrorism, and other hazards* (4<sup>th</sup> ed.). Springer Publishing Company.

**Appendix N: Table of Costs**

<b>Program Expenses</b>	<b>Hourly</b>	<b>Total</b>
<b>Salary/Wages:</b>		
<ul style="list-style-type: none"> <li>• Instructor salary: <ul style="list-style-type: none"> <li>○ Project manager/ED educator</li> <li>○ ED educator/HERT</li> <li>○ RN risk management/HERT</li> </ul> </li> <li>• Registered nurse (bedside) salary</li> <li>• REDCap system administrator salary</li> </ul>	<ul style="list-style-type: none"> <li>\$45.00 x 80</li> <li>\$45.00 x 12</li> <li>\$36.00 x 12</li> <li>\$32.50 x 3 x 33 RNs</li> <li>\$41.00 x 6</li> </ul>	<ul style="list-style-type: none"> <li>\$3,600.00</li> <li>\$540.00</li> <li>\$432.00</li> <li>\$3,217.50</li> <li>\$246.00</li> </ul>
<b>Startup Costs</b>	Per Class (6 per year)	Annual
<ul style="list-style-type: none"> <li>• Educational materials (handouts, folders, pens)</li> <li>• Communication software: REDCap</li> </ul>	<ul style="list-style-type: none"> <li>\$25.00</li> <li>\$0.00</li> </ul>	<ul style="list-style-type: none"> <li>\$150.00</li> </ul>
<b>Capital Costs</b>		
Equipment: laptop, projector, tables, chairs, PPE		\$7,000.00
<b>Total Project Expenses</b>		\$15,185.50
<b>Program Revenue</b>		
<ul style="list-style-type: none"> <li>• Nursing turnover rates</li> <li>• Nursing hiring and onboarding</li> <li>• Travel registered nurse</li> <li>• New graduate registered nurses from a nurse residency program</li> </ul>		<ul style="list-style-type: none"> <li>\$44,375.00 (per nurse)</li> <li>\$169,049.00 (per nurse)</li> <li>\$166,400.00 (per nurse)</li> <li>\$45,000.00 (per nurse)</li> </ul>
<b>Total Project Revenue</b>		\$424,824.00

**Program Benefit/Loss**

<b>Total Revenue</b>	\$424,824.00
<b>Less Expenses</b>	<u>\$15,185.50</u>
<b>Total Program Benefit/Loss</b>	<b>\$409,638.50</b>