PREPARING PUBLIC HEALTH NURSES FOR DISASTER: INCREASING

SELF-EFFICACY & STANDARDIZATION

By

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A DNP project
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ABSTRACT

Objectives: The purpose of this project was to increase disaster self-efficacy and standardization for public health nurses (PHNs) thru implementation of disaster training, specialized disaster certifications, and standardized triage procedures to prepare PHNs as first responders during disasters. The impetus for conducting the project was to address evidence from literature that suggest when PHNs are called on to be first responders in a disaster they do not have the knowledge and skill set to be effective in triage or to follow incident command protocols.

Methods: This project incorporated quantitative methods to identify and measure disaster self-efficacy for PHNs. This task was accomplished with a variety of approaches including: pre and post training Disaster Self-Efficacy Surveys (DSES) created by Dr. Catherine Naypaver, demographic questionnaires, simulations, online certifications, and course evaluations. All Data retrieved and collected was analyzed in SPSS software.

Results: The results of the dependent sample t-test were substantial, $t(16) = -10.68$, $p < .001$, SD 10.70, df 15, and Sig. (2-tailed) = .000 signifying that there was a difference in pre and post DSES tools. Overall 100% of the study participants perceived an increase in their individual level of disaster self-efficacy. Increased disaster self-efficacy was measured by the mean increase from pre-training DSES (55.63=45%) to post-training DSES (84.29=67%) reaching the goal of 20% or greater rise in mean scores.

Conclusion: The results of this DNP project demonstrate that PHNs at Riverside County Department of Public Health (RCDOPH) recognize specialized disaster training and certification in Basic Disaster Life Support (BDLS ®) to be a useful addition to their current training and will prepare them to respond to disasters in the role as first responder.

Key words: Public Health Nurses, Disaster, Self-Efficacy, Simulation, and Disaster Response

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DEDICATION

I would like to dedicate this research to my family and friends. First to my children Anthony and Adrianna, words can never deeply express my gratitude for your unwavering love, support, and sacrifice. I am so proud to be your mom. To Albert Toro for embodying the definition of a true friend and father of my children who without fail is always there for me. I also dedicate this to my parents Earl and Janice Johnson who said numerous prayers for me and never stopped believing in my worth. Rosemary and Chuck Conway: my mom and stepfather that are seeing my success from heaven; there is not a day that goes by that I don't remember all the sacrifices you made so that I could be where I am today. To Shannon Pfrunder my best friend, mentor, and fellow single parent. Thank you for answering your phone for countless marathon conversations about life and always finding a way to make me laugh. Lastly, to all my friends that gave me endless encouragement to be a fabulous, courageous, and worthy woman. You guys mean everything to me and I am so blessed to have you all. Thank you all for believing in me and for your unconditional love.

"Our greatest Glory is not in ever falling but in rising every time we fall… "

Oliver Goldsmith

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Background

News in the United States and across the world reflects increasing local, national, and

global disasters with mass casualty incidents (MCIs). It is imperative that first responders are

prepared to handle these tragic situations with confidence and expertise. These incidents

frequently cross jurisdictional lines and involve responders from multiple agencies that may use

different casualty triage methods (FICEMS, 2013). This can interfere with efficiency in caring

for the victims and ultimately affect morbidity and mortality outcomes. For operational

simplicity, flow of interactions between responders, and clinical competence, it is essential to

implement a standardized triage method including incident command for all agencies involved in

disasters. The lack of consistency in disaster and triage methodologies can lead to errors that cost

lives or decrease desired patient outcomes. Although public health nurses (PHNs) may be first

responders in a disaster, there is a lack of specialized education in standard triage methods for

nurses in the area of public health. It is critical for public health nurses to become proficient in

disaster response, preparation, and standard triage methods.

Problem Statement

PHNs are not equipped with extensive knowledge, skills, and attitudes to effectively

intervene and implement standardized triage processes in a disaster or emergency as a first

responder. The role of public health nurses currently includes clinical nursing, consultation,

follow-up treatment, patient education, and disease prevention. Recently, natural disasters and

man-made disasters have exemplified the need for public health nurses to be involved in all types

of disaster preparedness and response to decrease secondary morbidity and mortality (Rebmann,

Carrico, & English, 2008). Disasters are not predictable making it essential for comprehensive

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education, disaster simulation, and disaster training to prepare public health nurses (PHNs) for the difficulties a disaster will create.

In December of 2015, a shooting occurred in a San Bernardino County building where 80 public health employees attended training; 14 people were killed and 24 wounded. After the shooting incident Hermia Parks department director and Judy Atchison supervisor for the Office of Maternal Child and Adolescent Health (MCAH), a division of RCDOPH, came to California Baptist University College of Nursing (CBU-CON) to voice concerns and seek support in disaster training for the nurses that worked in the division. The Riverside County Department of Public Health (RCDOPH) has limited resources for nurses to be allocated for specific disaster training outside disaster shelter response. Riverside County Public Health Nurses (RCPHNs) receive basic disaster training within policy guidelines however; specific first responder training and standardized disaster triage education are unavailable. Parks and Atchison expressed that the nurses at the MCAH do not feel they had the appropriate skills and knowledge to take care of patients if a disaster was to occur in the workplace.

Purpose

The purpose of this project was to provide and implement disaster preparedness training that complies with local, state, and federal recommendations and includes standard triage methods. The project provides comprehension in disaster and mass causality incidents (MCI) preparation, necessary skills for first responders, and learning activities to improve self-efficacy for PHNs in Riverside County working at the MCAH division. This coincides with the mission of RCDOPH to strengthen collaboration and partnerships, to improve health outcomes, and provide equity of health services (Riverside University Health System, 2016). Collaborative training through didactic education and clinical simulation for RCPHNs was performed on

campus at CBU-CON. Completion of the training equipped the nurses with knowledge and skills: should they respond to a disaster they will be able to provide care resulting in the best possible outcomes for the greatest number of people.

Desired Outcomes

The short-term goal of the project was to provide disaster training through simulation and certification in BDLS for the nurses at MCAH. The long-term goals are to continue disaster education to promote sustainable knowledge and skills, increase self-efficacy for PHNs so they can be leaders in disaster response, and sustain community collaboration with RCDOPH and CBU CON. Project objectives were developed to reach desired project outcomes (Table 1).

Table 1 Desired Outcomes and Objectives

Desired Outcomes	Objectives
Increase the number of PHNs knowledgeable in basic skills	• Community based skills day in January 2017 at CBU CON for 60 PHNs working in Riverside County at the office of Mother Child and Adolescent Health (MCAH) • At least 25% of the 60 nurses attending skills day will stay for afternoon session to volunteer and participate in DNP project for community based disaster training.
Increase the number of PHNs knowledge and skills in role of first responder during disasters.	• At least 15-20 (75-100 %) participating in the project will obtain 100% completion of online certifications in SALT triage, Basic Disaster Life Support (BDLS), and Incident Command (IC-100) courses by March 2017.
Increase the number of PHNs competent in disaster response by providing repeat simulation to reinforce learning	• At least 15-20 (75-100 %) will continue to participate in the study by returning in May 2017, two months after education and certifications to participate in second simulation and repeat DSES tool.
Increase knowledge and disaster self-efficacy in PHNs	• All (100%) nurse participants completing project will increase self-efficacy in disasters evident by comparing data and overall mean score increase of 20% or greater on post- training DSES Tool.
Increase community engagement and resources for PHNs	• Two training days at CBU CON for PHNs will engage community partnership and increase resources for PHNs.

Objectives

SMART objectives are defined by Romero (2013), as: specific clearly defined objectives, measureable tructure that can be measured to determine when the objective is met, attainable by necessary tools and resources, relevant that the objectives are aligned with the organization's vision and mission, and time that the objectives has a completion date for when the objective will be met (Romero, 2013). Collaboration between MCAH supervisors and the DNP project leader produced the following five SMART objectives for the desired outcomes for this project:

1. Community based skills day in January 2017, at CBU CON for 60 PHNs working in Riverside County at the office of Mother Child and Adolescent Health (MCAH), of which 25% of the nurses will volunteer and participate in community based disaster training.

2. Participants 15-20 (75-100%) that participate in the project will obtain 100% completion of online certifications in SALT triage, Basic Disaster Life Support (BDLS®), and Incident Command (IC-100) courses by March 2017.

3. Participants 15-20 (75%-100%) will continue to participate in the study by returning in May 2017, two months after education and certificates to participate in second simulation and repeat DSES tool.

4. All (100%) nurse participants completing project will increase in self-efficacy in disasters evident by comparing data from pre and post training DSES tools to achieve an overall mean increase of 20% or greater.

5. Two training days at CBU CON for PHNs to engage community partnership and provide resources for PHNs working outside traditional acute care settings.

Significance of the project to nursing and health care

According to Littleton-Kearny and Slepski (2008), nurses make up the single largest group of healthcare providers, making them the ideal population for disaster training. Nurses are crucial in emergency response at location and point of entry of disaster victims. Critical to any disaster preparedness plan, nurses need to be competent, equipped with the key factors of disaster preparedness with the basic knowledge and skills for effective disaster response (Wisniewski, Dennik-Champion, & Peltier, 2004). Optimal outcomes depend on a rapid and coordinated response between all facets of the healthcare response system, yet systematic, coordinated responses are seldom seen in disaster situations (Hsu et al., 2004).

The literature identifies key barriers in planning for at-risk-populations including a lack of the following in public health nurses: resources for vulnerable populations, appropriate disaster responses, and accurate assessments during disasters (Grier, Homish, Rowe, & Barrick, 2011). Public health nurses outside the hospital continue to function within their scope of practice and in addition are held to the standard to follow policies for local, state, and federal agencies in disaster response. Therefore, training and education have become a vital part of disaster preparedness. When public health nurses are called on to be first responders in a disaster their limited understanding and skill set in diaster response make them unprepared to triage and follow incident command protocols (Grier, Homish, Rowe, & Barrick, 2011).

Caring for patients in clinical settings and simulation in nursing schools to achieve knowledge, skills, and attitudes in patient care is standard training protocol. However, a disaster education and training option for public health nurses and interprofessional community are limited (Kayama et al, 2014). Competency based education of nurses with simulation allows

nurses to acquire and demonstrate competencies in the role of first responder and in settings that draw as near as possible to a realistic emergency or disaster (Kayama et.al, 2014).

Plan/scope of the project

The plan and scope of the project were to provide a safe learning environment, deliver new tools with simulation, and promote self-efficacy for PHNs responding in disasters or MCIs. The project developed a disaster-training program for PHNs through a variety of methodologies including didactic, simulation, and online classes with certification. The six part PHN disaster training program consists of: (a) demographic and personal questionnaire (Appendix A), (b) Disaster Self-Efficacy Scale (DSES) survey tool (Appendix B), assessment of disaster knowledge and skills among the nurse participants, (c) disaster simulation at CBU CON, (d) nurse certification in BDLS ®, (e) repeat of simulation after education and certification, (f) repeat of the DSES tool post education and simulation to determine level of nurse disaster self-efficacy. Throughout the training a variety of education approaches and tools were utilized.

Environmental Context

The project took into consideration the current environment PHNs practice in throughout Riverside County and the location of the training to promote participation and sustainability. Both areas were addressed for understanding of the limitations and advantages in the project. RCPHNs are exposed to extreme environmental work conditions. RCPHNs spend most of their work time out in the field responding to referrals or home visits for patient care. RCPHNs are frequently in a car as their primary mobile office that includes supplies and a disaster backpack. The exposure to extreme temperatures in Riverside County that PHNs are exposed to create potential for lack of physical safety and the effect of heat on contents in their disaster backpack was considered. California Baptist University (CBU) was the determined site as a local resource

to provide classrooms and simulation for RCPHNs during the project. CBU is a Christian liberal arts institution founded by the Southern Baptist. The overall mission of CBU is to be a university committed to the Great Commission. This includes sharing the word of God with students, surrounding communities, and all people that come to the university campus.

Setting. Training and education was facilitated at CBU-CON department and RCDOPH offices. The location at CBU provided state-of-the-art learning environments, shared learning spaces, and infrastructure that promoted and enhanced teamwork for local community engagement. CBU-CON provided classrooms for group interaction and a high-tech simulation room known as *Black box simulation suite* for immersion in visual, auditory, and surround effects. In the *Black box* for the DNP project simulation a physical apartment was built to mirror work and environment settings that PHNs are accustom to in the community. The setting for the simulation resembled an earthquake and the use of live actors with injuries to evoke realistic responses from the participants as they responded to the disaster.

SWOT/Risk Analysis

A SWOT analysis was completed to assess strengths and weakness of the department of MCAH office at Riverside County public health chosen for the project. (Table 2). The focus is directly related to the phenomena of interest, increasing disaster self-efficacy and standardization for PHNs working at MCAH office in Riverside County. To ensure the DNP project met the needs of MCAH nurses, in May 2016 the results of the SWOT analysis was discussed with Hermia Parks and Judy Atchison.

Table 2 SWOT Analysis

	STRENGTHS	WEAKNESSES
Internal Analysis	Experienced Staff	Lack of knowledge and training for PHNs to be first responders and perform disaster triage
	Knowledgeable & cohesive management team	Insufficient manpower to support education for all nurses during work hours.
	Basic disaster and shelter education with Red Cross and FEMA.	Allocation of salaries and fees for specialized disaster certifications.
	OPPORTUNITIES	THREATS
External Analysis	Partnership with CBU CON to increase resources and community collaboration.	Funding
		Retention of participants for completion of the project over five months

Section 2: Faith Integration and Theoretical Framework

Biblical Worldview/ Spirituality

Noah and the flood, Joseph and the famines, Moses and the ten judgments, and Job and

the storm that killed his family are a few of the biblically noted disasters. No matter what disaster

occurs there are judgments as to why the event occurred and opportunities for faith, prayer, and

relationship with God. God has a larger plan than may be first realized during an actual disaster.

Jeremiah 29:1 (NIV) states, "For I know the plans I have for you," declares the Lord, "plans to

prosper you and not to harm you, plans to give you hope and a future. Nurses, Emergency

Medical Services (EMS) responders, firemen, police officers, and the disaster victims can have

many cultural and religious beliefs. It is important to note that the bible describes disasters in

scriptures from the past and proclaims disasters for the future. As written in Matthew 24:7,

"Nation will rise against nation, and kingdom against kingdom and there will be famines and earthquakes in various places" (Matthew, NIV).

In addition to taking care of patients, Christian nurses are faced with moral and ethical decisions. The integration of a biblical worldview in disaster preparation were introduced to RCPHNs when they come for training at CBU. A devotion and prayer were integrated in the classroom as it is done in every class at the College of Nursing (CON) before instruction and training. Patients in disasters are entitled to non-bias care and as a Christian nurse the verses from Matthew 25:34-40 instill an emphasis to care for physical needs as an opportunity for revealing God's love (Matthew, NIV).

Theoretical Framework

Translation theory and frameworks focus on the interrelationship and multifaceted organizational dynamics that are significant to the translation of research or new knowledge into practice. Knowledge translation theories are necessary to guide implementation of research based interventions into practice (White, Dudley-Brown, & Terhaar, 2016). The Ottawa Model of Research Use (Appendix C) focuses on the implementation efforts of existing knowledge that is ready to be shared. Developed by Logan and Graham in 1998, the model has three phases and six primary elements necessary to consider when implementing research into practice (White, Dudley-Brown, & Terhaar, 2016). The change proposed in the DNP project for RCPHNs, has been adapted from the Ottawa Model to create specific information for all the phases describe above (Appendix D).

Havelock's Theory (1976) is modified from Lewin's Theory of Change (1951). Havelock's Theory of Change for this project underpins a process for change agents to organize work and implement innovation in the work environment. Havelock's theory postulated that

change is made up of cycles of actions that are repeated as change occurs (Appendix E). (White,

Dudley-Brown, & Terhaar, 2016). Specifically for this project the DNP leader modified

Havelock's Theory for the project (Table 3).

Table 3 Havelock's Theory DNP project

- **C**are- Need for RCPHNs first responders in disasters and preparedness
- **R**elate- Meeting with Hermia Parks and public health nurses
- **E**xamine- Problem diagnosed RCPHNs have training limited to work in a shelter during a disaster, not as a first responder
- **A**cquire- Literature review shows need for training and education specific for public health nurses through simulation for disaster education.
- **T**ry- Solution to create DNP project to provide training and education for RCPHNs to improve self-efficacy in disaster response and standardization.
- **E**xtend- Present findings of DNP project at conferences and publication in journals
- **R**enew- Post DNP project evaluation and capability to sustain throughout the whole county of Riverside with potential to change Healthcare Policy.

Section 3: Literature Review and Evidence Synthesis

Literature Review

A systematic review of literature was conducted using the following databases: The

Cumulative Index for Nursing and Allied Health (CINAHL), Pub Med Central (PMC), Google

Scholar, Medline/PubMed, OneFile (Gale), Oxford Journals (Oxford University Press), SAGE

Journals, JSTOR Archival Journals, Science Citation Index Expanded (Web of Science), Scopus

(Elsevier), and Wiley Online Library. Key words included: Emergency preparedness (EP),

nursing ethics, self-efficacy, standardized disaster triage, disaster tools, public nurses, disaster

management, simulation, post traumatic disaster training, and disaster needs assessment surveys.

Search Results

During the search with key words, results yielded 409 articles for initial consideration.

Duplicate papers were excluded, reading of the titles and abstracts of the remaining 77 articles

were visited for consideration for the integrated review. Twenty research papers were included in the integrative review and reflected in a literature Matrix Table (Appendix F). The research papers revealed multiple methodologies: Eight of them included qualitative approaches; two included systematic reviews with meta-analysis; five included quantitative approaches; one included a concept analysis and four revealed mixed-method approaches. Five of the studies were published between 2006 and 2008, six were published during the timeframe between 2010 and 2012, and nine studies were published between 2014 and 2016.

The results of the literature review yielded information from past disasters with a gap of research in the area of public health. Public health emergencies rarely become singular events and generally were not repeated in the same manner (Rebmann, Carrico, & English, 2008). Public health nurses have minimal training in disaster response and emergency preparedness, however if public health nurses are given the proper training on disasters they can prevent disease and increase better patient outcomes (Rebmann, Carrico, & English, 2008). Currently, after a disaster, public health nurses can play a significant role in decreasing secondary infections through prevention, providing public information, offering mental health services, and partnering with outside agencies (Rebmann, Carrico, & English, 2008). However, limited training and lack of certifications for PHNs in first responder roles during disaster limits their ability to increase better patient outcomes to shelter settings.

Benchmarks and Supporting Data

Simulation Education in Disaster Training. To validate the use of simulation in disaster preparedness and training for public health nurses one study assessed the proficiency and effectiveness of educational intervention using best practices in immersive simulation (Weiner, 2006). An interprofessional simulation consisting of teams of six to twelve participants was

designed, performed, and the results evaluated. All respondents indicated that their skills improved in at least one of the eight target areas relevant to the Institute of Medicine (IOM) research priorities; meeting public health emergency preparedness (PHEP) guidelines, and Interprofessional Education Collaborative (IPEC) competencies (Weiner, 2006). The majority of respondents (79% to 92%) indicated improved confidence in five areas: crisis communication, situational awareness, maintaining safety in an emergency, triage, and crisis leadership (Weiner, 2006).

Nurse educators found in another study that use of simulation technology is ideal for training and expressed strong feelings that simulation is an effective means of teaching disaster content (Miller, Synder, & Rambeck, 2014). Simulation technique can replicate events of enormously complex situations brought about during disasters: one study provided a website and tool kit specific for public health nurses to aid in developing competencies and increase self-efficacy within their respective scope of practice (WHO, n.d.).

Competencies of Education in Disaster Training. Competencies in disaster training for PHNs most often include in-class and independent learning modules. In one study participants completed pre and post intervention surveys to evaluate the impact of interventions on self-perceived confidence with apparent need for further training in 25 disaster competencies (Brannigan, Witwer, Rudel, & Young 2006). PHNs reported greater confidence in emergency preparedness, response, and recovery. Competency in handling disasters by public health nurses increased and the perceived need for further competency training decreased (Chiu, Polivka, & Stanley, 2011). In addition, another cross-sectional pre and post-intervention survey using a convenience sample, found that personal disaster preparedness training for public health nurses

can yield gains in relevant preparedness behaviors and attitudes but may require longitudinal reinforcement (Chiu, Polivka, & Stanley, 2011).

Tools of education in disaster training. Communication can become a great challenge for public health nurses and first responders during a disaster or MCI, suggesting the need for training before the critical event occurs. It is essential for all responders to practice the same methods; to provide better patient outcomes, the flow of operational interactions, and responders' self-efficacy, yet currently no standardization of triage exists (Kohn & et.al. 2014). A common basis of training greatly enhances the likelihood that systems can mesh to accomplish necessary goals in an actual disaster. A Basic Disaster Life Support BDLS® course creates consistency and gives people a common basis for response because it is a comprehensive, integrated, all-hazards, systematic approach to training (Kohn, & et.al, 2014).

Tools of disaster self-efficacy. The term of disaster self-efficacy is fundamentally defined as an individual's self-confidence in their ability to respond and provide care during a disaster. Each disaster is unique and is comprised of specific factors based on the origin of the disaster. To deliver quality care in disaster response, the distinctive factors of the disaster require first responders to exemplify disaster self-efficacy evaluated for internal consistency and reliability (Cheraghi, Hassani, Yaghmaei, & Alavi-Majed, 2009). However, there is more worth to assess specific nursing self-efficacy, which will provide practical applicability as compared to General Self-Efficacy (Cheraghi, Hassani, Yaghmaei, & Alavi-Majed, 2009).

The Disaster Self-Efficacy Scale (DSES) was developed by Dr. Nypaver and according to Nypaver (2011), the tool is grounded on the GSES tool and from four components of Bandura's self-efficacy theory: mastery experience, verbal persuasion, vicarious experience, and physiological feedback (Bandura, 1977). The DSES tool consists of 25 questions. The questions

are scored on a 5-point (1-5) scale; higher scores indicate greater disaster self-efficacy, and a total score has a possible range from 25 to 125. Participants answer and complete the DSES prior to the training to gauge their confidence responding to a disaster and to detect specific training needs. The DSES was developed to measure the nurse's level of self-efficacy and offer areas for improvement both on an individual level and within a department (Nypaver, 2011).

Section 4: Methods and Implementation

Research Design

The DNP project leader obtained participant's baseline disaster knowledge in self-efficacy pre and post education with the DSES survey tool, monitored distribution of education, collected course evaluations, and analyzed all data in SPSS software. Comparison of the DSES tool pre and post training and course evaluations using a five point Likert scale was completed with quantitative evaluation methods. The selection of a quantitative pre-post design study was intentional to bridge the gap of knowledge in disasters to improve self-efficacy for the participants.

Population and Sampling

PHNs working at the MCAH office promote prevention of disease and wellness for the population they serve using evidence based knowledge to attain measurable outcomes and through nurse interdisciplinary interventions create a positive effect in the determinants of health for residents in Riverside County. The MCAH has 12 programs under their department that support disease prevention and improve health (RCPH, 2016). Historically the roles of PHNs during a disaster are to work in shelters and assist the American Red Cross. During RCDOPH annual training and certifications from the Red Cross and Federal Emergency Management Agency (FEMA), the nurses at MCAH are equipped to respond to disaster shelters to provide

care. The sample for the project consisted of 16 RCPHNs who work in the community outside an acute care setting.

Data Collection

In January 2017, during the first meeting the project participants completed: project consents, demographic personal questionnaire, DSES survey tool, and participated in an earthquake disaster simulation. Throughout February and March the nurse participants continued education online to complete SALT training and an eight week course for certification in BDLS ®. In May the participants returned to CBU CON to repeat simulation and DSES tool after education and certification. Data were analyzed and results were presented to stakeholders in September 2017.

Data collection Tools. The data collection tools were: pre and post training DSES tools, demographic sheets, and course evaluations. Each participant volunteered for the project and was assigned a unique number. A list of participants with corresponding numbers was maintained by the project leader and kept in a locked desk drawer in her office. The participant number was placed on data collection material. The DNP student administered and retrieved DSES tools, demographic sheets, and course evaluations from each participant in the project. For five months the observations from the pre-training DSES tools were maintained to later match with observations from the post-training DSES tools. The observational data and course evaluations will be maintained in a locked drawer in until May, 2019 and then destroyed by a contracted document shredder company at CBU CON. Information from pre and post training DSES tools was used to collect quantitative data on participants' perceived disaster self-efficacy. Outcome measures with data collection instruments and methods used in project are seen in Table 4.

Table 4 Data Collection Methods for Outcome Measures

Measures	Instruments	Data collection point	Data analysis
Number of PHNs complete skills day with basic skills and stayed to participate in DNP project	Sign in sheets, consents signed, demographic questionnaire, pre training DSES	Immediately before skills stations and before participation in project with simulation	Quantitative statistics, descriptive data and simple data summaries
Number of PHNs continue after initial simulation and receive knowledge as first responder in disasters.	Online cortication: SALT triage, Basic Disaster Life Support, and Incident Command (IC-100)	In May 2017 when PHNs return for post training simulation and DSES	Quantitative statistics, descriptive data and simple data summaries
Number of PHNs return for repeat simulation to reinforce learning and competency	Administration and completion of post DSES	In May 2017 when PHNs return for post training simulation	Quantitative statistics, descriptive data and simple data summaries
Number of PHNs increase of knowledge and disaster self-efficacy	Mean score of 75% or greater on post training DSES tool	In May 2017 when PHNs return for post training simulation	Quantitative statistics descriptive data summaries
Number of PHNs increase community engagement and resources	Sign in sheet of trainings at CBU CON	Twice in DNP project	Simple data summary

Evaluation Methods

Information was extracted from the Demographic Questionnaires and both DSES tools,

and analyzed using Statistical Package for Social Sciences (SPSS). Cross-tabulation method is

frequently used to analyze questionnaire data and used for the demographic questionnaires

(Greasley, 2008). The information coded in SPSS, allowed for statistical analysis between the

two sets of answers. The dependent variables are portrayed in histograms, coefficient of determination, and paired 2-tailed test.

   Project data evaluation. Data evaluation is determined by independently calculating the same group of people, under the same conditions, with the same measure, on two occasions and calculating a reliability coefficient (Pearson's *r)* (Kane & Radosevich, 2011). The correlation between scores on the first and second administration of the DSES indicates the degree of test-retest dependability. A high positive correlation indicates consistent measurements over the time period studied (Kane & Radosevich, 2011). Test-retest reliability determined is calculated for both DSES Time 1 and Time 2 to evaluate correlation between mean scores to measure increase of self-efficacy. The stakeholders and project leader agreed that an increase of 20% or greater on the mean score from pre and post DSES indicated project success along with other objectives in the project.

   Project participation course evaluation. The evaluation tool for the overall education and training is based on *Kirkpatrick's 4-level taxonomy* (Kirkpatrick, & Kirkpatrick, 2007). The four levels aim to measure the following: 1) response, or the measure of how trainees feel about pieces of the training program, 2) knowledge, or the measure of information acquired, skills developed, and attitudes changed as a result of training, 3) behavior modification, or the measure of the extent to which the trainees exercise behaviors as a result of the training, and 4) results or the measure of impact (Hites & et.al, 2014).   A group of 14 Preparedness and Emergency Response Learning Centers (PERLCs) throughout the United States developed five common metrics for trainees who have completed a training course: "course satisfaction, perceived knowledge gain, relevance of the subject matter to response role, relevance of subject matter to role in daily job, and recommendations to others" (Hites & et.al, 2014 p. 818). For evaluation of

the training provided in the DNP project the PERLCs' standardized measures tool was administered (Appendix G).

Timeline

The timeline for the project was fourteen months starting from development to evaluation. The project to train RCPHNs and increase disaster self-efficacy started in April 2016 and finished in June 2017. The data analysis was completed in July 2017 (Appendix H).

Marketing Plan

Organizing schedules within agencies at MCAH and CBU CON for the project was critical to meet objectives. After finalizing schedules with both clinical partners, flyers and advertising for the project were provided to PHNs at the MCHA by the project leader and in collaboration with Judy Atchison (Appendix I). To enhance recruitment of nurse participation flyers were emailed to all PHNs who work at the MCHA rather than posted, due to the nurses work out in the community, not in the office. Reminders of training and dates were also done by email. The participants received continuing education units (CEUs) from CBU CON for simulation and additional CEUs awarded by agencies that provided the online courses in the project.

Protection of Human Subjects

Approval for the project was obtained by a committee review from the California Baptist University Institutional Review Board (CBU IRB), (Appendix J). No data was collected prior to approval from the CBU IRB.

Section 5: Finances and Available Resources

Resources

When joining RCDOPH and CBU the source of cost and budgetary responsibilities was discussed. The project leader was given a budgetary line from CBU CON in the amount of $10,000 for the first year and $5,000 for the four subsequent years. This is to facilitate disaster education and training for community partners and sustain collaboration between CBU CON and RCDOPH. In addition, CBU CON provided physical location and skills lab resources. Cost for supplies and staff at CBU CON was provided by CBU CON budget. A resource list detailing activities, fixed resources, and variable resources to further define the long-term versus short-term needs of the program was created (Appendix K).

Rationale for resources, revenues, and expenditures

Minimal cost is a major benefit of the disaster training project. The overall cost of the project was $9,108 which breaks down to $560.25 per nurse to receive specialized disaster training that can allow them to not only provide standardized care but to be leaders in disaster first responder roles. The second year the cost to continue simulation and training for the 16 PHNs is reduced to $271.44 due to the nurses already have BDLS certification that is valid for four years. The yearly primary cost is supplies and price of simulation at CBU CON. There will be over $5,000 dollars in year two not utilized that can be retained to pay for recertification in BDLS when it expires. In comparison to the cost of the project and the price of saving multiple lives cannot be calculated in a monetary figure. The advantages of this project are not only impactful to those involved but also for the whole community in which the PHNs serve. Both organizations also benefit from this project: PHNs have access to state of the art training and CBU CON strengthens partnership for clinical sites for nursing students.

Budget Outline

The estimated and actual costs for DNP disaster training project are listed in the Table 5.

Table 5 Community Disaster Training Budget

5 Year Budget						
Community Disaster Training with Riverside County Public Health Nurses (RCPHN)						
California Baptist University						
College of Nursing						
First year 16 RCPHNs received initial training and certification each addition year simulation only no certification						
REVENUE	Budget Year 1	Budget Year 2	Budget Year 3	Budget Year 4	Budget Year 5	Rationale
College of Nursing @CBU	$ 10,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	Budget line item per year
California Baptist University		$ 5,000	$ -	$ -	$ -	
Total	$ 10,000	$ 10,000	$ 5,000	$ 5,000	$ 5,000	
EXPENSES	Budget Year 1	Budget Year 2	Budget Year 3	Budget Year 4	Budget Year 5	Rationale
Faculty salary to teach	$ -	$ 1,345	$ 1,345	$ 1,345	$ 1,345	Overload salary for 3 units
Office Supplies	$ 50	$ 50	$ 50	$ 50	$ 50	
Sim/Studio facility	$ 2,100	$ 1,050	$ 1,100	$ 1,155	$ 1,213	After Initial year simultion 1 not 2 and cost 50%
LRC Staff and Faculty Hours	$ 2,775	$ 1,138	$ 1,172	$ 1,207	$ 1,243	After Initial year simultion 1 not 2 and cost 50%
Student worker hours	$ 1,200	$ 600	$ 618	$ 637	$ 656	After Initial year simultion 1 not 2 and cost 50%
Leadership Student Actors	$ -	$ -	$ -	$ -	$ -	Volunteers
Consumable supplies	$ 273	$ -	$ -	$ -	$ -	Set up fee Initial year
Moulage Supplies	$ 150	$ -	$ -	$ -	$ -	Set up fee Initial year
Basic Disaster Life Support Certification	$ 2,400	$ -	$ -	$ -	$ 2,400	Initial training and 5th year for recertification
Food Lunch before simulation	$ 160	$ 160	$ 160	$ 160	$ 160	
Total	$ 9,108	$ 4,343	$ 4,445	$ 4,554	$ 7,067	
Operating Income	$ 892	$ 5,658	$ 555	$ 446	$ (2,067)	Funds from 2nd year will transfer to 5th year

Funding Sources

In conjunction with the current budgetary grant from CBU CON the project leader plans to apply for a micro grant through CBU in January 2018 in the amount of $5,000. This grant will allow for project sustainability and purchase new disaster supplies for the nurses at MCAH to carry in their cars. For PHNs to function in the role of first responder, supplies are essential to implement standardized triage and care. In addition, MACH will continue to provide salaries and time off for the nurses to attend additional trainings. Ongoing post-project disaster education and preparedness training are feasible with the contribution from CBU CON's budget of $5,000 for community disaster preparedness. The funding is specified to promote community engagement and collaboration between CBU and community partners. The use of clinical simulation and

integrated resources between both agencies during the disaster training created shareholder's

approval and buy in for future sustainability.

Section 6: Results/Outcomes Analysis

The main objective of this project was to prepare PHNs for disasters by increasing self-

efficacy and standardization. Based on outcomes of the disaster training program, data were

collected pre and post intervention including: pre and post training DSES tools, specialized

disaster online certificates, and demographic questionnaire. Pre and post DSES results were

gathered and analyzed using descriptive analysis: means, standard deviations, and Pearson

correlation. A paired sample t-test was performed to analyze the statistically significant

differences in the pre and post data.

Descriptive statistics were implemented to describe and discover main characteristics of

the variables. The average value of a selected variable is represented by *M* (mean), the range of

data around the mean of a scale variable is characterized by *SD* (standard deviation) and the

number of times a nominal or ordinal category counted was labeled by "*n*". Representation of

percentage (%) was used to define frequency of a nominal or ordinal category.

A dependent sample *t*-test was used to evaluate for significant differences between the

two paired scaled variables, pre and post DSES tools. The normality denotes the distribution of

data and the assumption was that the data portrayed a bell-shaped curve. To measure if the

assumption of normality was achieved the Shaprio-Wilk test was performed. To determine

probability (p-value) the *t*-test was calculated with the degrees of freedom (*df*). The p-value

represents the probability in the null hypothesis that there was no difference in the dependent

variables. Cohen's *d* was calculated to evaluate the strength of differences between paired scores.

Project Results and Analysis

Seventeen PHNs from the MACH office volunteered to be in the study but one withdrew from the project due to prior commitments that she was unable to reschedule. A total of sixteen participants completed the project and training. The average participant was a female PHN between the ages of 30-49 years old, with more than 16 years' experience. (Table 6)

Table 6. Demographics of Participants

Age	Years	n	Percent
	20-29	1	6.2%
	30-39	4	25%
	40-49	4	25%
	50-59	3	18.8%
	60-69	4	25%
Gender		n	Percent
	Male	2	12.5%
	Female	14	87.5%
Years of Experience		n	Percent
	0-5 years	5	31.4%
	6-10 years	1	6.2%
	11-15 years	1	6.2%
	16-20 years	4	25%
	21-25 years	1	6.2%
	26-30 years	1	6.2%
	>30 years	3	18.8%

DSES analysis. For the pre-training DSES tool, the self-reported observations ranged from 34.00 to 89.00, with a mean of 55.63 (SD = 12.70). For the post-training DSES tool, the self-reported observations ranged from 51.00 to 111.00, with a mean of 84.19 (SD = 15.37). Comparison of means and standard deviations for DSES tools are presented in Table 7.

Table 7 Means and Standard Deviations for Pre and Post Training DSES Tool

Variable	M	SD
Pre-DSES	55.63	12.70
Post-DSES	84.19	15.27

A dependent sample t-test was conducted to assess if there were differences in pre and post DSES tools. The assumption of normality for the DESE was assessed using a Shapiro-Wilk test (Appendix L). The significance for both DSES tools is high indicating probabilities > 0.05 confirming the data is normal therefore accepting the null hypothesis that the sample data is not significantly different than a normal population.

The results of the dependent sample *t*-test were substantial, $t(16) = -10.68$, $p < .001$, SD 10.70, df 15, and Sig. (2-tailed) = .000.signifying that there was a difference in pre and post DSES tools (Appendix M). The pre-training DSES scores had a significantly lower mean than the post-training DESE scores. According to Cohen (1988), if the means between two groups do not reflect a standard deviation of > 0.2 then the difference is insignificant even if there is statistical significance between the groups. The Cohen's d for this project was 2.01 placing the significance level as large according to Cohen (Cohen, 1988). Results of the dependent sample *t*-test are presented in Table 8. To measure effectiveness and increase in disaster self-efficacy among participants, Figure 1.0 shows the overall mean increased from pre-training DSES (55.63=45%) to post-training DSES (84.29=67%) achieving a 20% or greater increase in mean scores.

Table 8 Dependent Sample *t*-Test for Pre and Post Training DSES Tool

				Pre-training DSES		Post-Training DSES	
Variable	*t* (16)	*p*	Cohen's *d*	M	SD	M	SD
Pre-DSES-Post DSES	-10.68	<.001	2.01	55.63	12.70	84.19	15.27
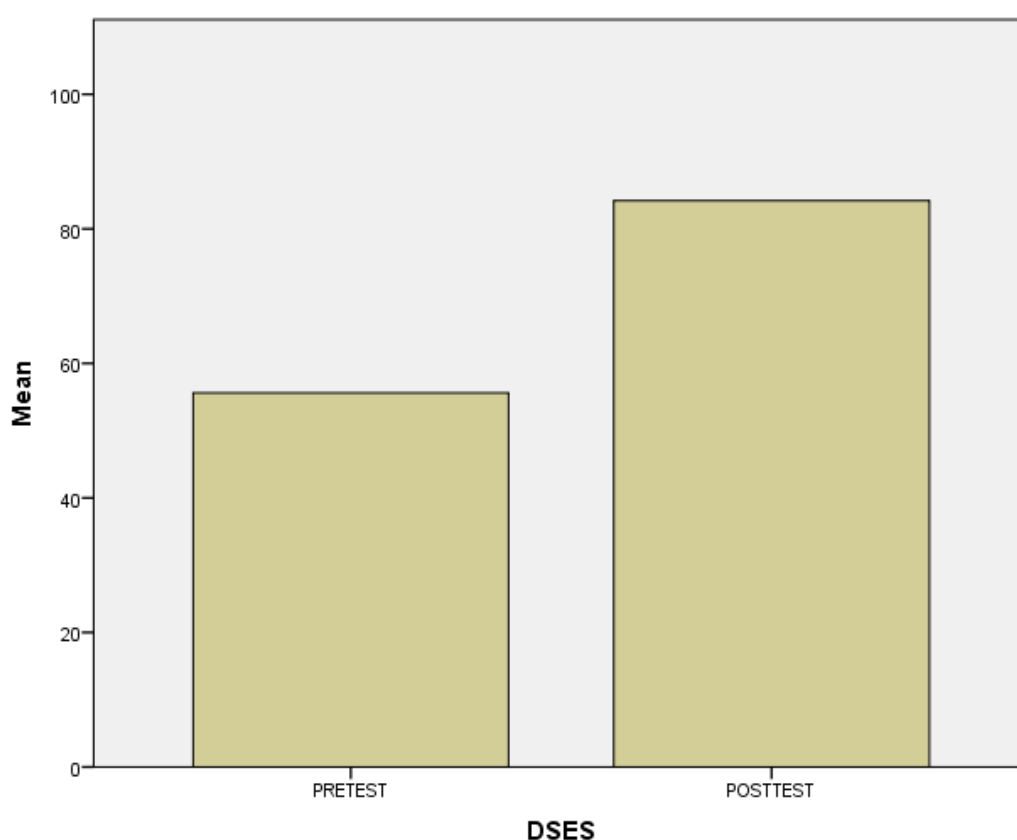
Figure 1.0 Mean of Pre-Training DSES and Post-Training DSES Tools

Course evaluation analysis. For the overall course evaluation PERLC's Level 1 Standardized Evaluation Measure was administered. The Likert Scale ranged from 1=Strongly disagree to 5=Strongly agree. The observation of responses collected from the course evaluation ranged from 4.5 to 4.94. Overall the participants were satisfied with the course and stated the

course enhanced their knowledge in disaster. Figure 2.0 shows the overall mean of course

satisfaction and knowledge gain reported by participants.

I was satisfied with the course overall

Somewhat Agree
Strongly Agree

This course enhanced my knowledge fo the subject matter

Somewhat Agree
Stongly Agree
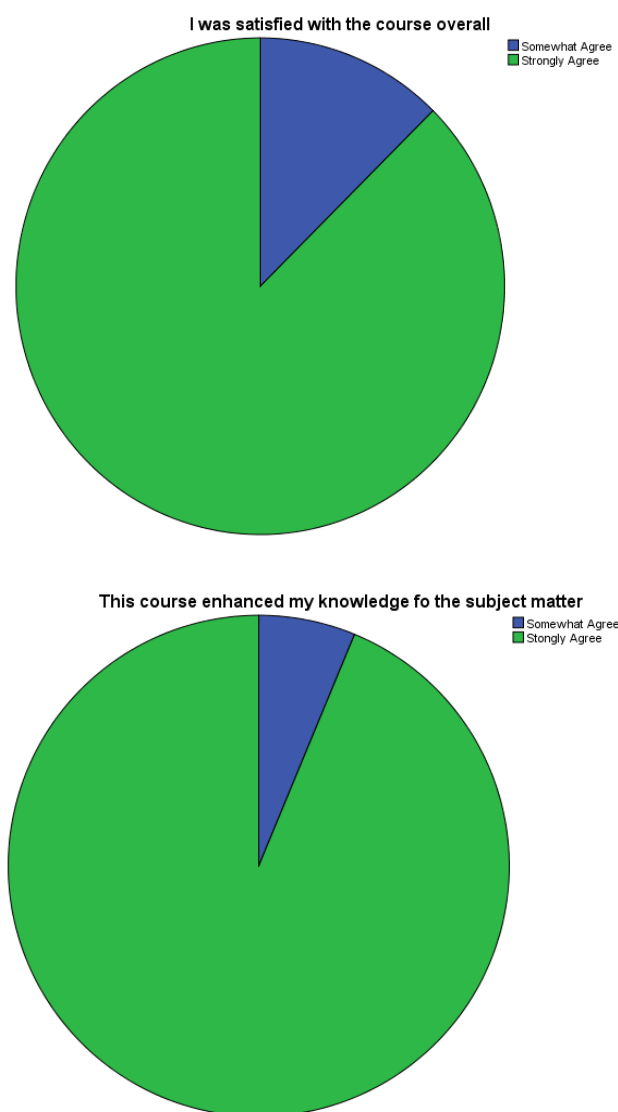
Figure 2.0 overall mean of course satisfaction and knowledge gain reported by participants

Project Success

The implementation of disaster training and specialized disaster certification resulted in

increased knowledge and disaster self-efficacy for the 16 MCAH nurses that participated in the

project. The improved RCPHNs' knowledge and self-efficacy post disaster training in the project

is reflective of the statistical significance between the pre and post DSES scores. The pre-training

DSES scores ranged from 34-89 total points out of 125 points possible with a mean score of

55.63. The post-training DSES scores ranged from 51-111 total points with a mean score of

84.19. Based on the descriptive statistics of comparison of both DSES tools, the participants

reported individual increase of knowledge in all 25 questions of the survey. Figure 3.0 shows the

individual responses of both pre and post DSES tools.
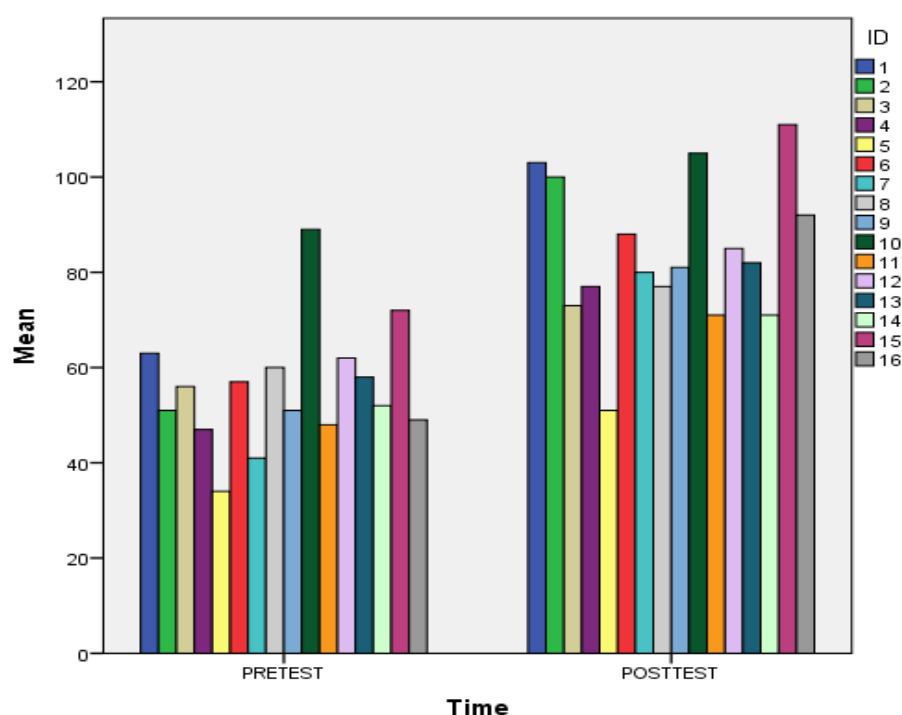
Figure 3.0 Individual participant recorded responses of both DSES Tools

Process and Outcome Measures Results

Process outcome results. The DNP project outcomes produced: basic skills for all

MCAH PHNs, disaster specialty certification for project participants, increase of disaster self-

efficacy for 16 PHNs, collaborative community relationships, analysis of data for dissemination,

and a Logic model (Appendix N) including measurable outcomes and goals for the project. All

project objectives were met and process outcomes reflect the project results. The process

outcomes results are in Table 9

Table 9 Process Outcome Results

Process Outcome	Project Result
Development of Disaster training for PHNs that work at MCAH office	Training developed. Key components: engaging in community organizations, DSES too administration pre and post training, data collection and analysis.
PHNs to achieved specialty disaster certification	All PHNs in project completed and received certificates in SALT Triage, BDLS, and Incident Command (IC-100)
Train PHNs to respond in disaster as first responder in disaster simulations with standardized patients	Two disaster simulations completed CBU CON with standardized patients no manikins. In the simulation the PHNs assume the role of first responder responsible for establishing IC and triage
PHNs evaluated training program	Quantitative data analysis was performed, 5 point Likert Scale Survey
Disaster training Increased self-efficacy for PHNs	Delivered to administration at MCAH the analysis of data showing increase of mean score by 20% from first DSES, to show increase in disaster self–efficacy for all 15 PHNs that completed the project.
Dissemination of results to RCDOPH	DNP project leader was invited to speak at annual PHN meeting in Riverside County on December, 2017

Suggestions for Improving Project and Sustainability

The project can be improved by conducting skills day separate from the first project

training day for participants in the study. The participants of the project attended both on the

same day and received information and education from two different roles in disaster response.

Sustainability of the project with MCAH includes adoption and funding for yearly disaster

training for the PHNs in the department. In addition, collaboration with CBU CON and

community engagement is critical for sustainability.

Dissemination

This project received tremendous support for the project by both RCDOPH and CBU CON. Hermia Parks, supported and encouraged a culture of collaboration and identified potential participants working in Riverside County under the MCAH branch to participate in the project who do not work in an acute healthcare facility. After completion of the project Hermia Parks and stakeholders received a poster presentation of the project to highlight the data reflecting increased disaster self-efficacy for the participants. A permanent copy of the project dissertation was submitted to CBU library in December 2017. The final paper will be uploaded to ProQuest as a component of the theses and dissertations database. On December 6, 2017 a power point of the project was presented to PHNs at the end of the year meeting for the MACH office. This allowed other PHNs to see the importance of disaster training and availability of training to increase self-efficacy in disaster response.

The DNP project leader believes it is essential to submit the DNP project findings of disaster self-efficacy for PHNs for publication. Publication to the appropriate journal includes consideration of the journal's mission and goals, impact factor, and the diverse content it provides for the readers. The journal selected for submission is the American Journal of Public Health (AJPH). The AJPH has been in publication for over 100 years and is dedicated to publication of original work in research, research methods, and program evaluation in the field of public health. Lastly, the DNP project abstract will be submitted to conferences as poster and podium presentations to disseminate project results and importance of the role of PHNs as first responders in disasters.

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Appendix A

Demographic Form and Questionnaire Modified from Dr. Nypaver's Demographic Form

Nurse Disaster Education Study **DEMOGRAPHIC FORM**	

AGE: _____ (Write in the years)

GENDER:

     Male   Female

RACE/ETHNIC   (Circle One or Write in)
American Indian, Asian, Black/African American, Hispanic, Native Hawaiian, White/Caucasian

YEARS OF EDUCATION: (Write in number of years)

HIGHEST DEGREE: _____

CURRENT PRACTICE SETTING: _____
(Critical Care, Emergency Department, Public Health, Med/Surg, Transportation, etc.)

YEARS OF RN NURSING EXPERIENCE: _____

PRIOR DISASTER TRAINING: (IF APPLICABLE)

TYPE (i.e. BDLS, FEMA, Workplace Training, etc.)	Length of	**Received w/in last 4**

PRIOR EMERGENCY PREPAREDNESS TRAINING	**(i.e., BDLS, IC, ADLS, ACLS, ATLS)**

Appendix A

Demographic Form and Questionnaire Modified from Dr. Nypaver's Demographic Form
Continued

PRIOR DISASTER EXPERIENCE:
IF PRIOR DISASTER EXPERIENCE, Why did you provide care? (Disaster at your job?)

Appendix B

Disaster Self-Efficacy Scale

Directions: Please answer each question by checking the answer that best describes how confident you are in your ability to respond to a disaster event.

	1-Not at all confident	2-Slightly Confident	3-Fairly Confident	4-Very Confident	5-Completely Confident
1. I can perform successfully under pressure in a disaster. (Physiological)					
2. I can accurately detect signs and symptoms of victim's exposure to biological agents. (Mastery experience)					
3. I can accurately detect signs and symptoms of victim's exposure to chemical agents. (Mastery experience)					
4 I can accurately detect signs and symptoms of victim's exposure to radiological agents. (Mastery experience).					
5. I can accurately detect signs and symptoms of victim's exposure to nuclear agents. (Mastery experience)					
6. I can accurately detect signs and symptoms of victim's exposure to explosive agents. (Mastery experience)					
7. I can successfully perform disaster response in extreme conditions. (Physiological)					
8. I can respond successfully during a disaster amid conditions of disorganization and chaos. (Physiological experience)					

9. I can maintain successful disaster response in the face of overwhelming suffering or tragedy. (Physiological experience)					
10. I can maintain a calm demeanor during emergency situations such as a disaster (Physiological experience)					
11 .I can maintain my composure even when circumstances around me are chaotic. (Physiological experience)					
12. I can perform my job despite emotional circumstances. (Physiological experience)					
13. I can manage my anxiety in difficult circumstance like disasters. (Physiological experience)					
14. I can accept help from my community resources during a disaster without difficulty. (Verbal persuasion).					
15. I can seek out support from my peers during a disaster when I need it. (Verbal persuasion)					
16. I can count on my peers for help during times of disasters. (Verbal persuasion)					
17. I can respect a chain of command and can take direction without difficulty. (Vicarious experience)					
18. I can be flexible in times of disasters to perform various functions as needed. (Verbal persuasion)					

19. I can anticipate challenges of healthcare providers and facilities in times of disasters to help adequately prepare for unanticipated influx of people. (Verbal persuasion)					
20. I can deal effectively with media personnel during times of disasters. (Vicarious experience)					
21. I can successfully perform in disaster situations because of events that have occurred in the media. (Vicarious experience)					
22. I can deal monitor the mental health status of disaster victims. (Mastery experience)					
23. I can successfully triage patients involved in a disaster event. (Mastery experience					
24. I can successfully respond to a disaster event because of training I have received from others. (Verbal persuasion)					
25. I can respond to disaster events based on discussions I have had with others who have experienced disaster response. (Verbal persuasion)					

Appendix C

The Ottawa Model of Research Use
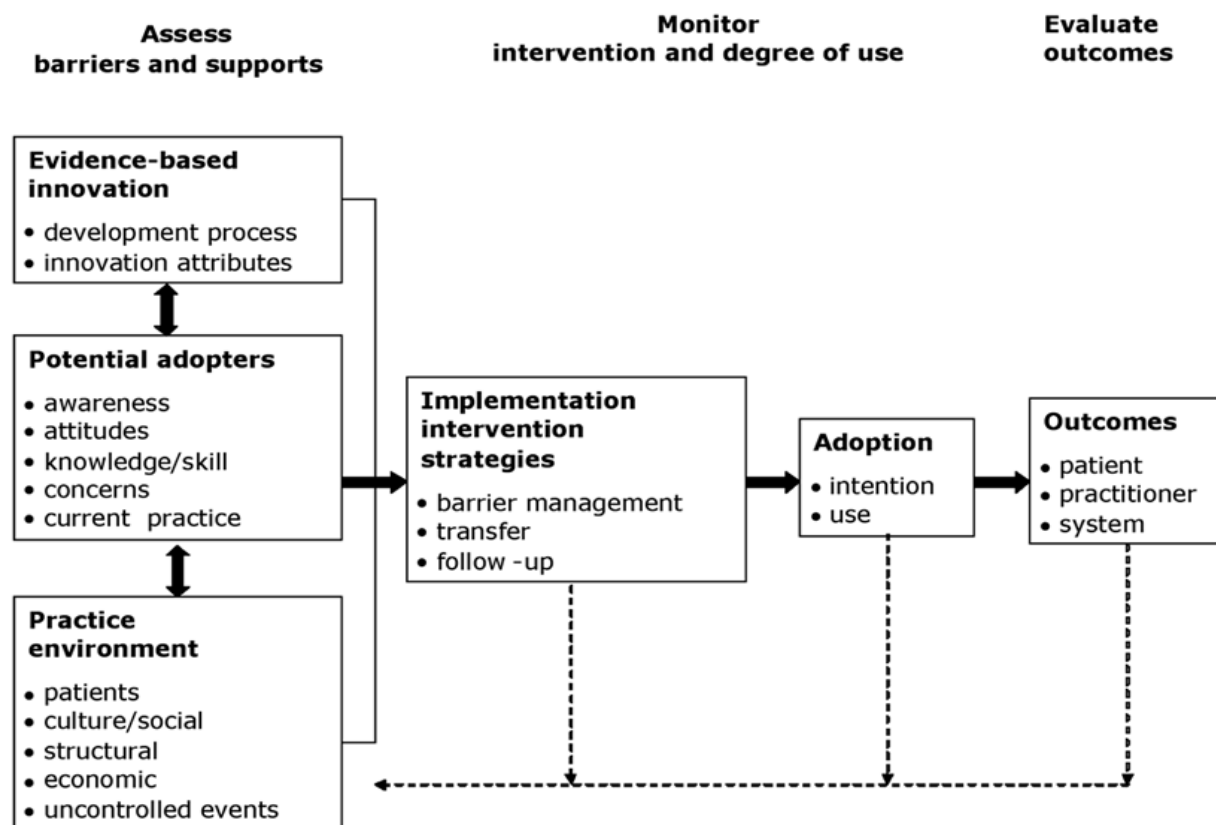
(White, Dudley-Brown, and Terhaar, 2016)

Appendix D

Ottawa Model of Research Use applied to DNP Change

Phase one	Phase two	Phase three
Assess barriers and supports	**Monitor intervention and degree of use**	**Evaluation outcomes**
Evidence-based innovation Disaster Self Efficacy Survey (DSES) Tool		
Characteristics of Potential adopters Awareness, Attitudes, Knowledge, Skills, Current Practice	**Implementation intervention strategies & Adoption** Baseline knowledge: Skills Day, Survey DSES Tool, & Simulation Online training: Certification in Basic Disaster Life Support (BDLS) and Incident Command (IC-100) Simulation: Repeat Disaster exercise, post DSES tool, and training evaluation	**Outcomes** **Short Term:** Increase knowledge and preparedness for RCPHNs defined by objectives that in questions on the first DSES Tool where answer to questions were: "Not at all confident" there will be a 20% mean increase in participants knowledge on 2nd DSES "To fairly knowledgeable or greater" Increase in Knowledge, Skills, and Attitudes as responders to disasters Faster care to patients with greater chance for survival **Long Term:** Curriculum and Annual training for RCPHNs Sustainability of disaster preparedness and training for RCPHNs in all county departments throughout Riverside.
Practice environment Riverside County Public Health Nurses working (RCPHNs) in the community in Riverside		

Ottawa Model Table original by Logan and Graham (1998), adapted by S. Toro (2016)

Appendix E

Havelock's Theory Change Cycle
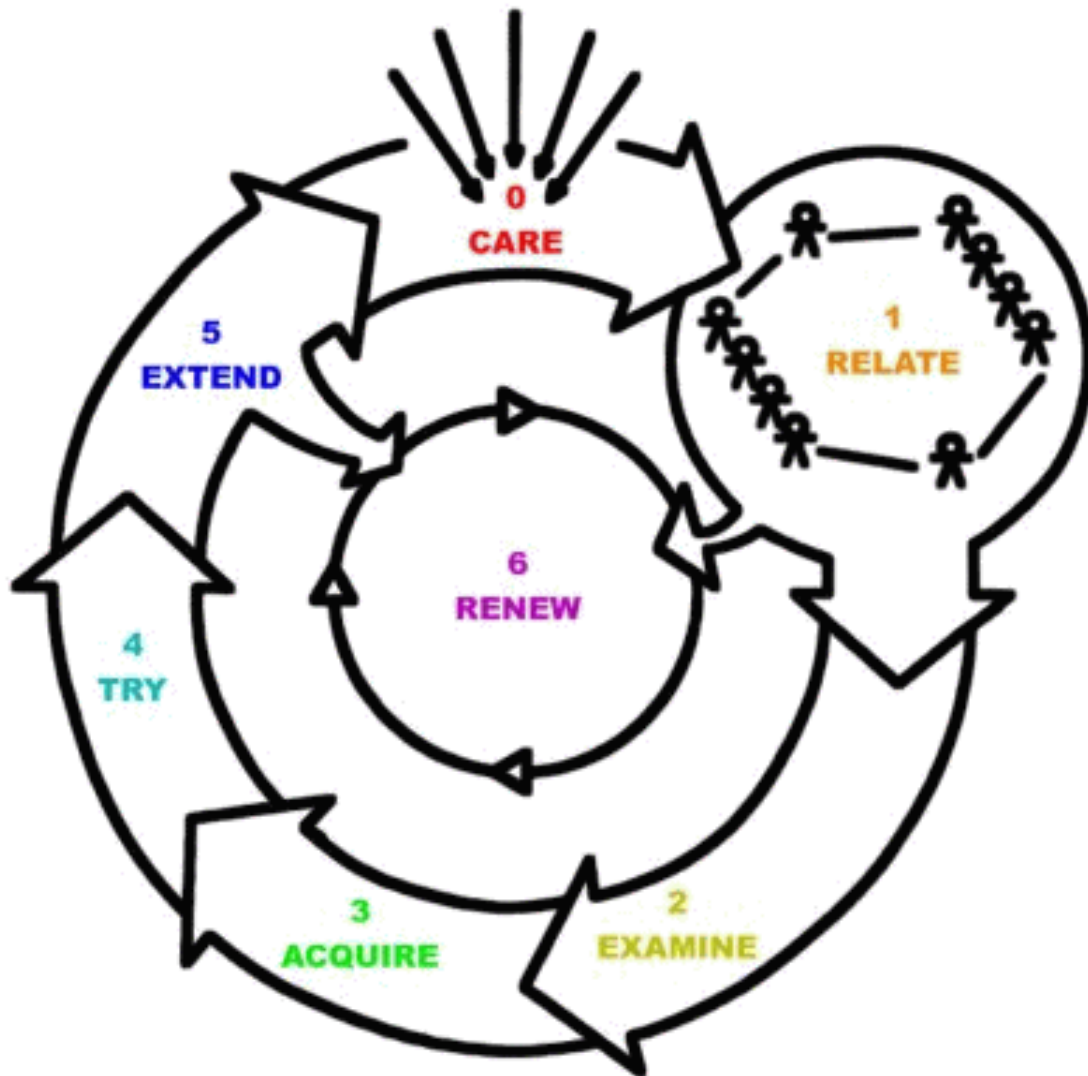
- **C**are
- **R**elate
- **E**xamine
- **A**cquire
- **T**ry
- **E**xtend
- **R**enew

(White, Dudley-Brown, and Terhaar, 2016).

Appendix F

Matrix Table: Summary of studies included in the review

Reference	Year of Publication	Purpose of paper or source document	Study design	Source and Key Words	Magnitude of effect
Brannigan, Laura, Witwer, Stephanie, Rudel, Piper, & Young, Alisa. (2006). Simulation Education in Mass-Casualty Incident Preparedness. *Clinical Simulation in Nursing, 2*(2), E69-E74.	2006	To survey nurse educators about current MCI preparedness topics being taught using simulation, and the present and future plans for integration of simulation as a tool for preparing nurses for a mass casualty event.	Descriptive non-experimental research design with both quantitative and qualitative elements.	Emergency Preparedness Public Health Nursing Simulation Competencies MCI	Nurse educators view simulation as an effective method for teaching MCI-preparedness skills. When compared to lecture, online education, and information transfer via video/CD, respondents indicated that simulation was the best method to teach most skills.
Weiner, E., (2006). Addressing Emergency Preparedness and Response Competencies for Nurses through Simulation Experiences. *Clinical Simulation in Nursing* 2(2), p. e43-e47.	2006	Competency-based education of nurses, with simulations to allow nurses to acquire and demonstrate competencies in settings that draw as near as possible to a realistic emergency.	Qualitative research	Emergency Preparedness Public Health Nursing Simulation Competencies	Simulation possibilities exist in which nurses can demonstrate their competencies in responding to emergency events. No current simulation technique can completely replicate the situations brought about during mass casualty and disaster events.
Torghele, K., Buyum, A., Dubruiel, N., Augustine, J., Houlihan, C., Alperin, M., & Miner, K. R. (2007). Logic Model Use in Developing a Survey Instrument for Program Evaluation: Emergency Preparedness Summits for Schools of Nursing in Georgia. *Public Health Nursing, 24*(5), 472-479. doi:10.1111/j.1525-1446.2007.00658.x	2007	To describe a unique way to make use of a logic model to develop a survey instrument that will assess the value of EP summits for nurse educators in Georgia.	Qualitative study	Emergency Preparedness Public Health Nursing Logic Model Survey	Linking survey questions to each of the elements in the logic model and cross-checking to assure that the goals and objectives are met, this helps to certify that the evaluation will be focused.
Chapman, Kija, & Arbon, Paul. (2008). Are nurses ready?: Disaster preparedness in the acute setting. *Australasian Emergency Nursing Journal, 11*(3), 135-144.	2008	A literature review was done to identify research examining nursing preparedness for disaster in the acute setting	This was a quasi-experimental group pre and post design.	Public Health Nurse Disaster Learned Education Emergency Preparedness Acute Care	Four major themes that were most frequently highlighted in disaster health research were identified. There are no currently taught practices or competencies in disaster health response that EBP evidence-based.

Reference	Year of Publication	Purpose of paper or source document	Study design	Source and Key Words	Magnitude of effect
Rebmann, T., Carrico, R., & English, J., (2008), Lessons Public Health Professionals Learned from Past Disasters, *Public Health Nursing,* (25) 4, p 344-352 Wiley Periodicals Inc. DOI: 10.1111/j.1525-1446.2008.00715.x	2008	Delineate the lessons that PHP learned during past disasters and to Determine resource educational gaps in previous disaster response.	Qualitative research	Public Health Nurse Disasters Learned Education Emergency Preparedness	Disasters can result in public health crises if infection prevention/control interventions are not implemented rapidly and appropriately. Gaps in past public health disaster response include infection prevention/control in mass casualty incidents.
Numminen, O., Leino-Kilpi, H., Van der Arend, A., Katajisto, J. (2010). Nurse Educators' Teaching of Code of Ethics. *Nurse Education Today* 30(2), Pages 124–131.	2010	The study focused on the statements of the codes of ethics; their functions, related ethical concepts, laws and agreements, and the codes of other health care professions.	Descriptive, cross-sectional this study and quantitative survey method.	Public Health Nurse Disasters Education Ethics New content	The study's sample was a good size in relationship to what was studied. When educating a new content, the ethic of target participants should be addressed.
Busby, S., Witucki-Brown, J., (2011). Theory Development for Situational Awareness in Multi-Casualty Incidents. *Journal of Emergency Nursing,* (37)5 p.444–452.	2011	To create new knowledge by discovering the process of SA in MCI and develop substantive theory with regard to field-level SA	A qualitative, grounded theory	Public Health Nurse Disasters Learned Education Emergency Preparedness	SA in MCI is a growing need at local, national and international levels SA in MCI involves responders anticipating, perceiving, and appreciating the multi-source relevant information pertaining to a particular contextually based emergency event.
Grier, N., Homish, G., Rowe, D., & Barrick, C., (2011). Promoting Information Sharing for Multi-jurisdictional Public Health Emergency Preparedness. *Journal of Public Health Management Practice*, 17(1) 84-89.	2011	The assessment was designed to address the needs of local, state, and federal government administrators working in emergency Management and public health.	A multilevel, mixed-methods evaluation study and online tool.	Public Health Nurse Disasters Learned Education Emergency Preparedness	The creation of a comprehensive guide to multijurisdictional collaborations, with self-assessment checklists, can provide information to emergencies. Information sharing and increased collaboration can lead to increased utilization of emergency preparedness best practices

Reference	Year of Publication	Purpose of paper or source document	Study design	Source and Key Words	Magnitude of effect
Nypaver, M. (2011). *Disaster Education for Nurses: A Comparison of Two Instructional Methods for Teaching Basic Disaster Life Support TM in the Light of Self-efficacy Theory*.	2011	There were five purposes: determine whether one teaching method is superior over another for disaster education; evaluate how knowledge retention varies between instructional models; examine whether a correlation exists between self-efficacy and disaster knowledge; pilot a new instrument, DSES; complete psychometrics on the BDLS® exam	Quantitative design study	Public Health Nurse Disasters Learned Education Emergency Preparedness Disaster Life Support	The DSES measure shows promise for determining disaster self-efficacy. The author created a new tool for disaster DSES The DSES is a 25-item scale. Items are scored on a 5-point scale (1 – 5), higher scores indicate greater disaster self-efficacy, and the total score has a possible range of values from 25 to 125.
Berger, W., Coutinho, E., Figueira, I., Marques-Portella, C., Luz, M., Neylan, T., & Mendlowicz, M. (2012). Rescuers at risk: a systematic review and meta-regression analysis of the worldwide current prevalence and correlates of PTSD in rescue workers. *Social Psychiatry & Psychiatric Epidemiology*, *47*(6), 1001-1011. doi:10.1007/s00127-011-0408-2	2012	To estimate PTSD among rescue workers and to determine the variables among the prevalence of individual studies.	Systematic review with meta-analysis	Public Health Nurse Disasters Learned Education Emergency Preparedness	The worldwide collective current prevalence was 10%. The Asian region had, on average, higher estimated prevalence than those from Europe, but not higher than North American's. Studies of ambulance personnel also showed higher estimated PTSD prevalence than studies with firefighters and police officers.
Chiu, M., Polivka, B., & Stanley, S. Evaluation of a Disaster-Surge Training for Public Health Nurses. *Public Health Nursing*, *29*(2), p. 136-142 doi:10.1111/j.1525-1446.2011.00984	2012	To examine the effect of a blended educational intervention (in-class and independent learning modules)	This was a quasi-experimental one group pre and post design.	Disaster Preparedness Public Health Nurses Disaster Surge	Confidence in Preparedness, Response, and Recovery PHN disaster surge competencies significantly increased. Significantly decreased. A blended learning approach to disaster surge training effectively improved PHNs confidence in competency achievement and reduced perceived need for further training.
Bevc, C., Simon, M., Montory, T., & Horney, Institutional Facilitators to Local Public Health I Planning for Vulnerable Populations. *Public Hea Reports,129(4)* p.35-41.	2014	Efforts to preparedness improve response services and address public health preparedness planning and training as they relate to vulnerable and at-risk populations	A multilevel, mixed-methods evaluation study an online tool to introduced the *Vulnerable & At-Risk Populations Resource Guide* in North Carolina.	Disaster Preparedness Public Health Nurses Tools Planning	Results highlight the important role of LHDs in preparedness planning and the potential implications associated with organizational and bureaucratic impediments to planning implementation

Reference	Year of Publication	Purpose of paper or source document	Study design	Source and Key Words	Magnitude of effect
Loke, A., & Fung, O. (2014). Nurses' Competencies in Disaster Nursing: Implications for Curriculum Development and Public Health. *International Journal Of Environmental Research And Public Health, 11*(3), 3289-3303	2014	To explore Hong Kong nurses' perceptions of competencies required for disaster nursing. It is important to understand nurses' perceived competencies in disaster care prior to curriculum development.	A qualitative study	Disaster Preparedness Public Health Nurses Curriculum Development	The special needs of vulnerable groups should be attended to in disasters to reduce damaging effects on health of the population and the death toll. Nurses should identify the vulnerable populations in the community, assist them in their special needs with special items available at home, the basic survival skills, where and how to get help
Glik, D., Eisenman, D., Donatello, I., Abdelmonem, S., Michael, P., Michael L., Martel, A., (2014). Reliability and validity of the Assessment for Disaster Engagement with Partners Tool (ADEPT) for local health departments. *Public Health Reports, 129*(6), 77. Los Angeles, CA.	2014	This study presents reliability and validity findings for the ADEPT, an instrument that can be used to monitor collaborative between LHDs, CBOs, and FBOs for disaster preparedness, response, and recovery	Formative Research Literature Review, Qualitative interview to finalize the conceptual development of survey multi-dimensional ADEPT scales and creation of four domains	Disaster Preparedness Public Health Nurses Tools Planning	Higher scores of ADEPT for organizational respondents suggest that more activities were inter- organizational preparedness in those organizations. This finding implies that organizations with higher ADEPT scores have more active relationships with CBOs/FBOs in preparedness, a key element for creating community resilience for emergencies and disaster preparedness.
Johnstone, M., & Turale, S. (2014) Nurses' experiences of ethical preparedness for public health emergencies and healthcare disasters: A systematic review of Qualitative Evidence. *Nursing & Health Sciences, 16*(1), 67-77 doi:10.1111/nhs. 12130	2014	Learn about nurses' experiences of ethics dealing with catastrophic public health emergencies. To identify gaps and weaknesses in ethics guidance and education available to nurses in disasters.	This systematic review considered qualitative data in studies with methodological approaches such phenomenology, hermeneutics, naturalistic inquiry, exploratory descriptive, and grounded theory	Disaster Preparedness Public Health Nurses Tools Planning	Significantly, of the 12 papers reviewed, only one study (Frank & Sullivan, 2008) directly identified ethical issues. Shows a gap in nursing research literature on healthcare disaster ethics, in regard to: the ethical challenges nurses face during a public health emergency or disaster; how nurses can best be prepared for ethical responses in extreme conditions.
Kayama, M., Akiyama, T., Ohashi, A., Horikoshi, N., Kido, Y., Murakata, T., & Kawakami, N. Experiences of Municip Health Nurses Followin Earthquake, Tsunami, a Disaster. *Public Health 31*(6), 517-525 9p.	2014	To explore the experiences of municipal PHN post-disaster of earthquake and tsunami resulting in a nuclear accident in Fukushima, Japan,	A qualitative research design	Disaster Preparedness Public Health Nurse	The complex demands of extended disaster management caused subjects to grow professionally. Helping them process their emotions should also help these nurses give focus to their posttraumatic growth, and strengthen their sense of professionalism.

Reference	Year of Publication	Purpose of paper or source document	Study design	Source and Key Words	Magnitude of effect
Kohn,S., Semon, N., Hedlin, H., Thompson, C., Marum, F., Jenkins, S., Slemp, C., Barnett, D., (2014) Public health -specific personal disaster preparedness training: an academic Practice collaboration. *Journal of Emergency Management* 12(1) p. 55-73.	2014	To measure the three relevant outcomes of a personal preparedness curriculum for public health workers	Cross-sectional Qualitative	Disaster Preparedness Public Health Nurses Tools Planning Vulnerable Populations	One-year post-workshop, 77% of respondents reported having personal emergency kits (40% at baseline) and 67% reported having preparedness plans (38% at baseline) suggesting some participants assembled supply kits and plans post-workshop.
Miller, J., Snyder, A., & Rambeck, J. (2014). Improving emergency preparedness system readiness through simulation and interprofessional education. *Public Health Reports, 129*, 129-135. Minneapolis, MN	2014	To test effectiveness of specific simulations, create consistent assessment tools for emergency response, team communication, and to assess retention and transfer of skills over time.	Quantitative and Qualitative data (mixed methods)	Disaster Preparedness Public Health Nurses Tools Planning Simulation Interprofessional Education	Workshop efficiently and effectively addresses several needs in emergency preparedness training to address all four IOM research priorities, meeting PHEP capabilities and IPEC competencies, and addressing issues identified in systematic reviews.
Piltch-Loeb, R., Nelson, C., Kraemer, J., Savoia, E., & Stoto, M. (2014). A Peer Assessment Approach for Learning from Public Health Emergencies. *Public Health Reports, 129*, 28-34.	2014	Alternative to standard quality improvement approaches and to commonly use after action report improvement plans, developed and tested a peer assessment approach for learning from singular public health emergencies.	The design is qualitative.	Disaster Preparedness Public Health Nurses Tools Planning	Participation of peers from similar jurisdictions offers the potential for objective analyses, both by professionals with experience in PHEP and of the particularities of the systems being assessed. At the same time, it can be an effective way to share best practices to support and amplify technical assistance provided by the CDC.
Veenema, T., Griffin, A., Gable, A., MacIntyre, L., Simons, R., Couig, M., Walsh, J., Lavin, R., Dobalian, A., Larson, E. (2016). Nurses as Leaders in Disaster Preparedness and Response—A Call to Action. *Journal of Nursing Scholarship, 48*(2), 187-200.	2016	To identify barriers in disaster nursing to achieve the vision, and development of recommendations for nursing practice, education, policy, and research.	Evidence from the opinion of expert committee. Single descriptive study.	Disaster Preparedness Public Health Nurses Tools Planning Response	This project represents an important step toward nurses' roles as leaders, educators, responders, policymakers, and researchers in disaster preparedness and response.

Appendix G

Preparedness and Emergency Response Learning Center-Developed Level 1 Standardized Measures

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
I was satisfied with the course overall.	1	2	3	4	5
This course enhanced my knowledge of the subject matter.	1	2	3	4	5
The course was relevant to what I might be expected to do (prevent, prepare for, or respond to) an emergency.	1	2	3	4	5
This course provided content that is relevant to my daily job.	1	2	3	4	5
I would recommend this course to others.	1	2	3	4	5

Appendix H

Timeline

April 2016	May 2016	June 2016	July-Aug 2016	September 2016	October 2016
Met Supervisors MCAH office Created SWOT analysis for PHNs	Met with Hermia Parks and Judy Atchinson to create collaborative plan for project. Met with Dr. Herrera expert in simulation to discuss simulation in the training.	DSES tool chosen for DNP project. DSES tool designed to evaluate self-efficacy of disaster knowledge. Project design: disaster simulation, skills, and content areas promoting disaster knowledge.	Met with Supervisors at MCAH to propose DNP project. Modifications made to meet mutual needs of MCAH and the project. Hermia Parks agreed to be community advisor for DNP project.	Submitted IRB application to CBU IRB committee for approval. Created project timeline schedule. Begin manuscript.	Modifications made to IRB application at the request of IRB committee.
November 2016	**December 2016**	**January 2017**	**February 2017**	**March 2017**	**April 2017**
Hermia Parks requested skills day at CBU for all PHNs at MCAH regardless of participation in DNP study. Skills day planned.	Received IRB approval for DNP project. Supplies for skills day requested and funds granted by Dean Oaks from community partnership budget at CBU-CON	Skills day January 26th 08:00 to 12:00 for all MCAH nurses. 1:00 to 5:00pm in which 17 participants signed consents and completed DSES #1 prior to simulation #2.	SALT triage disaster certification completed. 16 participants started 8 week online virtual course for certification in BDLS®. Classes taught by certified BDLS instructor.	Participants completed BDLS ® Certification course. Continue manuscript.	Continue manuscript.

May 2017	June 2017	July 2017	August 2017	September 2017	October 2017
Simulation #2 post disaster training, education, and BDLS ® certification. Administer DSES Tool #2 to all participants. Continue manuscript.	Evaluate data from DSES Tool #1 and #2 reflective of pre and post self-efficacy in each participant. Input Data in SPSS software. Continue manuscript	Input Data in SPSS software. Continue manuscript	Input Data in SPSS software. Continue manuscript	Finalized Data in SPSS software. Data evaluation and identified areas of increased knowledge and recognize future needs for PHNs and MCAH	Submit manuscript to Dr. Gage DNP advisor.
November 2017	**December 2017**				
Manuscript approved by Dr. Gage DNP advisor.	Final presentation and defense of DNP project.				

Appendix I

Flyer

TRAINING AND EDUCATION IN DISASTER PREPAREDNESS AND RESPONSE FOR PUBLIC HEALTH NURSES

WHAT THE STUDY IS ABOUT:
DEVELOPMENT IN DISASTER EDUCATION AND TRAINING PROGRAM FOR RCPHNS TO INCREASE SELF-EFFICACY IN DISASTER RESPONSE AND PREPAREDNESS

WHAT YOU WILL BE ASKED TO DO:
COME TO CBU FOR DISASTER TRAINING ON JANUARY 26TH FROM 13:00 TO 17:00. COMPLETE A SIMULATION IN DISASTER, GO HOME AND HAVE 2 MONTHS TO COMPLETE ONLINE TRAINING OF NURSE CERTIFICATION IN BDLS ® AND INCIDENT COMMAND IC-100. AFTER COMPLETION YOU WILL RETURN TO CBU ON MARCH 29TH, 2017 TO REPEAT THE SIMULATION.

RISKS AND BENEFITS:
THERE ARE NO FORESEEABLE RISKS TO YOU PARTICIPATING IN THE STUDY. THE BENEFITS INCLUDE IMPROVEMENT IN YOUR KNOWLEDGE OF DISASTERS AND A BETTER UNDERSTANDING OF DISASTER TRAINING FOR IMPROVED SELF-EFFICACY FOR PUBLIC HEALTH NURSES.

COMPENSATION:
THERE IS NO FINANCIAL COMPENSATION FOR THIS STUDY, THOUGH IF YOU DO PARTICIPATE CONTINUING EDUCATION UNITS (CEU'S) ARE AVAILABLE FOR ALL PARTICIPANTS.

IF INTERESTED PLEASE CONTACT
STACEY TORO
MSN, GDN, RN
STORO@CALBAPTIST.EDU

Appendix J

IRB Approval

California Baptist University
Institutional Review Board
Formal Approval

From: Erin I. Smith PhD.
Associate Professor of Psychology
College of Behavioral & Social Sciences

RE: IRB Review
IRB No.: 005-1617-EXP

Project: Preparing Public Health Nurses for Disaster: Increasing Self-Efficacy & Standardization

Principle Investigator: Stacey Toro
Faculty Advisor: Jeffery Gage

College/Department: School of Nursing

IRB Determination: Expedited Application Approved – Graduate student research using survey questionnaires as a part of nurse training; no minor subjects; no more than minimal risk; no deception utilized; acceptable consent procedures and documentation; acceptable data protection procedures. Data collection may begin.

Approval is granted for one year from date below.

Date: 12/12/2016

Appendix K

Resources	ST vs. LT	Fixed vs. Variable	Activities	LT vs. ST	Fixed vs. Variable
In order to accomplish the set of activities the following resource will be needed:	This resource is necessary short-term or long-term	This resource cost is fixed or variable	The following activities will need to be implemented to facilitate change:	Activity will occur short-term or long-term as a result of DNP change project	Activity cost is fixed or variable
Purchase cost for each nurse to go to Web base site for certification of Basic Disaster Life Support (BDLS	LT	Variable	Provide certification education specialty for RCPHNs that are in the field and can be first responders in a disaster.	LT	The trademark and product of BDLS will set the amount for certification and is at their discretions to increase or decrease cost.
RCPHNs work Unit Hours	LT	Variable	RCHD will allow for the release of monetary compensation for their nurses to come to education	LT	money per hour depends on the employees hourly rate of pay
Training Refreshments	ST	Variable	To increase productivity and encourage attendance	ST	Cost of refreshments can change due to type or amount of product.
Disaster training and Simulation at CBU	ST	Variable	Flex classrooms, use of simulations, disaster includes multiple supplies	LT	Disaster training and simulation related expenses are purchased one time for a fixed amount per the CBU
Purchase disaster Incident Command kit	ST	Fixed	To allow RCPHNs to train for responds to disasters for new hires or for yearly drills	ST	The kit is purchased once.

Office Supplies	LT	Variable	Office Supplies needed for various training materials	LT	Office supply costs are incurred either once each time that a resource is used, or once for each complete
Skill lab Supplies	LT	Variable	Disposable Lab Supplies needed during simulation trainings	ST	Volume will increase or decrease depending on type of simulation and number of participants.

Appendix L

Shapiro-Wilk Test of Normality

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
PRETEST	.156	16	.200[*]	.933	16	.270
POSTTEST	.133	16	.200[*]	.963	16	.721

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Appendix M

Paired Sample *t*-Test

Paired Samples *t*-Test

		Paired Differences			
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower
Pair 1	PRETEST - POSTTEST	-28.563	10.702	2.675	-34.265

Paired Samples Test

		Paired Differences 95% Confidence Interval of the Difference Upper	t	df	Sig. (2-tailed)
Pair 1	PRETEST - POSTTEST	-22.860	-10.676	15	.000

Appendix N

Logic Model

PICOT Question: In public health nurses in Riverside County (P), how will the use of disaster training (I) compared to current practice (C) affect knowledge and self-efficacy during a disaster (O) over a six month period (T)?

Resources/Input	EB Interventions	Outputs	Outcomes/Objective	Impact

Riverside County Public Health Nurses (RCPHN) and manager Director of MCAH

CBU DNP Candidate

CBU Faculty

Time

Disaster Training

Pre and Post Disaster Knowledge Tool

Educational Training and Simulation Accomodations at the School of Nursing Cal Baptist Univeristy (CBU)

Pre/post-training DSES survey administered to RCPHNs participants

Collection of Demographic Sheet

Create Disaster Training Education and Skills day

Provide online training for advance disaster skills

Data pre and post training to measure Self-Efficacy

Implementation of Simulation Training

Appropriate Disaster Certification For PHNs

Short Term

Increase knowledge and disaster self-efficacy for PHNs and stakeholders in the role of first responders for PHNs during a disaster

Faster care to patients with greater chance for survival and disaster

Long Term

Annual training for PHN nurses

Sustainability of disaster preparedness and training for PHN's in all departments throughout Riverside

Better Patient Outcomes

Nurses trained for Disasters.

Community Engagement

Sustainability: Disaster Prepairdness and Training program will be implemented long term at locations where PHNs in Riverside, CA. provide care

Appendix O

Permission to use DSES Tool Dr. Nypaver

Letter Requesting Permission to use Copyrighted Material in DNP project

Dr. Mary Nypaver PhD. RN
Fort Loudoun Medical Center
550 Fort Loudoun Medical Center Dr
Lenoir City, TN 37772

September 25, 2016

Dear Dr. Nypaver:

This letter will confirm our recent telephone text and email conversation. I
am completing a doctoral dissertation/ DNP project at California Baptist
University College of Nursing entitled:

PREPARING PUBLIC HEALTH NURSES FOR DISASTER: INCREASING
SELF-EFFICACY & STANDARIZATION

Thank you for your permission to reprint in my Project/ dissertation excerpts from the
following:

> Nypaver, M. (2011). *Disaster Education for Nurses: A Comparison of Two Instructional
> Methods for Teaching Basic Disaster Life Support in the Light of Self-Efficacy
> Theory* (Doctoral dissertation). Retrieved from ProQuest, Dissertations and
> Theses database.

 The excerpts to be reproduced are:

Disaster Self Efficacy Survey Tool and Demographic questionnaire to be modified.

The requested permission extends to any future revisions and editions of my doctoral
dissertation/ DNP project, including non-exclusive world rights in all languages, and to the
prospective publication of my dissertation by ProQuest Information and Learning. These rights
will in no way restrict republication of the material in any other form by you or by others
authorized by you. Your email response of this letter will also confirm that you own the
copyright to the above-described material.

The above met with your approval as indicated in the attached email. Thank you very much.

Sincerely,

Stacey Toro, MSN, GDN, RN

PERMISSION GRANTED FOR THE USE REQUESTED ABOVE: enclosed email next page

Stacey Toro

Dr. Nypaver I am writing to ask for permission to use the Disaster Self-Efficacy
Survey Tool for
My DNP project……….

Nypaver, Mary C   5:31 AM (2 hours ago)

Stacey,

Yes I will give you permission to use the DSES for your DNP project. Good luck with

Your project.

Thanks,

Mary Catherine Nypaver, PhD, RN

Infection Prevention/Employee Health

Fort Loudoun Medical Center 550 Fort Loudoun Medical Center Dr Lenoir City, TN 37772

865-250-0203 (Cell)

From: stacey toro [mailto:stororn@gmail.com]
Sent: Sunday, September 25, 2016 11:28 PM
To: Nypaver, Mary C <mnypaver@CovHlth.com>
Subject: Permission to use DSES Tool