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Emergencies: Risk and Personal Preparedness Measures

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EMERGENCIES: RISK AND PERSONAL PREPAREDNESS MEASURES

by

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Abstract

Emergencies: Risk and Personal Preparedness Measures

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Personal emergency preparedness efforts that increase the resiliency of individuals and communities and decrease the risk for poor outcomes after an emergency are increasingly of interest to health care leaders, policy makers, and governmental entities. The limited capacity for external aid to provide relief in the first 72 hours after an emergency dictates that individuals and communities become prepared to sustain themselves for this initial period. Failure to prepare for an emergency can result in a multitude of negative outcomes. Those who are economically vulnerable are particularly at risk, including a high risk for negative health outcomes.

An initial review of the literature on chronic diseases, specifically diabetes, provided a better understanding of how emergencies can impact the health of a diabetic.

Analyzing the concept of risk facilitates an understanding of the concept that is useful to health care, nursing, and emergency preparedness professionals. Lastly, analyzing the effectiveness of emergency preparedness education to determine whether it impacted preparedness behaviors and the participants' perceptions of the education itself provides insight into the effectiveness of the education and into the experience this population had in becoming more prepared. It was determined that participants were significantly more prepared for an emergency after the educational program (M = 17.2, SE = .98) than before the educational program (M = 11.68, SE = .55), $t(41) = -4.28$, $p < .001$, ES r = .56. However, further research must be done to find better ways to measure individual preparedness levels and evidence-based methods of teaching it.

Key words: emergency preparedness, mixed methods, emergency preparedness education, risk, ready.gov

Chapter 1: Personal Disaster Preparedness

Purpose of the Study

The overall purposes of this study are to ascertain the preparedness levels of an economically vulnerable population in East Texas before and after education guided by the Federal Emergency Management Agency's (FEMA) Ready Campaign and the State of Texas' "Are You Ready?" Campaign and to examine the issues encountered by this population in becoming more prepared for emergencies. A sequential mixed methods design was used; a type of design in which qualitative and quantitative data are collected sequentially, analyzed separately, and then converged. In this study, categorical survey data (quantitative descriptive data) was collected to determine emergency preparedness before and after emergency preparedness education. The qualitative data was collected by obtaining participant answers to open-ended survey questions regarding their experience in becoming prepared for emergencies and barriers that undermined preparation.

The Department of Homeland Security (DHS) outlines key concepts essential to a comprehensive approach to homeland security: resilience, security, customs, and exchange (DHS, 2010). Of primary interest in this study is the resilience necessary to decrease the risk of poor outcomes related to emergencies and foster individual and community capacity for rapid recovery from emergencies or disasters. DHS efforts focus on reducing risk via the traditional elements of emergency management: hazard

mitigation, enhanced preparedness, effective emergency response, and rapid recovery. Essential to improving DHS efforts is the assessment and improvement of performance within all programs (DHS, 2010; Government Accounting Office [GAO], 2010) including disaster planning campaigns such as FEMA's Ready Campaign and other state-run campaigns, like Texas' "Are you Ready?" Campaign. These campaigns are designed to improve individual emergency preparedness which, along with community preparedness, is essential to resilience (GAO, 2010; McKenna, 2010).

Nelson, Lurie, Wasserman, and Zakowski (2007) cited the need to determine preparedness levels in a reliable and valid manner. They further stated that a weakness in the evidence-base for emergency preparedness measures lies in the lack of widely accepted standards. The GAO (2010) cited the need for agencies providing emergency preparedness training to measure performance based on accurate and reliable data linked to program goals. According to the GAO (2010), $56 million went to community preparedness projects in 2008 with an unclear return on investment because changes in preparedness levels are not clearly linked to emergency preparedness education campaigns. Currently the Ready Campaign's performance is measured based on the number of materials distributed or public service announcements (GAO, 2010) with no link to outcomes. According to the GAO, from 2002 to 2013, $41 billion went to DHS "preparedness grant programs to enhance the capabilities of state, local, territory and tribal governments to prevent, protect against, mitigate the effects of, respond to, and recover from terrorist attacks and other disasters" (GAO, 2013, p. 1). The extent to which the Ready Campaign contributes to changes in individual preparedness behaviors

is unclear because a number of unknown confounding factors can contribute to changes in behavior (GAO, 2010).

This study was based on the Ready Campaign and the Texas "Are You Ready?" Campaign. All educational materials and handouts provided at this education seminar can be located at www.ready.gov and www.dshsstate.tx.us. Levels of individual emergency preparedness before and after the education were measured, and qualitative descriptions of participant experiences in preparing for emergencies (Appendix D, E, and F) were examined. Survey items corresponded with the emergency supply checklists provided by both the Ready Campaign and the Texas "Are You Ready?" Campaign. This study provides seminal data on the effectiveness of readiness campaigns for improving personal disaster preparedness in an economically vulnerable population.

Introduction of the Articles

This portfolio includes two manuscripts, "Risk: A Multidisciplinary Concept Analysis" (McNeill, 2013) and "Changes in Individual Preparedness Levels Among an Economically Vulnerable Population Following Emergency Preparedness Education: A Mixed Methods Study". This first manuscript was written for the Theory Construction and Evaluation course and utilized Walker and Avant's (2011) stepwise methodology for concept analysis. This analysis engendered greater focus on nursing interventions that went beyond the treatment of disease and toward the prevention of disease in the context of disasters. Translated into research, it caused a shift in focus toward preparedness measures for individuals that can be undertaken to prevent or mitigate negative outcomes after an emergency or disaster.

A number of researchers have suggested relief effort strategies to aid the medical and public health community in assisting individuals with chronic disease. Recommended strategies centered on preparedness efforts in vulnerable populations, particularly those with chronic illness (Sharma, 2008). Greenough et al. (2008) and Ford et al. (2006) emphasized the need for disaster health providers to anticipate commonly encountered chronic illness while Arrieta, Foreman, Crook, and Icenogle (2009) focused on preparing the patient through increasing knowledge of medication and treatment needs.

Research has shown that the US is unprepared for disasters (Citizen Corps, 2005, 2006, 2007, 2009), even in disaster prone areas like New Orleans that have been previously hit hard by disaster (Citizen Corps, 2006). This begged the question: how can emergency planners focus on the preparedness of a specific population when the general population was not prepared? This question ultimately led to the focus of the dissertation study and second manuscript, "Changes in Individual Preparedness Levels Among an Economically Vulnerable Population Following Emergency Preparedness Education: A Mixed Methods Study". This author was afforded the opportunity to work with the Northeast Texas Public Health District, Public Health Preparedness Department at the East Texas Medical Outreach Clinic in Van, TX in June of 2013. The final sample consisted of a population that faced economic vulnerabilities representative of many in that area (East Texas Food Bank, n.d.). Under the premise that there was a need to understand general population experiences in becoming prepared for emergencies as a whole, the dissertation research began.

Chapter 2: Risk: A Multidisciplinary Concept Analysis

Abstract and manuscript prepared for *Nursing Forum*

Abstract

Purpose: To analyze the concept of risk utilizing Walker and Avant's method of analysis to determine a conceptual definition applicable within nursing and nursing research.

Conclusion: The mental constructs and consequences of risk have a proactive connotation compared to the negative behaviors often identified as illustrations of risk.

Practice Application: A new conceptual definition of risk provides insight into an understanding of risk regardless of discipline. Its application to the metaparadigm of nursing should be the impetus for action and education. Formalizing the mental constructs of the concept of risk in a clear manner facilitates the inclusion of its latent constructs in nursing research.

Keywords: concept analysis, risk, concept of risk, hazard, risk management

Manuscript 1

Risk: A Multidisciplinary Concept Analysis

The concept of risk, aside from a simple definition, can serve to guide action to prevent or mitigate negative consequences and assign a probability. The process of assigning a measurable probability can provide reliability and validity in researching the causes and outcomes of risk. While assessments of risk remain a focus in many disciplines, there remains a lack of consensus as to the definition of risk (Aven, 2012; Nexoe, Halvorsen, & Kristiansen, 2007). The purpose of this paper is to outline the concept of risk in such a way that its usefulness is highlighted and latent constructs of risks can be framed to facilitate valid measurements within research studies. Without firmly establishing the concept of risk, researchers cannot consistently measure those constructs utilizing instruments with established rigorous construct validity (Fields, 2009; Hart, 2007; Portney & Watkins, 2009).

The concept of risk is a mental construct of possibilities rather than realities (Renn, 2010). Once an event occurs, it is no longer a risk. One must believe that actions can be taken to prevent or mitigate the consequence of the risk, or the concept itself is of no value. The process of connecting the mental construct of risk with reality is accomplished by linking past experiences of actual negative consequences to current scenarios (Renn, 2010). Experiences need not be personal in nature; they can be the experience of others in similar situations. In short, risk "is uncertainty about and severity of the consequences (or outcomes) of an activity with respect to something that humans value" (Aven & Renn, 2009, p. 2). References to "severity" include the intensity, size, extension, scope, and other potential measures of magnitude and effect deemed valuable.

The concept of risk itself is random and has no meaning as risk and meaning are exclusive of one another (Bouleau, 2011). Bouleau (2011) proposes the concept of risk is random until meaning is assigned. Once meaning is assigned, it is no longer a risk but becomes a purposeful threat. Events must be interpreted to determine what is by chance and what is purposeful. Bouleau (2011) also states that in order to understand the concept of risk one must possess the ability to interpret various scenarios. This can be difficult as interpretations depend on the researcher's innate ability to perceive different possibilities. Regardless of discipline, a depth of understanding into the realm of possibilities within a given scenario can aid in comprehension of what is a risk (chance) and what has meaning (threat).

The Oxford English Dictionary (2010) states that the three main categories of meaning for "risk" are: a) [exposure to] the possibility of loss, damage, injury, or other adverse or unwelcome circumstance, a chance or situation involving such a possibility, b) a hazardous journey, undertaking, or course of action; a venture, and c) a person or thing regarded as likely to produce a good or bad outcome in a particular respect; a person or thing regarded as a threat or source of danger. According to these definitions, a risk can be either positive or negative. While this is historically true, modern definitions refer to resistance against fate, uncertainty, and negative outcomes (Aven, 2012; Aven & Renn, 2009). The importance of this concept to the metaparadigm of nursing involves the prevention of disease or illness. The greater and more credible the risk is, the greater the need for intervention to mitigate or eliminate it. The realistic measurement of risk and its credibility is important to nursing research to provide validity within the measurement of latent constructs.

Method

Walker and Avant's (2011) eight-step method of concept analysis provided the framework for this analysis. Their methodology includes a) selecting a concept, b) determining the aims or purposes of the analysis, c) identifying all uses of the concept, d) determining the defining attributes, e) identifying a model case, f) identifying borderline, related, contrary, invented, and illegitimate cases, g) identifying antecedents and consequences, and h) defining empirical referents. A comprehensive literature review revealed many historical uses for risk to include: finance, security, mathematics, science, medicine, anthropology, sociology, law, psychology, history, arts, religion, and linguistics. In its earliest derivation, risk was not entirely negative in connotation. Through time and subsequent changes in meaning, risk has taken on a more negative meaning, regardless of the discipline assessing it.

Data for this concept analysis were collected from Science Direct, Business Complete, and Academic Search Complete using the key words: risk, risk analysis, concept of risk, and risk management. Perspectives across disciplines were included to ascertain a generalized theme, meaning, and/or aspect of approach toward an applicable concept that would be of use to all disciplines. Initial search parameters identified over 327 articles. Abstracts were then reviewed to determine whether the article met inclusion criteria. Of those articles, 11 articles were excluded as they were in languages other than English and 253 articles were excluded as the articles discussed aspects of risk inconsistent with this concept analysis. Full manuscript review was completed on the remaining 63 articles. References from the retrieved articles were also scanned to identify additional articles. Upon completion of the review, 18 articles

met the inclusion criteria for this manuscript. Articles were selected for their application to either the concept, definition, or analysis of risk.

Possible Meanings and Uses

Risk is used in financial theory to describe different kinds of probabilistic phenomena to determine the possibility of business failures, prices, and events (Troncoso, 2008). In this respect, risk is used to minimize or mitigate catastrophes or estimate their likelihood and to estimate earnings potential. Risks are managed through prevention measures and insurance, such as fire prevention, loss insurance, and flood insurance (Troncoso, 2008). Ultimately, a desired state of stability existing between degrees of risk (high or low) is achieved; however, risk is never desirable (Troncoso, 2008). It is important to note that risk is the exposure to the likelihood of a negative event, but it is not the negative event itself (O'Byrne, 2007). Risk exists regardless of events.

Risk within security relates to adversarial relationships, vulnerabilities, threats, and countermeasures. Security risk management programs require a systematic approach to analyze security risks in which critical assets are identified to facilitate protection from risk (Bajpai, Schdeva, & Gupta, 2010). The process involves identification of assets, credible threats, vulnerabilities, risks, and evaluating the adequacy of countermeasures (Bajpai et al., 2010).

According to Althaus (2005), the various disciplines view risk as follows: within logic and math risk is a calculable phenomenon, science and medicine determine that risk is an objective reality, anthropology views risk as a cultural phenomenon, sociology a societal phenomenon, and economics a decision making

phenomenon. The field of law determines risk to be a fault of conduct and judicable phenomena, psychology a behavioral phenomenon, and for linguistics risk is a concept (Althaus, 2005). Finally, Althaus (2005) states that within history, risk is a story, for the arts it is an emotional phenomenon, for religion it is an act of faith, and for philosophy risk is a problematic phenomenon.

Modern definitions of risk include an inherent expectation of damage or undesirable events given a specific situation (Renn, 2010). These expectations are based upon past observations, personal experience, religious beliefs, intuition, scientific assessment, etc. For example, an individual may observe that friends engaging in unprotected sex have been diagnosed with various sexually transmitted diseases; therefore, they choose to use condoms. Personal experiences of loss following a particular risky behavior such as drinking, driving, and subsequent automobile crash may cause that person not to drink again. Scientific assessments of risk regarding potential geologic activity may prevent the erection of structures in tectonically active areas. Risk is a part of everyday life as incurred through finance, occupation, entertainment, and lifestyle choices.

Risk studies and assessments attempt to elucidate relevant issues where risk is incurred in "science, policy, society, and individuals" (Henwood, Pidgeon, Parkhill, & Simmons, p. 252). One example of how risk impacts policies can be found in policies surrounding syringe exchange programs (SEP) within the United Stated that have been fraught with controversy between local, state, and national government (Des Jarlais, McKnight, Goldblatt, & Purchase, 2009). The intent of the SEPs is to decrease the risk of the transmission of communicable diseases, but the policies of the SEP do not

always align with governing bodies, police, and society (Des Jarlais et al., 2009). This lack of congruence results in police interference as well as further stigmatization within society, regardless of the intent of harm reduction (De Jarlais et al., 2009). Assessments of risk are necessary as policy-making will affect various entities and outcomes. These policies incorporate many different ideas regarding risk taking or avoidance preferences and must include perceptions of the risks encountered in everyday life. Those who regularly engage in such risks must develop awareness of the risks in their lives and determine individual risk tolerance (Erceg, 2010; Henwood et al., 2011; O'Byrne, 2007).

Defining Attributes

Synonyms of "risk" include chance, destiny, fate, luck, lot, speculation, gamble, venture, hazard, wager, instability, precariousness, peril, jeopardy, liability, exposure, danger, vulnerable, and liable (Roget, 1992). Recurring characteristics within this literature review included chance, fate, venture, hazard, vulnerability, exposure, liability, and danger. These terms were included in the consideration of defining attributes for the concept of risk.

The characterization of a particular risk depends on the cause-effect relationship between a risk and its potential consequences, the reliability of this relationship, the degree of controversy over the meaning of the risk to those affected, and the values of the assessor of the risk when judging whether something should be done about it (Renn, 2005). According to Nexoe, Halvorsen, and Kristiansen (2007), if an event is of high risk, then the undesirable event may occur soon; if it is of low risk, then it may happen later. This directly relates risk interpretation to the amount of time to an

adverse event. This characterization is important as a risk that does not have the potential to materialize in a reasonable amount of time is not a credible or calculable risk (Nexoe et al., 2007). Definitions of reasonable amounts of time vary between events. Examples of this might include building a home 50 miles from a volcano that erupted one million years ago and considering it a risk that it would erupt again in the near future or perhaps considering the risk that once you build that home it will not be habitable in 100 years. These are not credible risks in and of themselves due to the amount of time between the hazard and the exposure.

This author defines the concept of risk as the mental constructs of chance or probabilities associated within a given scenario, where a conscious entity is exposed to a hazard and the possibility of an undesirable outcome is inherent within a reasonable amount of time. Defining attributes contained within the concept of risk are as follows: a) a random hazard with the potential for negative outcomes, b) probability of exposure, and c) reasonable amount of time to exposure. Please review Table 1 for an outline of the antecedents, defining attributes, and consequences of risk outlined in this paper.

Model Case

Japan is a high-risk country for earthquakes. It is a tectonically active area that has an earthquake approximately every five minutes, about 20 percent of the world's earthquakes which are at least a 6.0 or greater, and approximately 2,000 earthquakes each year that can be felt by its residents (Reuters, 2007). On March 11, 2011, a 9.0 earthquake shook Japan to its core (Fuse et al., 2011).

This is a model case because the strength of the earthquakes is a random hazard with the potential for a negative outcome and a high probability of exposure, while the

frequency with which they occurred created a reasonable amount of time to exposure. Living on the islands of Japan is a credible, calculable risk. The value of the concept of risk aims to identify and either eliminate or mitigate risks. The people of Japan attempt to mitigate the risks they incur due to their surrounding hazards by building an infrastructure that can withstand earthquakes. This developed the notion that the risks were mediated to an acceptable level.

Related Case

The same population of Japanese people living in Northern Mainland Japan was then threatened by a tsunami that approached quickly after the earthquake. The 9.0 earthquake ultimately created a tsunami with waves almost 40 meters high (Lekkas, Andreadakis, Kostaki, & Kapourani, 2011). The sea was previously a hazard without a reasonable time to exposure; when it turned into a tsunami, it became an instant threat. This tsunami rolled through the northwest Pacific Ocean and eventually reached mainland Japan's north-eastern border, where it ultimately claimed tens of thousands of lives (Fuse et al., 2011) and cost billions of dollars in damage to the region (Tamagno, 2011).

The tsunami is a related case as, while the existence of a large body of water created a random hazard with the potential for a negative outcome and the possibility of exposure, there was no reasonable time to exposure. Additionally, it was not a risk as the materialization of the 40-foot waves was not a mental construct but a physical reality. The presence of a large body of water was merely a hazard; however, once the hazardous water rose from the sea in 40 foot waves heading for the coastline, it became an imminent threat. It is important to note that the tsunami was the largest in recorded

history and no previous evidence suggested that this rare event would occur (Building Research Institute of Japan, 2011). At no point was it a credible risk before it moved from hazard to threat.

Contrary Case

A young woman, Denise, grew up in a home where her parents paid particular attention to the quality and types of foods consumed. They instilled in their children the need to eat healthy fruits and vegetables and keep their daily intake of all components of their diet within nutritional guidelines. Each day they consumed healthy foods that posed no health risks. Denise never ate junk foods or sugary drinks and kept her body mass within normal limits throughout her lifetime. This scenario is contrary to risk, as a random hazard with potentially negative outcomes is removed, the probability of exposure to obesogenic foods is decreased, and there is no reasonable amount of time to exposure. This young woman's behavior is risk averse.

Borderline Case

Joe has worked at his current job as a construction worker for seven years. He has a good employment record and perceives he is secure in his position. Current economic trends have caused a reduction in the building of new homes, but Joe feels certain he will not be affected. His wife wants to purchase a new, larger home and Joe agrees. His ability to pay for that home is dependent upon his earnings. They soon sign the papers on their mortgage contract and move into their home.

This is a borderline case because while Joe has a job, random economic changes may affect his job as home building declines. He may have some probability of exposure over time, but if Joe were laid off, he could find another job and still be able

to pay his mortgage. While his actions are not outright risky, they demonstrate a borderline risk. The defining attributes of risk are not present while he continues to work; however, a layoff as a result of a faltering economy could change this, creating a potential negative outcome with the probability of exposure in a reasonable amount of time.

Antecedents and Consequences

Antecedents of risk highlighted in the literature were the creation of the mental concept of a potential risk of negative consequences or loss, exclusion of purposeful events, something of human value, and human intellect (see Table 1), (Aven, 2012; Aven & Renn, 2009; Henwood et al., 2011; O'Byrne, 2007; Renn, 2010). As risks represent a mental process that attempts to develop substantive expectations regarding what could happen, scientific knowledge must not be relied upon solely at the risk of exclusion of other forms of knowledge such as intuition or experience (Renn, 2010). These forms of knowledge are valuable because they explore the realm of possibilities within given scenarios to identify what may become a risk. The event must not have meaning and it must not be purposeful (O'Byrne, 2007). There must be something of human value at stake for a risk to exist. If there is nothing of value to be lost, there is no risk. Lastly, it must be conscious entities that experience this phenomenon (Aren, 2012; Aven & Renn, 2009; Henwood et al., 2010). In other words, without a level of consciousness, the risk could not be identified, and it would therefore not exist.

Consequences of risk include the results of passive and active choices due to awareness of a hazard and potentially negative outcome(s). Consequences include proaction, inaction, exacerbation, minimization, and avoidance in relation to the

identified risk (see Table 1). As risk is a mental construct, the consequences of risk are thoughts that lead to action or inaction. The outcome is still a function of the behavior itself and not the assigned risk. If a promiscuous adolescent has unprotected sex and subsequently contracts AIDS, this is a result of the behavior, not the risk. The value of the concept of risk lies in the belief that once a risk is identified, steps can be taken to decrease the effects of the risk or avoid them altogether. The value of the identification of a risk lies in its consequence. Regardless of the discipline, the concept of risk is related to the potential for changing the future in some way that is beneficial to the conscious entity experiencing the risk.

Table 1

Antecedents, Defining Attributes, and Consequences of Risk

Antecedents	Defining Attributes	Consequences
• The creation of the mental concept of a potential risk of negative consequences or loss • Exclusion of purposeful events • Something of human value • Human intellect	• A random hazard with the potential for negative outcomes • Probability of exposure • A reasonable amount of time to exposure.	• Proaction • Inaction • Exacerbation • Minimization • Avoidance

Empirical Referents

There is a distinction between risk as a concept and how risk is measured (Aven, 2012; Schwartz et al., 2011). Risk analysis requires a measurement of what can go wrong, the consequences of these events should they happen, and the probabilities of each (Aven, 2011). This requires the subjective measurement of the probability of an event as a frequency of occurrence, or how often the adverse outcome occurs (Nexoe et al., 2007). It is impossible to predict or measure risk with certainty, only a probability—if outcomes could be predicted with certainty, there would be no need for the concept of risk (Nexoe et al., 2007). A low degree of uncertainty does not necessarily mean a low risk or vice versa. When the consideration of risks is undertaken, both the uncertainty and severity of consequences must be considered simultaneously (Aven & Renn, 2009).

Assessments of risk must include a determination of statistical thresholds of acceptable levels of risk; there must be an amount that is considered negligible which would not require protective measures, an amount of risk that would be considered acceptable with protective measures, and an amount of risk that is determined unacceptable except in extraordinary circumstances (Vatn, 1998). When assessing or measuring risk as a mental construct, measurement of what can go wrong and determining the probability of it actually going wrong must be possible for statistical analysis and usefulness of the concept. This can be accomplished using data from other disciplines such as medicine, history, geography, or sociology, which aid in determining the likelihood of events. Once statistical analysis is complete, values can be utilized to determine what a low, medium, and high level of occurrence would be

for the event to facilitate determination as to whether the risk is acceptable in relation to its reward. For example, it would not be an acceptable risk to jump from a helicopter into a stormy sea unless it was to save the life of a person in the water who was in imminent danger of drowning. Use of the statistical analysis of risk ultimately determines whether an action would increase or decrease the chance of a predetermined acceptable outcome.

Conclusions and Recommendations

Risks and hazards must be considered separately in research, as hazards exist apart from risk. Hazards may not have the potential to affect something humans value, whereas a risk inherently does. Risks must incur both a hazard and exposure and include mental constructs of potential consequences. Additionally, risks have socially constructed meanings that affect actions, and the meaning and understanding of risks change with time (Henwood et al., 2011). Risk is a part of everyday life and what is determined to be "risky" is subjective. Examples such as sexual behaviors, personal lifestyle choices, and drug use may present hazards, but may not be risks. Kant (1724-1804) referred to the "das ding für mich" and "das ding an sich" of concepts. His references meant that our subjective impressions (or perceptions) of something may differ from its objective characteristics (as cited in Vatn, 1998). "Für mich" refers to subjective perceptions and "an sich" refers to reality. Risk can be viewed as both an "an sich" property of the world and a "fur mich" concept created from mental constructs. Researchers must be epistemically reflexive when researching risk to ensure that trends concerning risk are understood from a wider perspective (Henwood et al., 2011).

The value of the concept of risk is in its application to prevent or mitigate negative outcomes. When risk is identified, conscious entities must determine acceptable levels of risk. Risk is a measure of the adverse effect of a situation and forces communication regarding potential hazards in relation to the benefits those hazards may bring (Ducu & Maracine, 2011). The concept of risk allows valid methods of measurement in research to better identify and statistically support the occurrence of potential negative outcomes. Risk management aims to prevent the creation of a hazard, reduce it, move it, mitigate its outcomes, and/or stabilize areas exposed to hazards (Erceg, 2010).

While hazards can be a part of everyday life for many entities, the way hazards are handled can mean the difference between life and death. In nursing, the importance of communicating hazards and potential risks aids in preventing unhealthy lifestyle choices, or at the very least, educating patients on the potential outcomes of their choices. The communication of risks to clients can encourage people to change risky behaviors. Research is needed to measure risk inclusive of the mental constructs that define it as they are integral to the meaning of the concept. Further research must also be conducted to outline the mental constructs involved in risk so that statistical analyses of measurements of risk probabilities included in research studies is valid and reliable. Awareness of the mental concepts of risk highlights the importance of their inclusion in the calculation of risk probabilities, in that they allow determination of potential risk from a field of possibilities. For research inclusive of risk, these constructs must have accurate consistent measurements to ensure the validity of research. It is in this area that opportunities for future research exist.

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Chapter 3: Changes in Individual Preparedness Levels Among an Economically Vulnerable Population Following Emergency Preparedness Education: A Mixed Methods Study

Abstract

Purpose: The purpose of this study was to ascertain the preparedness levels of an economically vulnerable population in East Texas before and after education guided by the Ready Campaign and the Texas "Are You Ready?" Campaign, and to examine the issues encountered in becoming prepared for emergencies.

Design and Methods: A sequential mixed methods design was used for the study of economically vulnerable people who attended the East Texas Medical Outreach (ETMO) held in Van, Texas in June 2013.

Results: Participants were significantly more prepared for an emergency after the educational program (M = 17.2, SE = .98) than before the educational program (M = 11.68, SE = .55), $t(41) = -4.28$, $p < .001$, ES r = .56. The five items most impacted by the emergency preparedness education were: (1) Do you have a document bag?, (2) Do you have bleach set aside for your emergency supply kit?, (3) Do you have a local road map?, (4) Is everyone in your home aware of your evacuation plan?, and (5) Do you have a whistle?

Conclusions: Increases in the incidence of disaster have significantly impacted the attention given to disaster planning and prepared measures. It is vital that these

emergency preparedness measures be assessed for their effectiveness so that evidence-based measures to conduct and improve them can be obtained. The improvement in personal preparedness gives credence to the provision of preparedness education at public health events similar to the ETMO.

Key words: emergency preparedness, mixed methods, emergency preparedness education, vulnerable populations, resilience

Manuscript 2

Changes in Individual Preparedness Levels Among an Economically Vulnerable Population Following Emergency Preparedness Education: A Mixed Methods Study

Disasters are common but preparedness is not. As of November 2013, the United States (US) had experienced 58 major disaster declarations, 28 fire management assistance declarations, and five emergency declarations (Federal Emergency Management Agency [FEMA], 2013c). Those disaster declarations include severe freezes and storms, flooding, tornadoes, and hurricanes (FEMA, 2013c). There were 47 major disaster declarations and 16 emergency declarations in 2012, 99 major disaster declarations and 29 emergency declarations in 2011, and 81 major disaster declarations and nine emergency declarations in 2010 (FEMA, 2013b). According to the Center for Research on the Epidemiology of Disasters (CRED; Emergency Database [EM-DAT], 2009), in the last 10 years there have been 2,901 disaster related deaths in the US, over 20 million people in the United States have been impacted by disasters, and those disasters cost over $275 million. These disasters necessitate emergency preparedness and response measures at all levels to prevent and mitigate loss of or adverse effects to human health.

In the interest of reducing social, economic, and human consequences of emergencies, the World Health Organization (WHO; 2007) began placing more attention on strategies that call for comprehensive approaches to building national capacities in emergency preparedness. These strategies include focusing on risk reduction and communities most at risk. Strengthening the nation and the community will reduce the level of vulnerability and the consequential risks to health (WHO, 2007). The WHO (2007) strategy for "risk reduction and emergency preparedness is based on an All

Hazard/Whole Health concept" (p.11). The objectives of the WHO (2007) strategy include the development of baseline data, standards, training resources for health sector risk reduction and emergency preparedness, and monitoring the progress in strengthening emergency preparedness programs in Member States.

The US approach to managing the risks associated with these disasters has historically relied on governmental intervention (FEMA, 2011). However, new realities faced by US citizens as well as the US government have forced a change in the focus of efforts to improve our nation's resilience as various entities grapple with the limitations of their capabilities (FEMA, 2011). For this reason, significant access and service gaps exist (FEMA, 2011).

FEMA (2011) presents a foundation for increasing individual preparedness and engaging with members of the community as vital partners in enhancing the resiliency and security of our nation through a Whole Community approach. The National Health Security Strategy of the United States of America (NHSS; United States Department of Health and Human Services [USDHHS], 2009) is built on the premise that healthy individuals, families, and communities forge the foundations of community and national resilience. A direct approach to emergency preparedness measures considers individual and community capacities to respond to emergencies and methods of improving those capacities. Further, the NHSS cites the need for more evidence-based performance measures and standards to gauge effectiveness of national health security efforts (USDHHS, 2009). The purpose of this study was to ascertain the preparedness levels of an economically vulnerable population in East Texas before and after education guided

by Ready Campaign and the Texas "Are You Ready?" Campaign, and to examine the issues encountered by this population in becoming prepared for emergencies.

Conceptual Framework

The conceptual framework established by the DHS' Homeland Security Advisory Council (HSAC; 2011) Combined Resilience Task Force (CRTF) illustrates the relationship between preparedness, resilience, and risk reduction and was utilized as a lens through which the research was interpreted (see Figure 2 in Appendix B). Resiliency is the "ability of systems, infrastructures, government, business, and citizenry to resist, absorb, recover from, or adapt to an adverse occurrence that may cause harm, destruction, or loss of national significance" (DHS, 2008, p. 24). The WHO (2013) continues to utilize the definition of emergency preparedness as "actions taken in anticipation of an emergency to facilitate rapid, effective, and appropriate response to the situation" (para. 47), originally written by the Inter-Agency Contingency Planning (IACP) Guidelines for Humanitarian Assistance in 2001. The value of the application of both definitions rests in demonstrating that improved resiliency will result in improved emergency preparedness.

According to CRTF's (HSAC, 2011) conceptual framework, as resilience or emergency preparedness measures improve, the ability to prevent, protect, or mitigate the effects of an emergency also improve, thereby reducing the probability of failure. During an emergency, the ability to absorb the effects of the emergency will increase the capability of response measures (HSAC, 2011). Improved resilience aids adaptation and post emergency recovery. This framework will provide greater insight into the process of

emergency preparedness and how individual readiness can be impacted by economic vulnerability.

In the classic emergency management cycle, there are four phases of emergency response management: mitigation, preparedness, response, and recovery (FEMA, n.d.; Jakeway, LaRosa, Cary, & Schoenfish, 2008; Veenema, 2013; WHO & International Council of Nurses [ICN], 2009). The mitigation phase aims to prevent future emergencies or minimize the impact of emergencies (FEMA, n.d.; Veenema, 2013). An example of individual efforts to mitigate effects of an emergency would include various types of insurance. The preparedness phase involves any plans or preparation made to aid in rescue and save lives (FEMA, n.d.; Veenema, 2013). These preparedness measures would include individual preparedness education, the creation of evacuation plans, stockpiling medications for individual use, stockpiling food and water, etc. The response phase of emergency preparedness measures includes those actions taken as a part of preparedness plans previously made to save lives, seek shelter, etc. The last phase, recovery, includes those events which an individual undertakes to return their lives to normal including any repairs, financial assistance, etc. (FEMA, n.d.; Veenema, 2013).

Conceptual and Operational Definitions

Disaster preparedness education is conceptually defined as materials provided to any population to educate them on disaster and engender the "proactive planning efforts designed to structure the disaster response prior to its occurrence" (Veenema, 2013, p. 6). Disaster preparedness education was operationalized as attendance at an asynchronous educational seminar on disaster preparedness measures as created by the Texas Department of State Health Services (TDSHS) in conjunction with the Ready.gov

disaster preparedness campaign. All educational materials and handouts provided at this education seminar can be located at www.ready.gov and www.dshsstate.tx.us.

Emergency preparedness is conceptually defined as specific "actions taken in anticipation of an emergency to facilitate rapid, effective and appropriate response to the situation" (IACP as cited in WHO, 2013 para. 47). Operationalized, emergency preparedness is a survey of personal preparedness pre- and post-education. The researcher developed an instrument, the Personal Preparedness Assessment, based on the list of emergency supplies prescribed by the Ready Campaign and the Texas "Are You Ready?" Campaign.

Economically vulnerable is conceptually defined as the fiscal attribute of income that renders an individual or family susceptible to a given hazard (DHS, 2008). It is operationalized as those participants who meet the economic guidelines outlined by TDSHS for the East Texas Medical Outreach (ETMO) to include income and lack of insurance. All attendees at the ETMO were required to meet economic guidelines at the ETMO reception.

Review of the Literature

FEMA's directive for a whole community approach to emergency management places a large portion of the responsibility for preparedness upon individual citizens (FEMA, 2011). For this reason, research on individual preparedness levels is increasingly at the forefront of emergency preparedness research. Current research focuses primarily on overall emergency preparedness levels in various populations.

Disaster Preparedness in Vulnerable Populations

Deficiencies in disaster preparedness were noted in the literature in dialysis centers (Foster et al., 2011), among vulnerable populations (Bethel, Foreman, and Burke, 2011), senior citizens (Whitney et al., 2012), and those with disabilities (Smith & Notaro, 2009). Foster et al. (2011) noted that, among dialysis patients, disaster preparedness was inadequate but was not related to literacy, education, income, race, gender, or age. Though 80% of the participants in this study had information regarding their insurance and medications accessible in case of a forced evacuation, only 43% knew of any alternative dialysis centers and only 42% had enough medical information at home to provide an alternate dialysis center with needed treatment information. Bethel, Foreman, and Burke (2011) found that those respondents in their study who were in poorer health, with multiple chronic diseases, were generally less likely to have all disaster preparedness supplies but they were more likely to have a three-day supply of medication.

Significant differences were noted between persons with and without disabilities, and persons with disabilities were more likely to say that they were not prepared for an emergency (Smith & Notaro, 2009). Smith and Notaro (2009) concluded that people with disabilities may be more vulnerable to an injury or death subsequent to a disaster and must work toward being more prepared. Senior citizens may also be at risk as recent studies demonstrate that many do not know what types of items, such as food, water, and medications, should be included in a 72-hour kit (Whitney et al., 2012). These studies highlight the importance of aiding those who may have more needs requiring coordination and collaborative care in the wake of a disaster prior to an actual event.

Preparedness in the Overall Population

The Centers for Disease Control and Prevention (CDC; 2012a) reported that in some areas of preparedness (e.g. working battery-operated flashlight, radios, three-day supply of needed medication and food), the percentage reporting they were prepared remained high at over 75%. However, in other areas (e.g. written evacuation plans) fewer than one in four reported they were prepared. Positive correlations between emergency preparedness and age, education, and risk were noted in two recent studies (Baker, 2010; CDC, 2012b). Negative correlations between income, non-English speaking and minority respondents, and emergency preparedness were also noted (Baker, 2010).

Citizen Corps Studies

The Citizen Corps, a division of FEMA, began preparedness research in 2005 (Citizen Corps, 2005). Disparities between the perception of preparedness and actual preparedness have been noted and attributed to a lack of importance, a lack of time to adequately prepare, and a lack of information (Citizen Corps, 2005, 2006, 2007). The Citizen Corps (2009) conducted a survey on personal preparedness and found that 57% reported having disaster supplies, 34% had supplies in their car, and 45% had emergency supplies in their workplace. Only 44% reported having a household emergency plan that included instructions on where to go in the event of a disaster. Eighty percent had not conducted a home evacuation drill and over 70% did not know community evacuation routes. Barriers to emergency preparedness continue to include a lack of information, lack of time, and a lack of insight into the complexity of actually being prepared (Citizen Corps, 2009). The study validated the need for effective strategies at the community

level to improve individual emergency preparedness. As noted by Citizen Corps (2005) at the onset of their continued research, preparedness information is important, but behavior change is difficult and preparedness campaigns must convince people that being prepared is essential.

While the number of research endeavors to establish an evidence-base in emergency preparedness and disaster response continues to grow, what are notably missing are assessments of the efficacy of emergency preparedness education methods. No research examining the efficacy of individual emergency preparedness education measures linked to individual emergency preparedness outcomes in any population was located during the review of literature. The lack of improvement in emergency preparedness levels supports the need for evaluation of the effectiveness of current emergency preparedness training methods (Citizen Corps, 2005, 2007, 2009). In fact, this gap in research is highlighted often by the Citizen Corps (2010), DHS (2010), the NHSS (USDHHS, 2009), and the GAO (2010). Additionally, the sparse research on emergency preparedness among vulnerable populations and the issues they face in getting prepared for emergencies indicates a need to explore this further. While some preparedness research exists among dialysis patients (Foster et al., 2011), individuals with disabilities (Smith & Notaro 2009), and rural elderly (Whitney et al, 2012), only one study focused on vulnerable populations in general (Bethel et al, 2011) and a gap exists in understanding of how vulnerabilities impact preparedness.

Design Statement with Rationale

This research study was a sequential mixed methods study of economically vulnerable people who attended the ETMO held in Van, Texas in June 2013. It is

important to identify the levels of preparedness after education and to understand the experience an economically vulnerable person had in becoming more prepared for emergencies. This knowledge can help policymakers and emergency planners amend or adapt policies to facilitate or overcome highlighted barriers to personal preparedness levels.

Quantitative Stage

Quantitative analysis of the differences between preparedness levels prior to the emergency preparedness education and emergency preparedness levels after the education was explored. This is a single group pretest-posttest design (see Figure 1 in Appendix A). In this study, the treatment is not an independent variable because all participants will receive it (Portney & Watkins, 2009).

Qualitative Stage

The purpose for the qualitative stage and open-ended survey questions (see Appendix F) was to better understand the experience participants had in achieving adequate levels of emergency preparedness as well as to determine better methods of engagement in emergency preparedness education. This strand of the study utilized Qualitative Descriptive (QD) philosophical underpinnings. QD is less interpretive than other forms of qualitative research, staying very close to the data as an end-product rather than a beginning to interpretation (Sandelowski, 2000). Its goal is a comprehensive summary of events as related by the participants.

Methods

Research Questions

This study examined emergency preparedness with three research questions:

1. Is there a difference in emergency preparedness levels before and after an educational program guided by the Ready Campaign and the Texas "Are You Ready?" Campaign?
2. What areas of preparedness were most and least affected after the educational program?
3. To what extent do the qualitative results of perceived barriers to emergency preparedness confirm or expand the quantitative results on emergency preparedness levels?

Sample

Convenience sampling of individuals who attended the ETMO, a three-day clinic for low income uninsured or under-insured persons, in June 2013 was used. Study inclusion criteria were adults able to read and write in either English or Spanish and who met criteria for attending the ETMO. Exclusion criteria were anyone less than 18 years of age or with mental deficiencies that render them unable to comprehend the survey questions. Participants were able to opt out of the qualitative strand on the informed consent by not providing their telephone number and not completing both pre- and post-test surveys in the quantitative stage and returning them to the PI. G*Power 3.1.6 software was utilized with a preset alpha of .05, an effect size of 0.5, power of 0.8, and a *t*-test of differences between two dependent means, yielding a minimum sample size of 34. The final sample size for quantitative analysis of Phase I and II was 42 participants.

The ages of the respondents ranged from 18 to 70 years old with the mean age 43.14 years. Of the participants in Phase I, 84.3% made less than $35,000 per year. Most respondents would not require assistance to leave the area if there were an

emergency (69.8%) and 13.2% did not have access to reliable transportation. When asked if they were not able to physically evacuate on their own, have they registered for 211 to get a ride, only 1.5% reported that they had registered. This percentage increased to 7.1% at post-test but the sample size was vastly different so comparisons could not be made. Seventy-five percent of the respondents reported they had never had any previous emergency preparedness education. Please review Table 2 for detailed participant characteristics.

Instruments

For the quantitative stage, the researcher developed questionnaire, Personal Preparedness Assessment (PPA), was used to measure preparedness before and after an educational intervention. The pre-test and post-test versions of the PPA (see Appendices D and E) were based on the Ready Campaign and the Texas "Are You Ready?" Campaign materials, which prescribe specific actions to take to prepare for an emergency (supplies needed to maintain health, comfort, and safety for 72 hours after an emergency). The "Are You Ready?" program was devised by a panel of experts within the TDSHS (with input from stakeholders including FEMA). The experts comprise a Disaster/Emergency Preparedness Committee (DEPC) of 19 professionals including physicians, nurses, city emergency management coordinators, Emergency Medical Services, and fire department leaders among others (DEPC, n.d.; TDSHS, 2013). Committee members' careful examination verified content validity. Traditional reliability assessment is not feasible given the dichotomous nature of the surveys.

Five demographic questions gathered data on age, race, marital status, income, and language. All remaining questions pertained to items of emergency preparedness as

indicated by the Ready Campaign and the Texas "Are You Ready?" Campaign. For the PPA items, a score of one was awarded for possession of an item; a score of zero was assigned if the participant did not possess the item. These scores were summed for a total preparedness score. Each survey took less than 10 minutes to complete and was available in English and Spanish. The Flesch-Kincaid Reading level of the initial survey instrument is 7.1 and for the second, follow-up survey it was 7.3. Both are at the recommended 6^{th}-7^{th} grade reading level for instruments (USDHHS, National Institute of Health, & US National Library of Medicine, 2013).

The instruments were translated and back-translated prior to the onset of the study in June. The primary researcher enlisted the aid of a Spanish-speaking research assistant during the initial data collection phase at ETMO as well as during all subsequent phases of data collection. The Spanish language spoken by the research assistants for all phases of the study was of a Northern Mexican and Texas dialect. This is consistent with a majority of the Spanish-speaking population in Texas (Walters, 2010).

Two subscales emerged during analysis of the PPA, a general preparedness scale and a pet preparedness scales. The general preparedness subscale included possession of 26 items and pet preparedness included possession of 4 items by participants (Table 4). The scores were summed and potential scores for the general preparedness subscale can range from 0 to 26 and from 0 to 4 for the pet preparedness subscale.

Ten open ended questions were included for gathering qualitative data. The intent of the open ended questions was to garner information on the participants' perceptions of the preparedness education. The questions regarded participant's thoughts, difficulties,

further assistance they might need, current emergency plans, and health. Please see Appendix F for further details.

Procedures

Phase I of the study was completed immediately prior to participation in the disaster preparedness educational program. The program was comprised of the Ready Campaign materials and the Texas "Are You Ready?" Campaign materials. The education campaign consisted of flyers, handouts, videos, and website information that were provided to all those who attend the ETMO. The education was administered by the NETPHD disaster preparedness staff in an asynchronous manner where participants selected preparedness brochures they wished to read and could ask questions of the staff if they liked while preparedness videos ran in the background. Training on the administration of the education by ancillary volunteers was conducted on June 10th, the day designated for set-up.

All ETMO attendees were queried as to whether or not they would like to participate in the survey after being given a brief description. If attendees wished to participate in the study, informed consent was obtained and then the initial survey completed. Under the supervision of the primary researcher, the Spanish-speaking research assistant obtained informed consent and administered the first survey to anyone who preferred to speak in Spanish. Phase I participants provided either a mailing address or e-mail address to receive the follow-up survey for Phase II. Initially, Phase I yielded a total of 137 participants; however, one participant did not sign the consent so it was not utilized. Twelve participants gave either no address or an illegible address and were

excluded from the onset of Phase II, decreasing the number of potential respondents for Phase II to 124.

The sample was resurveyed 90 days after the June program for Phase II beginning September 15, 2013. Any participant who indicated on the informed consent that they preferred e-mail versus mail received the follow-up survey via an e-mail containing their participant number and a link to the survey in Qualtrics. If the participant indicated a preference for mail, the follow-up survey with the participant number written was mailed to the address provided in Phase I and a pre-stamped envelope. A total of 78 follow-up surveys were sent by mail and 46 were sent out by e-mail. The Phase II sample pool was further decreased because two of the Qualtrics responses had no participant identification number on them and one of the mailed surveys was return stamped as undeliverable. This brought the sample pool to 121. There were 11 e-mail responses submitted through Qualtrics and 31 responses received by mail for a final sample size of 42 for Phase II. The response rate for the follow-up surveys for Phase II that were e-mailed was 25%, the response rate for the follow-up surveys that were mailed was 41%.

Phase III, the qualitative interview, was an open-ended survey with up to 10 questions. The qualitative interviews began on October 13, 2013. Of the final sample size of 42 respondents, only 27 opted in to Phase III by providing their telephone numbers in Phase I but five provided incorrect or disconnected telephone numbers and nine did not answer their telephone after three attempts to contact them. Of those that originally opted in to Phase III and consented to the qualitative interview, 13 interviews were completed. The interviews were audio-recorded using Dragon Naturally Speaking software. Spanish speaking participants had their interviews scheduled in advance

utilizing the services of a translator. The translator asked the participants the prescribed interview questions under direct observation by the primary researcher and then the transcripts of the interview were mailed to the participants for any changes they wished within a two-week deadline. Only one participant made any changes to the transcript. After any changes were received, the transcript was translated to English by a second translator. Once translated into English, transcripts were back-translated by the first translator to ensure accuracy. All notes taken during verbal interviews were typed and linked to each transcribed interview.

The primary researcher remained cognizant of the need for bracketing any preconceived ideas as well as maintaining reflexivity, or self-reflection, throughout the interview and transcription process (Streubert & Carpenter, 2011). This was done using field notes that were typed and linked to respondent interviews and surveys.

Credibility Methods

Transcribed interviews were mailed to participants and they were asked to call the PI within two weeks if the transcripts did not confirm what they wanted to say. As QD research is not abstract (Sandelowski, 2000), direct wording of the participants was maintained to the extent possible. An external auditor who was unfamiliar with the research reviewed the entire project to provide an objective assessment of the project at the conclusion of the study (Creswell, 2009). According to established QD methods, no pre-existing coding system was used (Sandelowski, 2000).

Trustworthiness of research is measured by rigorous scholarship and an audit trail which can be easily followed (Murphy & Yielder, 2010; Streubert & Carpenter, 2011) and involves four areas: credibility, dependability, transferability, and confirmability

(Lincoln & Guba as cited in Murphy & Yielder, 2010). Methods to ensure credibility throughout the research process included member checks, peer debriefing, and triangulation (Murphy & Yielder, 2010). Qualitative rigor in this study was established by representation of voice and trustworthiness (Murphy & Yielder, 2010). Representation of voice was assured by utilizing the words of the participant to the extent possible, a hallmark of QD research.

Data Analysis

Quantitative survey data were entered into Statistical Package for Social Sciences version 21 by the PI. Descriptive statistics were used to summarize demographic data and quantification of preparedness items. General preparedness, consisting of 26 items described in Table 4 was calculated and treated as continuous level data to evaluate improvement from pretest to post test. Higher scores reflect better overall preparation.

Two of the three research questions were statistically analyzed in the quantitative component of the study:

1. Is there a difference in emergency preparedness levels before and after an educational program guided by the Ready Campaign and the Texas "Are You Ready?" Campaign? This question was analyzed using a paired *t*-test.
2. What areas of preparedness were most and least affected after the educational program? Change in each item between time-one and time-two was tested using McNemar's chi square. Survey items were rank ordered to show the most and least affected by the educational program.

Due to poor wording of questions and inappropriate respondent utilization of "not applicable", several of the items pertaining to health/medicine and travel were nebulous,

therefore logical decision making on ambiguous answers could not be applied and subscales could not be created for these categories. Subsequently an item-by-item comparison of frequencies was compiled in Table 3. In addition, several items were not clearly communicated on the pre-test and were not included on the post-test. Those items were "Do you have a three-day supply of prescriptions and backup medicines?", "Do you have feminine supplies and personal hygiene items?", "Do you have any medical illnesses that you see a doctor or nurse for regularly?", and "Do you have a list of medications with dosages and doctor's phone numbers in your document bag?".

The third research question was analyzed in the qualitative component of the study:

3. To what extent do the qualitative results of perceived barriers to emergency preparedness confirm or expand the quantitative results on emergency preparedness levels?

Qualitative data were separated into codes, grouped by categories, and quoted verbatim to support analysis. Themes from the qualitative analysis were compared to quantitative survey data to analyze this research question.

Convergence of Data

Upon completion of Phase III of the data collection and subsequent analysis, the results from the analysis of Phase I and II were reviewed. Areas of significance and those with lack of significance from the quantitative phases were compared to individual perspectives obtained through qualitative data collection. Qualitative data were compared to statistical analysis of item-by-item comparisons as well. Both quantitative and qualitative data were weighted equally.

Data obtained from Phases I and II were analyzed to answer the two primary research questions regarding changes in preparedness levels after education and what areas of preparedness changed the most and least. Upon the convergence of data from Phases II and III, the qualitative data were compared to the areas where significant quantitative change was noted. Qualitative statements by respondents were compared to level of change and significance of that change to illuminate congruence or incongruence with quantitative analysis of data. Congruence was noted in the five areas most affected by preparedness education and incongruent with the five areas least affected by preparedness education.

***Triangulation*.** Data triangulation was completed when quantitative and qualitative data converged, thus ensuring completeness (Bekhet & Zauszniewski, 2012; Casey & Murphy, 2009). Analysis was performed to determine the levels of preparedness prior to and after the education, explore of the impact of emergency preparedness education on various preparedness behaviors, and to illuminate participant experiences in achieving appropriate emergency preparedness levels.

Human Subjects Protection

The study was reviewed and approved by the University of Texas at Tyler Internal Review Board (IRB) prior to the start of the study (see Appendix H). Individuals were informed of the study purpose, procedures including use of the surveys and interviews to gather data, and the right to withdraw at any time. Information regarding the individual's preferred method of contact for the follow-up survey was included on each consent. Each participant signed an informed consent form that was kept in a locked file drawer in the PI's office. Confidentiality was maintained throughout all

phases of the study by assigning numerical identifiers to represent participant names. Completed consents, surveys, and interviews, were stored by the primary researcher in a secure, locked cabinet. The primary researcher, the external auditor, and the dissertation committee chair had access to the data, which will be destroyed via shredding in three years.

Study volunteers signed an informed consent (see Appendix C). Upon consenting to the study, participants were given initial surveys to evaluate their disaster preparedness and assigned participant identification numbers that the PI put on their surveys. Once they completed the initial survey, they received the emergency preparedness education. Participant identification numbers were included on the follow-up surveys prior to the second data collection in September/October to be sure that they were linked with the initial survey.

Results

The study data were queried for answers to the three research questions.

Question 1

The paired t-test was used to determine any significant differences between preparedness levels before and after the emergency preparedness education, summed scales were utilized for items pertaining to general preparedness levels for all participants and pet preparedness levels for those participants who had pets. Participants were significantly more prepared for an emergency after the educational program (M = 17.2, SE = .98) than before the educational program (M = 11.68, SE = .55), $t(41) = -4.28$, $p < .001$, ES r = .56. Post hoc power analysis determined the power of this test was 0.94. The paired t-test was also used to examine the change in level of preparedness for pets

between testing occasions. No significant difference was noted in the level of pet preparedness after the education program (M = 2.85, SE = .132) as compared to pet preparedness before the education program (M = 1.92, SE = .142), $t(23) = -.592$, $p > .05$. An item-by-item comparison pre and post education is presented in Table 4.

Question 2

To determine which items were impacted the most and the least by the emergency preparedness education, an item by item analysis for 30 items, 26 general and 4 pet preparedness items were compared. Due to the dichotomous nature of the surveys and the small sample size, the binomial method of McNemar's chi-square was utilized to determine the significance of those changes. The five items most impacted by the emergency preparedness education were: (1) Do you have a document bag?, (2) Do you have bleach set aside for your emergency supply kit?, (3) Do you have a local road map?, (4) Is everyone in your home aware of your evacuation plan?, and (5) Do you have a whistle? The five items least impacted by the emergency preparedness education were: (1) If you have a pet, do you have pet medications in a pet first aid kit?, (2) Do you have a fire extinguisher?, (3) If you have a pet, do you have a current pet photo in case you are separated?, (4) Do you have comfort items such as books, games, and toys?, and (5) Do you have a first aid kit?. Please see Table 4 for detailed item-by-item analysis.

Question 3

Thirteen participants consented to interviews. Interviews centered on the respondent's evaluation of the emergency preparedness education, current emergency plans, potential challenges in preparing for emergencies, and facilitators to emergency

preparedness. Participants did not readily discuss their health during the interviews and were very short in answering the questions; one participant hung up mid-interview.

Participant Evaluation of Emergency Preparedness Education. All participants evaluated the education they received in Van, TX positively. Several participants stated that the program caused them to contemplate things not previously considered regarding emergency preparedness, stating "It made me aware of some things I hadn't thought about – being prepared with my animals and things like that" and "I thought that it opened my eyes; I didn't even realize I needed to do so much about emergency preparedness". Additional comments regarded preparing animals for emergencies, "just getting my thoughts collected about my animals and what I should do with them. That was something I hadn't thought through" and "I hadn't thought previously about the need to prepare your dog in case of an emergency. I had dog food and a crate but no first aid kit". Some suggestions for improving the program included consideration for those with Alzheimer's or Dementia, "They just don't know what's going on, how would you prepare for that? We need more education for those types of people". Another suggestion for teaching people about emergency preparedness included the utilization of Facebook, "All of what you're doing here to coach and teach about emergency preparedness would be fantastic to promote on Facebook".

Current Emergency Plans. Participants were queried regarding their current emergency plans. Responses ranged from "My plan is to not freak out. That's good, right? I don't really have a plan yet, I need to sit down with my family and make a plan" to "I've got my important papers in a plastic bag, prescription stuff ready, and all I have to do is get my stuff in the car and get my husband". Several participants did cite that

they have their emergency kits ready to go and would be able to quickly grab them and leave to their selected destinations. Other participants stated, "Honestly, I would be in trouble right now" and "I wouldn't want to evacuate. Right now I don't know where I'd go". One participant assessed their plan stating, "We didn't have one, we've never talked about one...we've never discussed it until I went to that thing in Van. We are in the process of coming up with a plan. I think a lot of families are like us, unless you go to something like that I don't think people think about it".

Potential Challenges in Preparing for Emergencies. Several participants stated that they took medications but few discussed any potential issues when preparing for a disaster. Of those that did, having extra medications on hand in case of a disaster were noted to be a potential difficulty, "I don't have an extra supply so it would be a problem if the pharmacy was inaccessible" and "I have meds but not for a disaster". Other potential challenges regarded familial concerns in activating emergency plans. One participant stated:

> I guess a concern would be you never know when an emergency will strike, just not knowing where my children would be if there was an emergency and we're not all together because we have a big family and our children are in a couple of different schools and sometimes they're with friends...I would have to send a lot of texts out to get my family together.

Other concerns regarding family members included those who were the primary caregiver for invalid family members and a need for more information on where to go in case of emergencies, "I am in an area that I am new to and my mother is an invalid. I just

need to know if anything happens where we can go, who to call...I think the biggest challenge would be to get my mother out, taking care of her".

The most often cited challenge in preparing for an emergency regarded the financial means to purchase necessary items. One participant stated, "I think if we were to get everything recommended for an emergency that is a challenge to go out and buy all the supplies. We don't have a lot of extra income other than to pay our bills". Another stated the "Medications are a major problem, to buy a three month supply, for economic reasons". Yet another participant reported difficulties accumulating the requisite amount of food, stating "...canned food, I need to stock up, this is lacking because of the economy, in the quantity needed".

Facilitators to Emergency Preparedness. Many respondents cited excellent health and did not require daily medications. Of those that did require daily health care considerations, prior consideration resulted in a positive assessment of readiness, "No, I don't think I have any challenges even though my husband is on oxygen. We keep three or four bottles in the car. Everything is pretty good, well taken care of". Other facilitators to emergency preparedness discussed by the participants were having a family member who is knowledgeable. One participant stated, "My son has been a part of the civil air patrol and he's received emergency rescue training and various training and safety things and I think that helps give me piece of mind". Another participant stated, "The man I live with thinks ahead more than I do". Finally, long-term experience with emergency preparedness led another participant to perceive comfort in his level of emergency preparedness, "since the age of 17, I have been involved in the preparation of emergencies".

Additional Findings

Additional analysis of data revealed no significant difference in preparedness by yearly income group (less than $25,000, from $25,001 to $45,000, and above $45,001). However, data did reveal that all three income groups achieved similar preparedness levels irrespective of income. Analysis of post-education preparedness levels: income less than $25000 ($M$=16.59, SD = 6.16), income $25001 to $45000 ($M$=21.00, SD=4.69), income $45001 and greater ($M$=15.20, SD=9.26.

Discussion

The purpose of this study was to examine preparedness levels of an economically vulnerable population, determine to what extent they were impacted by emergency preparedness education, and to explore participant perspectives on the education and becoming prepared for emergencies. To better utilize the results of this study, it should be viewed through the conceptual framework established by the DHS's HSAC (2011), the CRTF. Viewed in this manner, the results can be seen in terms of the relationship between preparedness, resilience, and risk reduction.

Preparedness

The primary finding of this study is that there was a significant change in the general preparedness levels after the emergency preparedness education. No other studies relating emergency preparedness levels and emergency preparedness education could be located. It was also interesting to note that, while participants often stated that they were not aware of all that had to be done to prepare for emergencies for pets until they received the emergency preparedness education, there was no significant change in pet preparedness levels after the education. Another interesting finding was that there are

elements of emergency preparedness that cost nothing yet are still found lacking. For example, post-test analysis of respondents with evacuation plans revealed that only 23.8% had an evacuation plan after the education and of those who had an evacuation plan only 54.8% had family members who were aware of the evacuation plan.

On the follow-up survey, participants were asked if they had all the items in a travel bag, 38.1% of the respondents stated they did. Item by item analysis of all items revealed that only 7.1% of all respondents actually had all items listed. This is important as the premise of becoming prepared is to have all the items ready to go quickly in a "go bag". The incongruence between what participants reported and the item by item analysis may signify a need to better convey this important aspect of readiness. It also signifies an overestimation of preparedness as has been noted in previous research (Citizen Corps, 2005; 2007).

The results of this survey are congruent with previous research conducted solely to determine preparedness levels of various individuals (CDC, 2012a, 2012b; Citizen Corps, 2005, 2006, 2007, 2009; Whitney, Visker, Haithcox-Dennis, & DeWeese, 2012). Whitney et al. (2012) found that less than half of their respondents knew what types of items should be included in the 72-hour kit and the incongruence between what participants in this study reported as being in their travel bag and what they had actually collected further demonstrates this gap in understanding.

Resilience

As resilience or emergency preparedness measures improve, the ability to prevent, protect, or mitigate the effects of an emergency also improve, thereby reducing the probability of failure (HSAC, 2011; USDHHS, 2009). The response measures of local

and federal organizations are not immediate, nor are they infinite (FEMA, 2011). Theoretically, individuals who can sustain themselves are more likely to have a positive outcome than those who would require more immediate assistance (HSAC, 2011).

Conveying the importance of this message may be an area in need of attention as a false sense of preparedness may hinder further preparedness efforts. Throughout the qualitative interviews, some respondents reported that they were prepared. However, individualized detailed analysis of Phase I and II data from participants reporting perceived acceptable levels of preparedness demonstrated that they were missing key items like food, water, evacuation plans, a radio, and sanitation items. As applied to the CRTF framework, those who do not possess prescribed items would be less resilient than those who do, thus the probability of failure would be increased (HSAC, 2011). It is not currently known whether the participants perceived the importance of obtaining all prescribed items of preparedness or whether or not they are able to link preparedness to reduced risk.

Risk Reduction

According to the CRTF, as preparedness levels improve, resiliency increases, and risk is reduced (HSAC, 2011). Strengthening communities and the individuals within them will reduce the level of vulnerability and the consequential risks to health related to emergencies and disasters (HSAC, 2011; WHO, 2007). In order to bridge extant service gaps during emergencies and reduce the risk of negative outcomes, individuals must bear some of the burden of preparedness though historically many have relied on governmental intervention (FEMA, 2011). Reductions in the risk of failure and time to recovery are contingent upon preparedness and resiliency (HSAC, 2011). It is unclear

whether participants in this study associated preparedness levels with personal risk reductions. However, it was noted that participants in this study achieved similar levels of preparedness, regardless of income. Other literature noting associations between risk and preparedness include a study done in Florida that demonstrated a relationship between risk and preparedness in that Floridians who lived in hurricane risk zones had higher preparedness levels than noncoastal areas of Florida (Baker, 2010). While the relationship between perceived levels of risk and preparedness remains unclear, it is worthy of note for future studies.

Strengths and Limitations

It is understood that the one group pretest posttest quasi-experimental design can be considered weak and particularly vulnerable to threats to internal validity because there is no control group (Portney & Watkins, 2009), although individuals serve as their own control. Selection bias is a consideration for this study because convenience sampling methods are used. The ETMO provided a venue and access to the population of interest.

Social desirability bias may also impact the results of the pretest and posttest because the participants knew that the purpose of the study was to determine whether or not they are prepared for an emergency and they may not wish to appear unprepared, a negative connotation. The PI encouraged participants to respond honestly on both the surveys and in interviews so that preparedness could be accurately assessed.

Attrition with fewer participants completing the second, follow-up surveys and the qualitative interview occurred. To enhance response rates, follow up with non-respondents was done via mail, e-mail, or telephone two weeks after initial contact

(MacDonald, Newburn-Cook, Schopflocher, & Richter, 2009). Fewer individuals completed the qualitative questions and saturation was not achieved. Due to participants' reticence, detailed data was not possible and the interview process had to be streamlined. Probing produced limited information. Participants stated that it was not a good time to talk, set up an appointment for a later date and time, and then not answer their telephones. Others cited competing demands (children, work, etc.) as reasons they needed to complete the interview quickly.

The professional practice implications are a strength of this study because the results are intended for direct consideration and application into practice or emergency preparedness education and plans. As noted earlier, trustworthiness was enhanced via member checks. The process of peer debriefing was done with the faculty advisor where the primary researcher (this author) worked with the advisor and examined the transcripts of any telephonic interviews, submitted surveys, and final reports to glean feedback thus ensuring that the report reflects all interviews accurately to enhance credibility and ensure validity.

Dependability and confirmability are also important and were achieved through the use of an audit trail and the collaborative process of the interviews, the data transcription, the organization of the data by themes, and comparison of the outcomes of this research to other reported outcomes. Transferability is only applicable to this research in populations that are similar to the population within this study. As with any research, potential bias can hinder objective outcomes. Potential interviewer bias can be introduced by the individual collecting data interjecting their personal experiences or

vested interests into data collection; however, bracketing this information by excluding it to the extent possible prevented such bias (Fischer, 2009).

Other potential forms of bias within this study are recall bias in which the participants may fail to remember an event or remember it incorrectly (Portney & Watkins, 2009). QD research can be dramatically impeded by recall bias as the participant recall is the very basis upon which the results are built. The short amount of time between the education and assessment of emergency preparedness levels after education (90-120 days) is thought to have decreased recall bias. Desirability bias may also be an issue; however, the project was presented in a manner that highlighted the need for an honest assessment of difficulties encountered in becoming more prepared for emergencies. Characteristic to the study methodology, findings lack transferability to dissimilar populations (Holsten, Deatrick, Kumanyika, Pino-Martin, & Compher, 2011).

Conclusions and Recommendations

On June 15, 2010 DHS Secretary Janet Napolitano announced the adoption of the final standards for the voluntary private sector preparedness accreditation and certification program (USDHHS, 2010). This program highlights the role of universities and nonprofit organizations in bolstering disaster preparedness and response capabilities to enhance the readiness and resiliency of our nation. Even as the emphasis on individual preparedness continues, the results for the emergency preparedness education campaigns are not being realized. It is vital that these emergency preparedness measures be assessed for their effectiveness so that program improvements are evidence-based

FEMA outlines 31 Core Capabilities that are critical to achieving National Preparedness goals; one of the Core Capabilities is Community Resilience (FEMA,

2013a). This capability falls under the mitigation phase of the traditional emergency response cycle and is described as efforts to "recognize, understand, communicate, plan, and address risks so that the community can develop a set of actions to accomplish Mitigation and improve resilience" (FEMA, 2013a, para. 13). These efforts could be more accurate and cost effective for preparedness efforts if individual community members are first educated and begin their own preparations to sustain themselves until external response efforts are possible.

This study provides greater insight into not only the preparedness levels among a vulnerable population in East Texas, but also into the changes in individual emergency preparedness behaviors after receiving emergency preparedness education and their experience in becoming more prepared for emergencies. Additionally, it is a beginning in the effort to link emergency preparedness education campaigns to changes in behavior, the initial steps in answering the call for evidence assessing programs meant to achieve greater levels of emergency preparedness, and returns on investment of federal monies to improve emergency preparedness (Citizen Corps, 2010; DHS, 2010; GAO, 2010; McKenna, 2010; USDHHS, 2009; Nelson et al., 2007; WHO, 2007). Finally, the National Preparedness Report (DHS, 2013) cites the need to improve individual preparedness levels and the existing limited public engagement in preparedness activities. Creative teaching methodologies that improve both engagement and preparedness levels in a sustainable manner are paramount to these efforts. The notion that individuals may perceive risks and engage in achieving personal emergency preparedness levels based on their perception of their personal risk is one that requires further study. The insight

provided by this study could be invaluable to emergency planners and governmental agencies with a vested interest in the outcome of such research.

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Table 2
Characteristics of Respondents

Live with others	114 (83.8%)
Live alone	22 (16.2%)
White non-Hispanic	85 (62.5%)
Hispanic/Latino	36 (26.5%)
Black/African American	13 (9.6%)
Native American	1 (0.7%)
Married/Committed Relationship	80 (58.8%)
No previous emergency preparedness education	102 (75.0%)
English Speaking	107 (78.7%)
Spanish Speaking	29 (21.3%)
Female	106 (77.9%)
Male	28 (22.1%)
Yearly income < $12,000 per year	47 (34.6%)
Yearly income $12,001 to $25,000	39 (28.7%)
Yearly income $25,001 to $35,000	19 (14.0%)
Yearly income $35,001 to $45,000	5 (3.7%)
Yearly income $45,001 to $55,000	8 (5.9%)
Yearly income over $55,000 per year	5 (3.7%)

Table 3
Frequency Analysis of Individual Items Not Sum Scaled

Preparedness Item	Pre-test Survey % of participants responding yes	Post-test Survey % of participants responding yes
General Preparedness Items		
Do you have baby items such as formula, bottles, and baby food in your emergency supply kit?	11.0	9.5
Do you have soaps, personal supplies, and baby items if applicable?	60.3	69.0
Do you have an extra cell phone battery and car charger?	52.2	71.4
Do you have a wrench or pliers to turn off utilities?	68.4	90.5
Do you have soaps, personal supplies, and baby items if applicable?	60.3	69.0
Do you have an extra cell phone battery and car charger?	52.2	71.4
Do you have a wrench or pliers to turn off utilities?	68.4	97.6
Health/Medicine		
Do you take prescription medications regularly for any reason?	45.6	59.5
Do you have a list of medications with dosages and doctor's phone numbers in your document bag?	22.8	35.7
Do you have a plan for any power needs, such as medical equipment or refrigerated medicine?	11.0	7.1
Do you have a small cooler and cold packs?	25.0	19.0
Do you have an adequate supply of special diet food, syringes, blood sugar monitoring strips and other needed items?	11.8	23.8
Do you have extra medicine in case you cannot get to your pharmacy?	21.3	45.2
Have you made copies of your prescriptions from your doctor in case you are away from home?	9.6	14.3
Travel		
Are you physically able to evacuate on your own?	30.1	7.1
If you are not able to leave the area on your own, have you registered with 211?	1.5	7.1
If an order was given to leave the area, do you have access to transportation?	86.8	95.2

Table 4
Emergency Preparedness Items Possessed by Participants and
McNemar's Chi-Square Significance in Difference Between Pre- and Post- Test

Preparedness Item	Pre-test Survey % possessed by Participants	Post-test Survey % possessed by Participants	% change	*p*
General Preparedness				
Perception of Personal Preparedness				
Is everyone in your home aware of your evacuation plan?	21	54.8	33.8	.001
Do you believe you are prepared for an emergency?	42	64.3	22.3	0.02
Overall Preparedness				
Do you have a document bag?	25	78.6	53.6	<.001
Do you have bleach set aside for your emergency supply kit?	19.9	61.9	42	<.001
Do you have a whistle?	26.5	57.1	30.6	.001
Do you have a battery-powered emergency alert radio or standard radio with extra batteries?	29.4	59.5	30.1	.031
Do you have cash or traveler's checks, current picture IDs, and family documents easily accessible to put into your document bag?	46.3	76.2	29.9	.002
Do you have insurance information, medical cards, and bank account information easily accessible to put into your document bag?	46.3	73.8	27.5	.096
Do you have toilet paper, paper towels, and garbage bags set aside for sanitation during emergencies?	49.3	76.2	26.9	.065
Do you have dental care, hearing, and vision products for your emergency supply kit?	30.9	57.1	26.2	.189
Do you have a complete change of clothing to include a long sleeved shirt, long pants, and sturdy shoes?	64.7	90.5	25.8	.004
Do you have a three-day supply of nonperishable food for all those that live with you that needs no cooking?	41.2	66.7	25.5	.774

Continued on next page

Table 4 (Continued)

Do you have a supply of water that would provide at least one gallon of water per day for each person in your home for three days?	37.5	61.9	24.4	.109
Do you have flashlights for each family member and extra batteries?	46.3	64.3	18	.344
Do you have sunscreen and insect repellant?	55.9	73.8	17.9	.039
Do you have plastic sheeting and duct tape?	34.6	52.4	17.8	.581
Do you have matches and a lighter (in a water-proof container)?	42.6	59.5	16.9	.815
Are your social security cards and birth records easily accessible to put into your document bag?	67.6	83.3	15.7	.581
Do you have a hand-operated can opener?	83.1	97.6	14.5	.250
Do you have a sleeping bag or warm blanket?	89	97.6	14.5	1.00
Do you have an evacuation plan written down?	11	23.8	12.8	1.00
Do you have moist towelettes for your emergency supply kit?	37.5	50	12.5	.227
Do you have comfort items such as blanket and pillows?	85.3	97.6	12.3	.219
Do you have nose and mouth protection masks for your emergency supply kit?	15.4	26.2	10.8	.344
Do you have an emergency supply kit?	52.9	61.9	9	.013
Do you have a first aid kit?	52.9	61.9	9	.289
Do you have comfort items such as books, games, and toys?	66.9	71.4	4.5	1.000
Do you have a fire extinguisher?	35.3	38.1	2.8	1.00
Travel Preparedness				
Do you have a local road map?	36	71.4	35.4	<.001
Do you have basic repair items such as tools, a spare tire, a tire patch kit, or engine oil?	58.1	73.8	15.7	.508

Pet Preparedness

If you have a pet, do you have a pet carrier, leash, and toys?	35.3	53.5	18.2	1.000
If you have a pet, do you have a three-day supply of pet food, water, and bowls?	40.4	58.1	17.7	.375
If you have a pet, do you have a current pet photo in case you are separated?	35.3	39.5	4.2	.688
If you have a pet, do you have pet medications in a pet first aid kit?	11.8	14.0	2.2	.625

Chapter 4: Summary and Evaluation

This research effort began with an initial interest in disasters and how they impacted the community, followed by an interest in how to decrease risk among individuals within a community. Subsequent exploration involved an examination of the educational methods aimed at increasing individual emergency preparedness to a level that decreases the risk of poor outcomes in terms of human health related to emergencies and disasters. A greater understanding of how the concept of risk can be applied to emergency preparedness was acquired through the writing of "Risk: A Multidisciplinary Concept Analysis" (McNeill, 2013). The value of decreasing risk and increasing resilience to facilitate the absorption of and recovery from adverse events regardless of health status has been explored. If all individuals were educated in an evidence-based manner, they can begin to consider measures to reduce their personal risk based on the scenario of their own lives inclusive of health considerations. This thought process was derived through the research for the study "Changes in Individual Preparedness Levels Among an Economically Vulnerable Population Following Emergency Preparedness Education: A Mixed Methods Study".

A review of the results of the study in terms of the CRTF's framework (Appendix B), highlights the mitigating force that preparedness provides in the "before" phase of an event. Preparedness can increase the resiliency of individuals, reduce the probability of failure, and decrease the time to recovery after an event (HSAC, 2011). As depicted by the framework, it aids in the resistance of negative outcomes, facilitates absorption of

adverse events, promotes recovery and/or adaptation, and increases the capabilities of response measures (HSAC, 2011). The effectiveness of preparedness education is difficult to measure (GAO, 2010) but the evidence suggests that current methods have not resulted in adequate increases in preparedness levels (Citizen Corps, 2005; 2007; 2009). It is imperative not only to measure changes in preparedness levels resulting from current emergency preparedness methods, but also to pilot different methods of delivering that education to determine what delivery method results in the best outcome. Other areas in need of research include methods of engaging the public in emergency preparedness measures (Citizen Corps, 2005) and facilitating education on preparedness to the extent that individuals can accurately assess their preparedness level and not overestimate it (Citizen Corps, 2006; 2007).

Increases in the incidence of disaster have significantly impacted the attention given to disaster planning measures. Almost 379 million people were affected world-wide by disasters (e.g. earthquakes, floods, and storms) in 2010-2011 (EM-DAT, 2009). The number of disasters and their impact has increased exponentially from 1975 to 2011 (EM-DAT, 2009). There have been more than 780 disasters declared in the United States from 2000 to 2012 (FEMA, 2010). Oftentimes, disasters necessitated evacuation of those in the path of destruction. According to the *World Disasters Report 2012*, there were an estimated 72 million people displaced world-wide in 2012 (International Federation of Red Cross and Red Cross Crescent Societies, 2012). According to Greenough, et al. (2008) a general consensus exists among disaster and medical experts that disasters will increase in frequency and affect far greater numbers of people. On February 19, 2003 the DHS launched its Citizen's Preparedness Campaign which continues to this day (The

White House, 2003). Yet even as these emergency preparedness campaigns continue at great expense to the US government (GAO 2010), the levels of emergency preparedness in the US have not increased (Citizen Corps, 2005, 2007, 2009).

In 2011 the official poverty rate was 15.0%; 46.2 million people lived in poverty (US Census Bureau, 2012). Clearly, this large impoverished population will impact the emergency preparedness of individuals in the US and thus our community resiliency. For this reason, serious consideration must be given to emergency preparedness campaigns and emergency preparedness funding for this group. Those who are more disadvantaged are more vulnerable to illness, less able to protect themselves utilizing preventive strategies, and more burdened than other populations by public health response interventions (DeBruin, Liaschenko, & Marshall, 2012). To provide redress for this disadvantaged population, we must have a firm understanding of their experiences and difficulties in undertaking preparedness measures and accommodate them to the greatest degree possible in the interest of social justice (DeBruin et al., 2012; Enarson, 2007).

It is not enough to dictate to a population that they must be prepared for emergencies in the interest of community resilience and national security directives; we must consider their ability to comply with these measures, especially among economically vulnerable populations. Knowledge of what vulnerable populations need in the event of an emergency can direct emergency managers to act on this knowledge throughout the disaster cycle, thus reducing the vulnerability (Enarson, 2007). Lack of consideration for the needs of vulnerable populations in achieving emergency preparedness can directly and indirectly increase the exposure to hazards presented by disaster (Enarson, 2007).

As we move from the top down focus to more community and individual "grass-roots" focus on emergency preparedness and resilience, few people are maintaining the recommended stockpiles of food and water, identifying alternative transportation measures, alternative power generation, or communication plans in the event of emergency (Longstaff, Armstrong, Perrin, Parker, & Hidek, 2012). Research must endeavor to understand where this disconnect is occurring. Questions remain as to the effectiveness of emergency preparedness education campaigns (Citizen Corp, 2010; DHS, 2010; GAO, 2010; McKenna, 2010; United States Department of Health and Human Services [USDHHS], 2009) and the ability of vulnerable populations to adequately prepare for emergencies and become more resilient.

In 2001, the GAO (2013) recommended that FEMA develop a national preparedness assessment of existing capabilities against established requirements. This recommendation was made in an effort to determine what federal agencies should be prepared to address identified gaps. In terms of Community Resilience, this should be done at the local level to determine the needs of a population.

This is further supported by the testimony of the Honorable William Euille on June 25, 2013 before the Senate Committee on Homeland Security and Governmental Affairs Subcommittee on Emergency management, Intergovernmental Relations, and the District of Columbia (Are We Prepared?, 2013). Mayor Euille testified that, because events and their impact are primarily a local matter, grant funding should support local preparedness and prevention efforts. It is imperative that local preparedness efforts intended to improve individual and thus community resiliency be evaluated for the effectiveness to ensure appropriate utilization of preparedness funds.

While significant individual preparedness levels after emergency preparedness education were noted in this study, the research gap is wide. No other research of this nature was located by this author yet it has been consistently called for by various government entities (Citizen Corps, 2010; DHS, 2010; GAO, 2010; USDHHS, 2009). Future research must focus on the evaluation of the effectiveness of various methods of delivery of emergency preparedness education and the implementation of those evidence-based practices in the community. A commitment to individual preparedness throughout communities across the nation must be engendered. This will promote engaged and resilient members of society who are better able to withstand adverse events and understand that preparedness decreases their personal risk.

Evaluation

The manner in which questions were organized in the surveys did not lend itself to logical, smooth flow of thought for the participants. The medication questions were not sequential, questions on power needs were not clearly articulated, the "not applicable" option was too readily available on questions where it should not have been an option (e.g. Do you have bleach?). Additionally, the wording of some of the questions (e.g. Do you have soaps, personal supplies, and baby items if applicable?) was likely confusing. Separating them more clearly would have facilitated better understanding of the question and data that were more reliable (e.g. Do you have soaps and personal hygiene supplies? Do you have a baby?). Lastly, shortening the survey to key components likely would have improved responsiveness. However, the value of the amount of data collected cannot be understated and provided for an overall assessment of general preparedness that was quite valuable.

The qualitative interview phase could have also yielded more data had the interviews been completed face-to-face instead of on the telephone. Logistically, this was not possible because of time and financial constraints. It seemed that by phase three, participants had tired of the study and did not want to answer more questions. While the majority rushed through the interview, valuable data was still obtained. In the future, splitting the study into solely quantitative and/or qualitative might better provide for more engaged participants.

Because there was an initial sample of 136 participants from phase I, $10 Wal-Mart gift cards were given to ensure sufficient response for phase II. Even with this incentive, given to the first 50 respondents, only 42 people participated. However, a sample size of 42 was more than enough to achieve adequate power.

As we continue to face a world with various types of emergencies and where the scale and severity of disasters are growing and will likely pose threats across all systems, both public and private (Intergovernmental Panel on Climate Change, 2011) it is imperative that we prepare and that we, as nurses, promote preparedness in our communities. Improvements should be made in overall instrumentation utilized to measure the preparedness levels. At present, there is no widely used instrument to assess preparedness and most studies utilized dichotomous questions as was done in this study (Bethel et al., 2011; CDC, 2012a; 2012b; Citizen Corps, 2009; Foster et al., 2011; Whitney et al., 2012). Because individual preparedness and evaluations of emergency preparedness campaigns have been highlighted by the GAO (2010) in requests for evidence pertaining to changes in behavior as a result of these campaigns, well developed and validated instrumentation is needed.

The data gathered was complete and of sufficient size to ensure adequate power and a large effect size between preparedness before and after the education. Permission for the study that was granted by Northeast Texas Public Health District was paramount to its success and greatly appreciated. Initial logistical challenges occurred such as inappropriate placement of the data collection table which resulted in the premature departure of potential participants who left without reviewing emergency preparedness material. This was quickly realized and corrected toward the end of the first day. Once corrected, improved flow increased participant responses. Overall, the data desired was successfully obtained.

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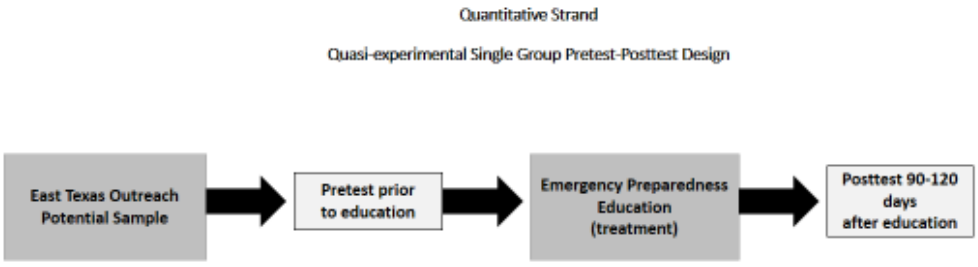
Appendix A

Figure 1. Quantitative Stage Design



Appendix B

Figure 2. The Conceptual Relationships Between Preparedness, Resilience, and Risk Reduction

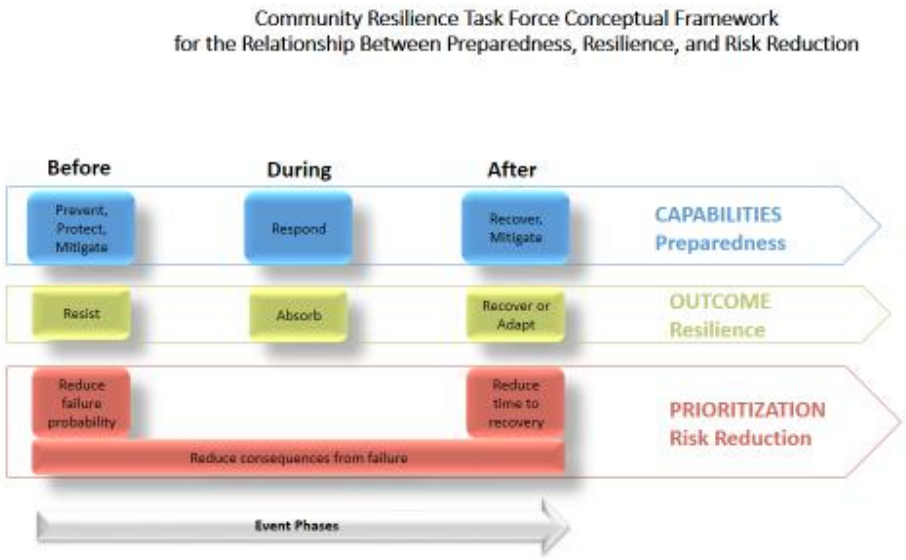


Figure 2. Graphic depiction of the Homeland Security Advisory Council's Community Resilience Task Force conceptual relationships between Preparedness, Resilience, and Risk Reduction. Adapted from "Community Resilience Task Force Recommendations" by the Homeland Security Advisory Councils Community Resilience Task Force, 2011. Retrieved from http://www.dhs.gov.

Appendix C

Informed Consent to participate in Research

THE UNIVERSITY OF TEXAS AT TYLER

Informed consent to Participate in Research

1. Project Title: Emergency Preparedness Education

2. Principal Investigator's Name: Charleen McNeill, PhD Candidate, MSN, RN

3. Participant's Name:
_____

To the Participant:

You are being asked to take part in this study at The University of Texas at Tyler (UT Tyler). This consent form explains why this research study is being performed and what your role will be if you choose to participate. This form also describes the possible risks connected with being in this study. After reviewing this information with the person responsible for your enrollment, you should be able to understand and make an informed decision on whether you want to take part in this study.

DESCRIPTION OF PROJECT:

4. Purpose of the Study

We invite you to participate in a research study intended to find out how well East Texans are prepared for emergencies and if they are better prepared for emergencies after receiving emergency preparedness education.

5. Research Procedures

If you choose to participate, you will:

1. Complete a short survey of your current emergency preparedness (time required – 5 minutes)
2. In 90 to 120 days, you will complete a second survey of your emergency preparedness either by mail or email (your preference). If you select to have the survey mailed to you, a preaddressed, stamped envelope will be provided to return the survey. (time required – 5 minutes)
3. You will be given the opportunity to participate in an additional survey that will consist of the researcher contacting you by phone to discuss any difficulties you found as you worked on your preparation for emergencies. (time required – 15 minutes)

6. Side Effects/Risks

Considering the experience of a disaster may make you anxious. Questionnaires may contain questions that are sensitive in nature. You may refuse to answer any question that makes you feel uncomfortable. If you have concerns after completing the questionnaires, we encourage you to contact the principal investigator (contact information will be at the end of this consent form). Any possible risks have been listed above, but please keep in mind that unpredicted risks may exist.

7. Potential Benefits

This study will aid health care professionals and emergencies planners to better understand individual needs for emergency preparedness. By identifying difficulties you had in preparing for emergencies, you will enable planners to improve the emergency preparedness and response process. This will benefit those who face similar disaster events in the future. There are no direct benefits to you by participating in this study.

UNDERSTANDING OF PARTICIPANTS

8. I have been given an opportunity to ask any questions concerning the Emergency Preparedness Education research project and the investigator has been willing to answer my questions. This research project will be administered by the University of Texas at Tyler as part of the project titled, numbered, and described above. I hereby authorize Charleen McNeill, the principal investigator, and/or the investigator she may designate, to conduct the Emergency Preparedness Education research project surveys and/or interview.

9. I have been told and I understand that my participation in this study is strictly voluntary and that I may refuse to participate without penalty or loss of benefit to which I am otherwise entitled.

10. I know I can stop being a part of the study whenever I want to. If I do stop I know this means that nothing will happen to me and I will not lose anything I am supposed to receive, like benefits, or have any costs or other types of penalties.

In addition, I understand the following:

- I will be informed of any new information or findings that may affect my willingness to continue participating in this study
- The study may be changed or stopped at any time by the principal investigator or by the University of Texas at Tyler.
- The principal investigator will gain my written consent for any changes that may affect me.

Appendix C (Continued)

11. I have been assured that confidentiality will be preserved and that my name will not be revealed in any reports or publications resulting from this study without my expressed written consent, except that qualified investigators from the Department of Health and Human Services may review my records where appropriate and necessary.

I also understand that any personal health information or other information collected during this study may be shared with the following as long as no identifying information as to my name, address or other contact information is provided:

- Organization contributing money to be able to conduct this study
- Other researchers interested in combining your information with information from other studies
- Information shared through presentations or publication

I understand The UT Tyler Institutional Review Board (the group that ensures that research is done correctly and that measures are in place to protect the safety of research participants) may review documents that have my identifying information on them as part of their compliance and monitoring process. I also understand that any personal information revealed during this process will be kept strictly confidential. I also understand that any information regarding safety of drugs must be shared, but in regards to any other information, I may cancel my permission at any time to share information collected from me by contacting the researcher named in this consent at the following address:

Charleen McNeill, PhD Candidate, MSN, RN
The University of Texas at Tyler
Institutional Review Board
c/o Office of Sponsored Research
3900 University Blvd
Tyler, TX 75799

12. I have been informed of the reasonably foreseeable risks associated with participation in this research project. I have been informed that should I suffer any injury as a result of participation in this project, verbal counseling will be available. I understand, however, that in the absence of negligence on the part of The University of Texas at Tyler personnel, I cannot expect to receive any payment for medical expenses or any financial compensation for such injury.

13. I understand that I will not be charged for any costs involved in this project. My insurer and/or I will be responsible for the cost of any supportive or treatment of any research-related complications or injuries. I also understand that I will not be compensated for any patents or discoveries that may result from my participation in this research.

Appendix C (Continued)

14. If I have any questions concerning my participation in this project, I shall contact Charleen McNeill at 423-967-8238 or Dr. Danita Alfred (faculty sponsor 903 566-7019). If I have any questions concerning my rights as a research subject, I shall contact Dr. Gloria Duke, Chair of the IRB, at (903) 566-7023. I understand that I may contact Dr. Duke with questions about research-related injuries.

15. CONSENT/PERMISSION FOR PARTICIPATION IN THIS RESEARCH STUDY

Based upon the above, I consent to participate in the research. I give the principal investigator or study researcher permission to enroll me in this study. I have received a signed copy of this consent form.

_____ _ ___ _ _____ _____

Signature of Participant Date

Participant address to mail follow-up survey:

_____

_____

If you would rather receive the follow-up survey by e-mail, please write your e-mail address in the space provided below:

E-mail address: _____

Please contact me by telephone for follow up interview in September/October 2013.

Telephone: _____

Witness_____

Witness _____

16. I have discussed this project with the participant and/or her/his authorized representative, using language that is understandable and appropriate. I believe that I have fully informed this participant of the nature of this study and its possible benefits and risks, and I believe the participant understood this explanation

_____

Investigator Date

Appendix C (Continued)

TRANSLATOR

I have translated this consent form into English and I assisted the investigator in the consenting process for this participant.

_____

Translator Signature Date

Participant ID #_____

Appendix D

Pre-test Survey

Test yourself by answering the following questions:

Q1 Please write in the participant number, this will be the same number as the medical record number assigned to you by medical personal.
_____

Q2 What is your race (check one)?

- ❍ Asian/Pacific Islander
- ❍ Hispanic/Latino
- ❍ White/Caucasian
- ❍ Black/African American
- ❍ Native-American
- ❍ Multi-racial
- ❍ Other

Q3 What is your marital status?

- ❍ Single
- ❍ Married/Committed Relationship

Q4 Have you ever had any education on emergency preparedness?

- ❍ Yes
- ❍ No

Q5 What is your primary language?

- ❍ English
- ❍ Spanish
- ❍ Other _____

Q6 What is your gender?

- ❍ Male
- ❍ Female

Q7 What is your age (in years)?
_____

Q8 What is your yearly income (check one)?

- ❍ less than $12,000 per year
- ❍ $12,0001 to $25,000 per year
- ❍ $25,001 to $35,000 per year
- ❍ $35,001 to $45,000 per year
- ❍ $45,001 to $55,000 per year
- ❍ over $55,001

Appendix D (Continued)

Question	Yes	No	Does not apply
1. Do you believe you are ready for an emergency situation for 72 hours after the emergency?			
2. Do you live alone?			
3. If there was an emergency, would you need help to leave the area?			
4. Do you have an evacuation plan written down?			
5. Is everyone in your home aware of your evacuation plan?			
6. Do you have an emergency supply kit?			
7. Do you have a three-day supply of food that won't spoil for all those that live with you that needs no cooking?			
8. Do you have a supply of water that would provide at least one gallon of water per day for each person in your home for three days?			
9. Do you have a hand-operated can opener?			
10. Do you have a sleeping bag or warm blanket?			
11. Do you have baby items such as formula, bottles, and baby food in your emergency supply kit?			
12. Do you have a first aid kit?			
13. Do you have a three-day supply of prescriptions and backup medicines?			
14. Do you have toilet paper, paper towels, and garbage bags set aside for sanitation during emergencies?			
15. Do you have bleach set aside for your emergency supply kit?			
16. Do you have moist wipes for your emergency supply kit?			
17. Do you have dental care, hearing, and vision products for your emergency supply kit?			
18. Do you have soaps, personal supplies, and baby items if applicable?			
19. Do you have sunscreen and insect repellent?			
20. Do you have nose and mouth protection masks for your emergency supply kit?			

Appendix D (Continued)

Question	Yes	No	Does not apply
21. Do you have a battery-powered emergency alert radio or standard radio with extra batteries?			
22. Do you have an extra cell phone battery and car charger?			
23. Do you have flashlights for each family member and extra batteries?			
24. Do you have matches and a lighter (in a water-proof container)?			
25. Do you have a whistle?			
26. Do you have a local roadmap?			
27. Do you have basic repair items such as tools, a spare tire, a tire patch kit, or engine oil?			
28. Do you have a document bag?			
29. Do you have cash or traveler's checks, current picture IDs, and family documents easily accessible to put into your document bag?			
30. Do you have insurance information, medical cards, and bank account information easily accessible to put into your document bag?			
31. Are your Social Security cards and birth records easily accessible to put into your document bag?			
32. Do you have a list of medications with dosages and doctors phone numbers in your document bag?			
33. Do you have plastic sheeting and duct tape?			
34. Do you have a fire extinguisher?			
35. Do you have a complete change of clothing to include a long sleeved shirt, long pants, and sturdy shoes?			
36. Do you have a wrench or pliers to turn off utilities?			
37. Do you have feminine supplies and personal hygiene items?			
38. Do you have comfort items such as blankets and pillows?			
39. Do you have comfort items such as books, games, and toys?			

Appendix D (Continued)

Question	Yes	No	Does not apply
40. Do you have a pet?			
41. If you have a pet do you have a three-day supply of pet food, water, and bowls?			
42. If you have a pet do you have pet medications in a pet first aid kit?			
43. If you have a pet do have a current pet photo in case you are separated?			
44. If you have a pet do you have a pet carrier, leash, and toys?			
45. Do you take medication regularly for any reason?			
46. Do you have a plan for any power needs, such as medical equipment or refrigerated medicine?			
47. Do you have any medical illnesses that you see a doctor or nurse regularly?			
48. If you have an illness that you have to see a doctor or nurse for regularly, have you identified an alternate doctor or nurse?			
49. Do you have a small cooler and cold packs?			
50. Do you have an adequate supply of special diet food, syringes, blood sugar monitoring strips and other needed items?			
51. Do you have extra medicine in case you cannot get to your pharmacy?			
52. Have you made copies of your prescriptions from your doctor in case you are away from home?			
53. If you are not able to leave the area on your own, have you registered with 211 to get a ride during and hurricane evacuation?			
54. If an order was given to leave the area, do you have access to transportation?			

Appendix E

Follow-up Survey on Emergency Preparedness

Participant ID# _____

Please check the appropriate box answering each question.

Question	Yes	No	Does not apply
1. Do you believe the class you received in June helped you become more prepared for emergencies?			
2. Do you believe you are ready for an emergency?			
3. Are you physically able to evacuate on your own?			
4. If you are not able to leave the area on your own, have you registered with 211?			
5. Do you have anywhere to go in case of emergency?			
6. Were you able to get all of the items on the emergency checklist?			
7. Do you believe it is important to prepare for disasters?			
8. Do you live with others?			
9. Do you have an evacuation plan written down?			
10. Is everyone in your home aware of your evacuation plan?			
11. Do you have an emergency supply kit?			
12. Do you have a three-day supply of food that won't spoil for all those that live with you that needs no cooking?			
13. Do you have a supply of water that would provide at least one gallon of water per day for each person in your home for three days?			
14. Do you have a hand-operated can opener?			
15. Do you have a sleeping bag or warm blanket?			
16. Do you have baby items such as formula, bottles, and baby food in your emergency supply kit? (If you do not have a baby, please mark n/a)			

Appendix E (continued)

Question	Yes	No	Does not apply
17. Do you have a first aid kit?			
18. Do you take prescription medications regularly for any reason? (if you do not, please mark n/a)			
19. Do you have toilet paper, paper towels, and garbage bags set aside for sanitation during emergencies?			
20. Do you have bleach set aside for your emergency supply kit?			
21. Do you have moist wipes for your emergency supply kit?			
22. Do you have dental care, hearing, and vision products for your emergency supply kit?			
23. Do you have soaps, personal supplies, and baby items if applicable?			
24. Do you have sunscreen and insect repellent?			
25. Do you have nose and mouth protection masks for your emergency supply kit?			
26. Do you have a battery-powered emergency alert radio or standard radio with extra batteries?			
27. Do you have an extra cell phone battery and car charger?			
28. Do you have flashlights for each family member and extra batteries?			
29. Do you have matches and a lighter (in a water-proof container)?			
30. Do you have a whistle?			
31. Do you have a local roadmap?			
32. Do you have basic repair items such as tools, a spare tire, a tire patch kit, or engine oil?			
33. Do you have a document bag?			
34. Do you have cash or traveler's checks, current picture IDs, and family documents easily accessible to put into your document bag?			
35. Do you have insurance information, medical cards, and bank account information easily accessible to put into your document bag?			

Appendix E (continued)

Question	Yes	No	Does not apply
36. Are your Social Security cards and birth records easily accessible to put into your document bag?			
37. Do you have any medical illnesses that you see a doctor or nurse for regularly? (if not, please mark n/a)			
38. Do you have a list of medications with dosages and doctors phone numbers in your document bag? (if you do not take any medications, mark n/a)			
39. Do you have plastic sheeting and duct tape?			
40. Do you have a fire extinguisher?			
41. Do you have a complete change of clothing to include a long sleeved shirt, long pants, and sturdy shoes?			
42. Do you have a wrench or pliers to turn off utilities?			
43. Do you have comfort items such as blankets and pillows?			
44. Do you have comfort items such as books, games, and toys?			
45. Do you have a pet? (if you do not have a pet, mark n/a for items 45 through 49)			
46. If you have a pet do you have a three-day supply of pet food, water, and bowls?			
47. If you have a pet do you have pet medications in a pet first aid kit?			
48. If you have a pet do have a current pet photo in case you are separated?			
49. If you have a pet do you have a pet carrier, leash, and toys?			
50. Do you have a plan for any power needs, such as medical equipment or refrigerated medicine?			
51. If you have an illness that you have to see a doctor or nurse for regularly, have you identified an alternate doctor or nurse?			
52. Do you have a small cooler and cold packs?			
53. Do you have an adequate supply of special diet food, syringes, blood sugar monitoring strips and other needed items?			

Appendix E (continued)

Question	Yes	No	Does not apply
54. Do you have extra medicine in case you cannot get to your pharmacy?			
55. Have you made copies of your prescriptions from your doctor in case you are away from home?			
56. Do you have all of the items listed in this questionnaire ready to go in a travel bag or other appropriate container at this time?			
57. If you are not able to leave the area on your own, have you registered with 211 to get a ride during and hurricane evacuation?			
58. If an order was given to leave the area, do you have access to transportation?			

Appendix F

Interview Questions

Good afternoon _____. This is Charleen McNeill, the PhD candidate from the University of Texas at Tyler. You recently completed the second survey on Emergency Preparedness and provided your phone number to discuss becoming prepared for emergencies and want to extend my sincere gratitude for your assistance. Did you receive your gift certificate? I am calling to discuss your experience in trying to become more prepared now. Is this a good time? (Wait for the participant to answer either yes or no. If they say this is not a good time, ask them when would be a good time. If they provide a time, we will call back. If they say they do not want to participate any longer, thank them kindly and hang up.)

As we speak, I will be repeating what you say so that I can be sure to record your answers accurately on my computer. Once we are done, I will mail you a transcript of our discussion for your review. If you wish to change any answers, please do so within two weeks by calling me at 423-967-8238.

1. Tell me your thoughts on the emergency preparedness education you had.
2. Was there information about emergency preparedness that you needed by was not included in the program?
3. What do you need to help you prepare for an emergency?
4. Tell me about your emergency plan.
5. Tell me about any concerns you have regarding being prepared for an emergency.
6. Tell me about your health.
7. Tell me about any medications you take.

Appendix F (Continued)

8. Tell me about challenges you have preparing for an emergency.

9. Tell me what you would do if your neighborhood was told to evacuate.

10. Is there anything else you would like to share regarding emergency preparedness?

Appendix G

Acronym Reference List

BRFSS – Behavioral Risk Factor Surveillance System

CDC – Center for Disease Control and Prevention

CRED – Centers for Research on the Epidemiology of Disasters

CRTF – Community Resilience Task Force

DEPC – Disaster/Emergency Preparedness Committee

DHS – Department of Homeland Security

ETMO – East Texas Medical Outreach

FEMA – Federal Emergency Management Agency

GAO – Government Accounting Office

HSAC – Homeland Security Advisory Council

IACP – Inter-Agency Planning Committee

ICN – International Council of Nurses

IRB – Internal Review Board

NHSS – National Health Security Strategy

PI – Primary Investigator

PPA-Personal Preparedness Assessment

QD – Qualitative Descriptive

TDSHS – Texas Department of State Health Services

US – United States

USDHHS – United States Department of Health and Human Services

WHO – World Health Organization

Appendix H

The University of Texas at Tyler Institutional Review Board

May 24, 2013

Dear Ms McNeill,

Your request to conduct the study: *Emergency Preparedness and Barriers within a Vulnerable Population: A Mixed Methods Stud,* IRB #Sum2013-95 has been approved by The University of Texas at Tyler Institutional Review Board under expedited review. This approval includes the written informed consent that is attached to this letter, and your assurance of participant knowledge of the following prior to study participation: this is a research study; participation is completely voluntary with no obligations to continue participating, with no adverse consequences for non-participation; and assurance of confidentiality of their data. In addition, please ensure that any research assistants are knowledgeable about research ethics and confidentiality, and any co-investigators have completed human protection training within the past three years, and have forwarded their certificates to the IRB office (G. Duke).

Please review the UT Tyler IRB Principal Investigator Responsibilities, and acknowledge your understanding of these responsibilities and the following through return of this email to the IRB Chair within one week after receipt of this approval letter:

- This approval is for one year, as of the date of the approval letter
- Request for Continuing Review must be completed for projects extending past one year
- Prompt reporting to the UT Tyler IRB of any proposed changes to this research activity
- Prompt reporting to the UT Tyler IRB and academic department administration will be done of any unanticipated problems involving risks to subjects or others
- Suspension or termination of approval may be done if there is evidence of any serious or continuing noncompliance with Federal Regulations or any aberrations in original proposal.
- Any change in proposal procedures must be promptly reported to the IRB prior to implementing any changes except when necessary to eliminate apparent immediate hazards to the subject.

Appendix H (Continued)

Best of luck in your research, and do not hesitate to contact me if you need any further assistance.

Sincerely,

Gloria Duke, PhD, RN Chair, UT Tyler IRB

Appendix I

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Biographical Sketch

NAME Charleen McNeill	POSITION TITLE Doctoral Candidate, University of Texas at Tyler Assistant Professor at Midwestern State University, Wilson School of Nursing, Wichita Falls, TX Adjunct Assistant Professor the University of Maryland University College, Adelphi, MD
eRA COMMONS USER NAME (credential, e.g., agency login)	

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Coastal Georgia Community College	AD	04/05	Nursing
University of Arkansas	BS	12/07	Nursing
University of Texas at El Paso	MS	05/11	Nursing
University of Texas at Tyler	PhD	5/14	Nursing

A. Personal Statement

The goal of this research was to examine preparedness behaviors in a group of economically vulnerable people and to determine the effect that emergency preparedness education had on those levels as well as the participant experiences in becoming prepared for emergencies. My experience in both military and nursing increased my interest related to emergency preparedness and response. The dissertation research provides the groundwork for my continued study of the nursing role in emergency preparedness and response.

B. Positions and Honors

Positions and Employment

2014- Present	Assistant Professor at Midwestern State University, Wilson School of Nursing, Wichita Falls, TX
2010- Present	Adjunct Assistant Professor at University of Maryland University College, Adelphi, MD
2010-2010	Director of Orthopedic/Surgical Services at Del Sol Medical Center, El Paso, TX

2008-2010	Director of Nursing, Prison Health Services, El Paso, TX
2006-2008	Staff Registered Nurse at Northwest Medical Center, Springdale, AR
2005-2006	Staff Registered Nurse at Wayne Memorial Hospital, Jesup, GA
1989-2002	United Stated Army

Professional Memberships

2008-	Texas Nurses Association
2007-	Sigma Theta Tau
2006-	Phi Kappa Phi
2005-	American Nurses Association
2004-	Phi Theta Kappa

Honors

2001	Selected as the first female in a combat military occupational specialty
2004	Molly Pitcher Award for Outstanding Service to the Field Artillery Community