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Willingness of Nurses to Respond after an Alaskan Earthquake: Systematic Literature Review

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Abstract

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MSN, Walden University, 2009

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Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Nurses may share a commonality of issues which can affect their willingness and ability to respond as post-disaster emergency care providers. Guided by expectancy, locus of control, and chaos theory, a systematic literature review was conducted to identify the barriers which affect nurses' willingness and ability to report to their unit after a disaster occurs. Briggs methodology guided this systematic review, and Fineout-Overholt's and Melnyk levels of evidence were used to evaluate the reliability of information and effectiveness of their interventions. Fifteen articles meeting the inclusion criteria (addressed nurses' willingness to report to their unit or to contact the incident command center for mobilization, published in 2005 or after, and written in English) were reviewed. Twelve were systemic reviews of descriptive and qualitative studies (Level 5), one was a cohort study (Level 4), one was a report of expert committees (Level 7), and one reported findings from a pilot study. Five articles reported personal barriers related to the nurses' home caregiver responsibilities and four articles reported personal barriers related to nurses' concern for personal and family safety. Three articles reported institutional barriers related to unsure availability of necessary safety equipment, and two articles reported lack of disaster preparedness. Developing a disaster plan that includes emergency phone numbers, a prepared backpack of basic survival gear, and a plan for emergency child and elder care arrangements, as well as providing disaster training for nurses was recommended. Understanding health provider needs and willingness to respond to emergency situations contributes to positive social change by contributing to disaster risk reduction and ensuring safer and more resilient communities.

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Dedication

This long process could not have succeeded to its completion without the support of my family and close friends. I would first like to dedicate this project to my mother, Rosemary Stutzman, who, as a dedicated nurse, inspired me to spread my wings; to my father, Guy Robert Stutzman who taught me to think outside the box and to realize that all things are possible if you believe. I wish you were both here to celebrate with us. To my sisters and brother, Nancy, Carolyn, and Jim, thank you for your support and your understanding in this long endeavor. I love you more than you know.

I want to dedicate this project also to my son, Robert and my daughter, Jessica. I am so blessed to have children who have been so supportive. Thank you for your encouragement and support. I love you so much. Thank you for your understanding and telling me that “you can do it mom”. Thanks for believing in me.

How do I possibly express my appreciation and love to my beloved husband David? You have been my solid rock throughout this challenging time in my life. When I felt I couldn't take another step or write another sentence, you always found ways to keep me focused on the task at hand. Thank you for all you have done for me through this process and for loving me unconditionally. I am so blessed to have you as my husband.

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Section 1: Nature of the Project

Introduction

Nurses are, by definition, care providers. According to Wall & Keeling (2011), nurses who are by nature of their practice and numbers among the first responders to all types of human disaster. When emergencies do occur, nurses will be called upon to provide care to the people affected: however, many things can affect the willingness of nurses to respond (Adams & Berry, 2012). According to the American Nurses Association (ANA), (2010), although nurses are considered to be a "reliable responder due to their compassionate nature, for some there is conflict regarding if they will respond" (p.1). The ANA recognizes that the "well-being of their family is usually the nurse's primary focus" (p. 4). The nurse may also have concerns regarding their safety and the legalities of responding in an unfamiliar situation. The ANA strives to educate nurses that there is a framework which will support nurses who respond to a disaster.

The nature of this project identified a gap in the planning stage of disaster preparedness. Literature was reviewed and analyzed as to the trends in the nature and number of articles related to the topic. By systematically completing a review of the scholarly literature on the willingness of nurses to respond to a call for disaster relief, data were identified. Disaster preparedness planning will benefit from an exploration of the trends and factors related to nurses' willingness to engage in disaster relief work. These trends could be utilized in future disaster preparedness training, influencing more nurses to be prepared ahead of time and to respond to the call for aide, leading to positive social change.

Problem Statement

The local practice problem exists in the healthcare system of the State of Alaska where disaster preparation for earthquakes is an on-going concern for healthcare providers, citizens, and the communities. Alaska Respond (2016) advises Alaskans that earthquake preparation is especially important in Alaska where the 9.2 magnitude Alaskan Earthquake of 1964, the second most powerful earthquake recorded, claimed 132 lives. According to the Alaskan Earthquake Center (2011), as well as violent shaking, the ground liquefied, sections of mountains fell and streets rose many feet. After this event there were many data collected, which have assisted in improving survivability for people after future earthquakes all over the world (United States Geological Survey [USGS], 2016a). Because this earthquake happened in the United States, and in the last century, it has been frequently examined and critiqued, which led to many procedural methods in earthquake preparedness, not just in building codes but also in daily operations of city management.

Community disaster planners must project the number of relief workers needed in the event of disaster. Healthcare institutions must address the projected needs unique to their population. This cannot be done in Alaska unless healthcare institutions have an accurate count of nurses who will participate. Awareness of the factors related to willingness to respond need to be addressed. This Doctoral of Nursing Practice (DNP) project reviewed existing literature to determine how to encourage and support nurses regarding disaster relief.

Therefore, it was necessary to examine the evidenced-based information regarding the preparation of nurses before a disaster. In a disaster, the nurse's first

commitment is to self, (ANA, 2010). As human beings, nurses are subject to the same vulnerabilities as everyone else. Reporting to work may not be the nurse's first priority. According to Advisen (2014), hospital planners realize that having enough workers to assist after a disaster may depend on how their staff is personally prepared. A study by Secor-Turner and O'Boyle (2006) discussed the stresses in these situations and the effect they may have on nurses. Being exposed to the unspeakable horror that accompanies a disaster may be more than many nurses have ever seen. The willingness of these nurses to place themselves in danger, perhaps, leaving family or children without a caregiver, needs to be analyzed so that disaster preparedness programs can be readdressed.

Purpose

A meaningful gap-in-practice existed concerning the procedural methods in earthquake preparedness that organizations have written (ANA, 2010). These policies specify a certain number of nurses who are needed for the disaster relief, depending on the emergent situation and the type of unit (Gage, 2006). The actual number of nurses who showed up to their unit may not be adequate to provide care for victims (Couig, 2012). The willingness and ability of nurses who respond varies by type of disaster (Adams & Berry, 2012). According to Advisen (2014), the nurses' availability and willingness to serve will often depend upon their family's safety, especially, when the earthquake has also impacted their families.

According to Jones (1995), the Alaskan earthquake became the best documented and thoroughly studied earthquake with a goal to restore operations as rapidly as possible. Jones (1995) quoted President Johnson (1964), "We should learn as much as possible

from the Alaskan earthquake, to cope with them more adequately" (p. 1). This became the stimulus to drive the major thrust of earthquake research.

With the 1964 earthquake being so frequently examined and the emergency actions critiqued, procedural methods in earthquake preparedness were proposed, developed, and planned for, not just in building codes, but also in planning for emergency medical care (Alaska Earthquake Center, 2011). The assumption in these plans is that personnel such as nurses are available to provide the care proposed in the earthquake disaster plan (Adams and Berry, 2012). In order to be able to report to the scene of a disaster nurses must be prepared. The reality is many nurses or their families may be victims of the destruction.

The purpose of this systematic review of literature was to identify those obstacles which stand in the way of nurses responding to a disaster. According to the ANA (2010), there is a "gap in our nation's disaster preparedness and response systems" (p. 1). The assumption that all nurses will respond and be available for indefinite amounts of time is a gap in disaster planning (p. 2). Obviously, not all nurses in an organization will report. Therefore, the disaster plans will not function as anticipated and the shortages at emergency sites may actually discourage nurses from responding (Adam and Berry, 2012). Volunteer organization including Red Cross and Alaska Respond (2016) are critical to addressing surge capacity and filling in where necessary. Government organizations including Federal Emergency Management Agency (FEMA), according to Alaska Command (2014), provide military units for deployment, structuring, and coordinating all military branches as needed for humanitarian aid. All are indispensable to fill in the gap when nurses are unable to report to work.

By knowing what the literature stated about the willingness of nurses to respond, greater accuracy in the written disaster plans, as stated by Gage, (2006) became possible. In this article, the author describes core competencies which assess the operational aspects of disaster management that can also transcend staff roles.

This doctoral project has the potential to provide community organizations with scholarly information about the factors which may contribute to information about the willingness of nurses to respond. Encouragement and support of nurses can be addressed before a disaster happens. In addition to disaster drills, organizations in the health care system need to focus on willingness of nurses to respond. This focus could be used in estimating availability of staff, but also in practice drills and preparedness where the anticipated response rates are expected. If disaster planners would acknowledge this gap in the plans, nurses could be involved in the discussion. The resulting awareness and the acknowledgment of the issue might increase nurses' response rates. The literature contained innovative ideas or strategies to deal with the unwillingness to respond. A study by Gage (2006), reviewed "the ability of a hospital to manage daily surge, adequate amounts of space, and staffing directly affects how hospitals will handle patient surges during an emergency" (p. 1). There is a gap in practice in hospital disaster plans if they are expecting their own nurses to report to work after a disaster. Currently, the solution to this discrepancy has been the mobilization of governmental and volunteer organizations (ANA, 2010). However, the best persons to fill the vacuum are the bedside nurses who know the unit. Only as a last resort, such as a deficit in personnel, are alternate teams recruited to fill that gap. The solution to prevent this scenario is for nurses to be

personally prepared; to leave children in prearranged care; to grab an emergency bag and be personally prepared to help save lives (Centers for Disease Control (CDC), (2016).

This doctoral project identified trends in earthquake disaster planning and provided a review of scholarly literature regarding the barriers which could contribute to the willingness of on and off duty nurses to participate. This literature review regarding the willingness of nurses in terms of factors such as preparation, education, and resiliency will help to close the gap in earthquake preparedness planning regarding nurses' responses in an earthquake emergency.

The guiding practice-focused question was: What factors influence nurses' willingness to respond to a disaster? Potential questions addressed include:

1. How confident are nurses in themselves, their basic nursing abilities, and being able to assist a community during the time following an earthquake, in both the community and hospital setting?
2. How physically and psychologically prepared are nurses to help their community after a disaster?
3. How willing are nurses to place themselves in danger, perhaps leaving family or children without a caregiver for periods of time?
4. What are the legal and ethical issues nurses must consider when providing care during a disaster?

Nature of the Doctoral Project

A systematic review of relevant and scholarly literature was done with library searches as the source of evidence. Articles on earthquake preparedness planning and nurses' willingness to respond for disaster relief were collected. Data were extracted,

critically appraised, and summarized to reveal the use in earthquake preparedness and nurses' willingness to respond for relief. According to President Eisenhower (as cited in The American Presidency Project, 1957),

> Plans are worthless, but planning is everything. There is a very great distinction because when you are planning for an emergency you must start with this one thing: the very definition of "emergency" is that it is unexpected, therefore it is not going to happen the way you are planning (p. 1). Hospitals and healthcare institutions may have great disaster plans, scrutinized, labored over, and discussed, but if, when the time comes, no one shows up, all that planning was worthless.

An interesting note is that according to Murphy (1996) the basis of the chaos theory was not postulated until the 1970s but President Eisenhower in 1957 emulated its meaning perfectly as it applies to the unpredictable nature of earthquakes. The chaos theory will be discussed later as a theoretical underpinning model for this project.

According to ANA (2010), the gap-in-practice was discovered that earthquake disaster plans assume that nurses are available as needed without considering the willingness of nurses to leave their families to respond for disaster relief. This may result in not enough nurses to attend to the injured. This project explored the willingness of nurses with implications for disaster pre-planning, including awareness, education, acknowledgement, and successful strategies.

Significance

The stakeholders in relation to this study are primarily those involved in local disaster preparedness programs that exist in the state of Alaska, including volunteer

emergency response teams, faith based organizations, community planners, healthcare institutions, planners, military units, the U.S. government and other organizations in the healthcare system. These stakeholders provide the means and planning for earthquake disaster relief. According to Gage (2007), they are responsible and accountable at the federal, state, and local levels for realistic planning that was able to be implemented during and after an earthquake the ultimate stakeholders are the victims of the earthquake who depend on the prior plans for their survival and care.

Nurses are also indirectly stakeholders as their awareness and advance preparation regarding responding for disaster relief impact their willingness to respond. Hopefully, acknowledging and planning will include strategies and factors identified in the review of the literature. Responding for disaster relief is crucial for Alaska where few trauma center emergency facilities exist. Many rural communities are without surgical trauma capabilities. This doctoral project has the potential to contribute to the emergency plans of hospitals and other facilities where nurses are employed by increased awareness of willingness to respond as a variable in their plans. This project has potential transferability to earthquake planners at the state, municipal, and organizational level who plan for earthquake disaster relief throughout Alaska. It assumed that disaster plans include nurses as primary caregivers in most locations and in all types of emergency care without considering how many nurses may be willing to respond and provide care for extended time periods.

This project has the potential to influence positive social change regarding disaster preparedness and the role of nurses in the planning. Planning and disaster drills could potentially include information on willingness to respond. Discussions and

strategies to encourage participation could be included in planning and practice. The realities of a disaster and the obstacles to responding could become part of planning and practice at all levels of planning from hospital plans to community plans to statewide earthquake disaster relief plans.

Summary

Section 2 identifies the theoretical framework, the relevance to the nursing profession, provides local background and context, and explains the role of the DNP student. The approach to assess and explore the willingness of nurses to respond to earthquake disasters in Alaska will consist of a systematic review of literature. Literature searches used Walden library databases. Critically appraised, and summarized articles were select for factors influencing nurses' willingness to response for disaster relief. Also, the articles were analyzed for strategies that may be put into place or which may already exist to encourage willingness of nurses and to increase their awareness of policy during disaster planning.

Section 2: Review of the Literature and Theoretical and Conceptual Framework

Introduction

Currently, a gap-in-practice exists between the community's expectations for numbers of nurses who will be needed to participate in an earthquake disaster, according to written disaster plans, with the realities of actual numbers of nurses responding in an earthquake disaster. The reality is that nurses may not respond as anticipated (Qureshi, et al., 2005). The purpose of this DNP project was to analyze the literature related to the willingness of nurses to respond in disaster and then to share the findings with local hospital planning community agencies who may apply this data to the community disaster management plans.

A systematic literature review, according to Holley, Salmond, and Saimbert (2012, p. 7), "will assess action planning, act to implement, apply expertise, critically appraise and search databases". The purpose of this DNP literature review was to explore in the evidence-based literature the concept of the willingness of nurses to respond to determine what was already been known and studied. The evidence from the literature review were assessed, appraised, and searched to increase awareness and justify approaches to this gap. It is hoped that this doctoral project will be a contribution to minimize local emergency preparedness planning strategies.

This section identifies the major concepts which are underpinning this doctoral project and were used to support this study. The chaos theory, described by Murphy (1996), was applied due to the unpredictable and volatile nature of disasters, particularly earthquakes. The Vroom Expectancy theory, as described by Ejeta, Adralan, and Paton (2015), looked at the motivation of the nurses' actions during the relief effort, and the

theory of locus of control, according to Rotter (1982), examined the larger picture of the hospital and community level regarding the nurse's willingness to respond to the community after a natural disaster.

Section 2 includes evidence-based literature to identify the choices that nurses need to make related to the categorization their individual obligations in balance with the need to be supportive to their community. The relevance to nursing practice identified in Section 2 recognized the local hospital emergency preparedness protocol and ascertain if there is a gap-in-practice from what is expected to occur when the hospital has dealt with emergent situations.

This DNP project looked at the local background and context of this gap-in-practice issue by looking at the uniqueness of Alaska and the emergency needs of the Alaskan people after a disaster. The role of the DNP student was to be active in creating a systematic literature review and to thoroughly analyze the data in order to identify trends revealing issues in nurses' willingness to report to their unit for disaster relief. An additional role of the DNP student was the dissemination of this project to stakeholders at the local hospital level.

Concepts, Models, and Theories

There is a need to study the contributing factors of nurses' willingness to respond during a disaster. The theories that were used in this doctoral project was related to the environment in which a disaster occurs and to the motivation of nurses who respond, as related to the individual behavior as influenced externally and internally. According to Murphy (1996), the overall broad theory that provided the concept for this project is chaos theory that is apropos to the environment during a disaster. The planned and linear

disaster preparedness plans cannot possibly apply to the chaotic nature that remains unknown. Murphy (1996) explains the chaos theory uses nonlinear planning to optimize on a situation which would be more consistent with chaos and unexpected events (p. 96). The hospital policies and plans that were developed may not be applicable during a disaster. An example is that nurses who fully expected to respond and who were included in the disaster plan to respond may not respond because of personal consequences of the earthquake. Thus, the predicted outcome of the preparedness will not be possible.

Regarding the motivation of the nurses to respond, Vroom's (1964) expectancy theory was used to examine the nurses' perceived needs during a disaster which influenced their behavior, especially related to the workplace, and willingness to report to work during ae disaster. According to Vroom, behavior is influenced by the value of the perceived goal and includes behavioral responses strongly affected by values and beliefs of an individual (p.1).

The theory of locus of control, as described by Ejeta et al., (2015) was used to examine factors that influence willingness to respond. These factors might be internal motivators, such as loyalty, sense of duty, and the degree of self-efficacy of the nurse. External motivation may be positive as related to the hospital workplace's incentives to respond or negative as related to personal or family injury or damage (Ejeta et al., 2015).

The terms needing clarification in this doctoral project included *respond, disaster relief,* and *willingness*. For the purpose of this DNP study, the term *respond*, as in willingness to respond, means nurses not on duty during a disaster will show up to their unit, be ready to work, or will contact their unit for further directions regarding how they can assist (Adams and Berry, 2012). According to Qureshi et al. (2005), *ability to*

respond is similar to *willingness to respond* but may be different. Willingness points to intention, wanting to participate, agreeing to go where needed, whereas ability incorporates the physicality of nurses actually getting to the disaster staging area.

Relevance to Nursing Practice

Being available to assist the injured after a disaster is an important function of nursing. According to Adams and Berry (2012, p. 1), "adequate staffing is a key component of surge capacity and must take into consideration the willingness and ability of healthcare personnel to report to work". According to Joint Commission, (2008, p.19) "surge capacity is defined as the ability to expand care capabilities in response to sudden following a disaster". In this study the major barriers for staff after a disaster were the responsibility for childcare with a common theme of needing to secure shelter for their family. Not only were concerns for their family of concern, also was the type of disaster condition the nurses to which the nurses would be exposed and to have the potential to bring contagions back to their family.

Qureshi et al. (2005) proposed the type of disaster affected the willingness of nurses to report. "Respondents were more willing to respond to a snowstorm and environmental disaster and less willing to respond to radiation, chemical, and / or an infectious" (p. 1). The study also identified barriers to willingness and ability such as transportation problems, childcare concerns, personal, family, and pet health (p.1).

Advisen (2014) studied the competence of the emergency disaster system and made the following recommendations. "Hospital employee health and safety under extreme conditions begins with the design and construction of the facility itself. It should accommodate surges. A safer building contributes to the willingness of staff to respond"

(p. 2). The author also discussed the internal plan for staff rotation (Advisen, 2014) assuring staff has adequate rest periods. They also recommended a system for contacting retired and part time staff from the community to assist in time of need (p.3). According to, Adams and Berry (2010, p. 2), "if fewer than anticipated healthcare personnel report to work in response to a disaster, safety and sustainability of the care provided may be jeopardized". Inadequate healthcare workforce during a disaster affects the survival and health outcome of victims

A study by Secor-Turner and Boyle (2006) identified the psychological barriers which influence nurses' willingness to report. "As consequences of disaster work, these may include;

- exposure to death and dying,
- pain and terror.
- psychological diagnoses such as posttraumatic stress disorder (PTSD),
- acute stress disorder (ASD).
- depression and substance abuse (p. 416)."

The Institute of Medicine (IOM), quoted by the ANA (2016), discusses the current state of nursing practice during and after a disaster,

> Nurses should take a leadership role, practicing to the full extent of their training, to lead change to advance health, and to collaborate with other professions to improve research and the collection of analysis of data on workforce requirements (p.1 of 22). To collaborate with other disciplines will help to assure that in time of a disaster everyone needed to provide safe patient care, will respond to the call.

To summarize the current state of nursing practice in this area, Alaskans live in an earthquake prone area (USGS, 2016a). In order to affect social change as it relates to earthquakes in Alaska, nurses must prepare as early as possible to assure that they are ready for any type of disaster, not just earthquakes. According to the Alaskan Earthquake Committee (1973), the United States in 1964, was not planning specifically for an earthquake or other natural disasters. At this particular time in history, according to Jones (2007), the world was posturing for war. Just two years prior to the Alaskan Earthquake of 1964, Americans were consumed by the reality that nuclear missiles were reportedly aimed at the United States from Cuba (Office of the Historian, 1962).

According to Washington Times (2011), "by 1960, nearly 70 percent of American adults thought that nuclear war was imminent. By 1965, an estimated 200,000 shelters were built in the United States." Alaska was as prepared as any people could be for the devastation that was about to befall, but instead of the destruction coming from the skies it came from deep underground.

National Research Council (1970) authored a book with the individual accounts of the 1964 earthquake stating that after the quake stopped, disaster protocols were swiftly put into place. Homeless families began to stream into the hospitals for sanctuary where there was a vital working system in place to receive them. The 1964 earthquake occurred around 5:30 pm AST on Good Friday. Dr. Martha Wilson, Director of Alaska Native Service Hospital (1970) claimed that many people were less likely to be injured because they were either in their cars, coming home from work, or were on their way to a Good Friday church service. One comment was especially poignant when considering the willingness and ability of nurses to report to work after an earthquake; nearly "everyone

had their shoes on" (p.19). This exemplifies the importance of even the smallest detail of preparedness enabled many to escape serious injury.

During any disaster, nurses provide crucial support at a time when they may feel inadequate for the task ahead. According to Chaffee (2009), nurses question if there would be functioning equipment for nurses to use. Should they bring their own nursing supplies and personal items? How do nurses contribute adequately without becoming a burden themselves? Alaska Respond (2016), a volunteer medical organization, instructs participants to bring a three-day supply of self-sustainability supplies when mobilized to respond to a disaster.

Strategies and standards of practice that others had written about are amply available to nurses. A report by (Centers for Disease Control [CDC], 2016) discussed the recommendations to humanitarian aid workers stating "it is critical to prepare before relief is needed by assuring adequate immunizations and taking classes to be registered by a relief agency such as the Red Cross" (p.1). In order for nurses to be confident in their own abilities to respond to a disaster, certain preparations can be made prior to an emergency. To assure aid worker's safety the CDC (2016), recommended bringing items for self- sustainability, such as their own drinking water, high calorie snacks, cell phone, sturdy shoes, and a whistle. They should also bring their own equipment, including their own blood pressure cuffs, stethoscope, flash light, and minimal first aid kit when responding to a disaster setting (p.1).

Local Background and Context

There is local evidence that disaster preparedness in the community and the hospitals depend on an estimated number of nurses available for disaster relief during an

earthquake. Volunteer organizations and the nearby military units that would be on full alert, would help to fill in the gaps. In the state of Alaska, Anchorage is the largest city other than the nearby military installation, independent bush pilots, and the Red Cross, there are no other closely located nursing resources who could be on the ground quickly enough to assist in a disaster. According to the State of Alaska, the Department of Military and Veterans Affair/Division of Homeland Security & Emergency Management (DMVA/DHS&EM) (2011), "Planning for emergencies ensures that emergency services, local authorities, and other organizations better communicate and coordinate efforts, improving disaster response and post-disaster recovery. Federal, state, and local requirements are concerned with providing safety and security for the public under threat of a full spectrum of potential disasters" (p.1). In addition, the remote locations of Alaska can make evacuation of the injured more difficult than other parts of the country.

Role of the Doctoral Student

As well as being a DNP student, I am also a faculty member at the University of Alaska, Anchorage which has an associate and bachelor of nursing program locally. The program offers nursing degree completion to distance students located in all of the larger villages via video broadcast throughout the state. This curriculum is broadcasted to 13 additional distance sites to reach much of Alaska. I also provide clinical instruction at two of the three hospitals within Anchorage, and I have been trained in emergency preparedness policies at the hospitals during an orientation. I have visited the areas in Alaska devastated by the 1964 earthquake and have seen first-hand the still visible destruction. After studying this particular topic over the past years, I registered with the

Alaska Respond Organization in order to be as competent as possible in time of a disaster.

I am a citizen of the community in which several minor earthquakes occur daily, albeit most are 3.0 magnitudes or less and not as noticeable (USGS, 2016b). I have experienced firsthand the unsettling experience of disorientation and confusion after a 7.2 magnitude quake which occurred in January of 2016. I became resolved in identifying the emotional state in which nurses find themselves after surviving an earthquake and determining how nurses and disaster plans can anticipate the needs of their staff.

My motivation for this doctoral project was to review the literature on willingness of nurses to respond for disaster relief and to share the data with the local hospitals and community agencies involved in disaster preparedness to contribute to the advance planning and expected nursing staff during the next event. I will be living and working here where earthquakes are commonplace and my perspectives on this topic may help motivate nurses and myself to influence preparedness planning.

My potential bias was my belief that nurses are self-sacrificing and altruistic people who will want to help during an earthquake disaster, but may be incapable of responding for a variety of reasons. My optimism about their participation was a bias that I addressed by reviewing existing literature on motivation to respond during disasters.

Summary

When looking back at history, the United States is a nation that does realize the importance of preparing for a significant disaster. A major disaster is not discriminatory and those who are in its path become very vulnerable. It does not matter what type of disaster, be it natural or man-made; anyone can become a victim. This project looked at

barriers which nurses face when making the decision to respond to any disaster, not just earthquakes. It examined the small things which can be done, that could make the difference in just seconds. Seconds in a disaster, could make the difference between life and death. This project showed that there is transferability into a host of other disciplines as well as geographical locations. Preparedness for disaster is certainly not just a nursing concern nor is it just an Alaskan issue. It is applicable to all who have caregiving responsibilities where they must report to work and do their job.

The current gap-in-practice is related to disaster preparedness planning that expects certain numbers of nurses to be available for disaster relief and the reality that these nurses may not be able or willing to provide earthquake disaster relief. An extensive review of the literature provided information on motivation to participate and on experiences from other disasters reporting that are documented in the literature. This evidence provided the stakeholders awareness and information to use in addressing the expectations for nursing care to be available in an earthquake disaster.

Section 3 reviewed the practice focus questions, further identified the sources of evidence and the need for exploration into the area of disaster preparedness. It developed the method of creating search criterion, and of critiquing and analyzing the evidence-based literature. Section 3 analyzed and synthesize data, described the methodology of the data collection which helped to inform this DNP project.

Section 3: Methodology

Introduction

The nursing problem of providing care in Alaska comes with unique considerations. Preparation for the unexpected is part of life in remote areas. After an earthquake occurs, hospitals are expecting nurses to report for duty but not all nurses will be able to help (ANA, 2010). Many will be involved in caring for their own family or neighbors. Some may have been injured themselves.

The purpose of this DNP study was to perform a systematic literature review of existing evidence-based research regarding the willingness and ability of nurses to respond for work after a disaster. According to Fineholt-Overholt et al. (2005) "data will be searched for the best evidence, critically appraised, addressing the sufficiency of the evidence and evaluating the outcome" (p. 339-341). Trends which developed were identified and correlated to indicate what barriers effect the nurse's decision whether or not to report.

Section 3 identifies the local problem, the gap-in-practice, and the practice focused questions. Section 3 also clarifies the purpose of the study, how its approach aligned to the questions, and the operational definition of key aspects of the DNP project.

Practice-focused Questions

The need in Alaska for nurses to be prepared for emergencies is vast. Due to extremes in temperature and natural disasters, Alaskan nurses must be ready and available to assist after a disaster (ANA, 2010). The gap-in-practice is that there may not be enough nurses who are able to report to work after a disaster to fill the need of multiple injured patients. According to Gage (2007), "effective surge capacity relies upon

the coordination of the hospital policies to mobilize staff and outside agencies" (p.1-2). The problem of staffing may occur after a disaster due to multiple variables. According to Adams (2009), "Nurses should make every effort to be thoroughly informed about their organization's disaster plan and to advocate for disaster drills that include a cross-section of personnel on a variety of shifts" (p. 1).

The guiding practice-focused question was: What factors influence nurses' willingness to respond to a disaster? Potential questions which were addressed included:

1. How confident are nurses in themselves, their basic nursing abilities, and being able to assist a community during the time following an earthquake, in both the community and hospital setting?
2. How physically and psychologically prepared are nurses to help their community after a disaster?
3. How willing are nurses to place themselves in danger, perhaps leaving family or children without a caregiver for periods of time?
4. What are the legal and ethical issues nurses must consider when providing care during a disaster?

The purpose of this DNP project was to analyze the issues affecting nurses after a disaster which impact their decision whether or not to report to their unit. According to Holley et al., (2012), "systematic reviews provide a summary of research findings using explicit, rigorous, processes to identify, critically appraise and synthesize relevant studies available on a topic" (p. 3). This evidence-based practice method of examining literature is aligned to the practiced-focused questions. The need to reconcile the already published literature is important in order to ascertain the perceived barriers These practice-focused

questions reflect the difficult choices which are often made by nurses when facing a disaster situation. According to Couig (2012), concern for self and for family, caretaking commitments, availability of personal protective equipment (PPE), and lastly, education and training were the main reasons for not reporting to the hospital after a disaster.

Polit & Beck (2014), described "research utilization (RU) as the use of findings from disciplined research in a practical application that is unrelated to the original research. In RU, the emphasis is on translating empirically derived knowledge into real-world applications; the genesis of the process is a research-based innovation or new evidence" (p. 34). This would be similar to using theory designed to explain a mathematical equation to explain the chaotic design of a disaster.

The operational definitions of key aspects of the DNP project were identified through the lens of the chaos theory. According to Murphy (1996), "the theory is useful as an analogy as natural disaster may disrupt or violate the status quo, and to raise question about organizational control of public perceptions" (p. 95). During an earthquake, the chaos theory will help to identify the extraordinarily difficult choices that nurses must make after a disaster; to take care of self and family or report to work.

Operational Definitions of Key Aspects of the Doctoral Project

Nurse: a person who cares for the sick or infirm; *specifically*: a licensed health-care professional who practices independently or is supervised by a physician, surgeon, or dentist and who is skilled in promoting and maintaining health. Retrieved from Merriam-Webster's Collegiate Dictionary, (2016)

Willingness: of or relating to the will or power of choosing. Retrieved from Merriam-Webster's Collegiate Dictionary, (2016)

Respond: to react in response Merriam-Webster's Collegiate Dictionary, (2016)

Disaster: something (as a flood or a tornado) that happens suddenly and causes much suffering or loss. Merriam-Webster's Collegiate Dictionary, (2016)

Sources of Evidence

Sources of evidence were discovered through word searches in several databases**.** Primarily, the data collected were derived from peer reviewed nursing journals. In order to analyze the data for this project, the systematic literature review protocol was used. According to Godfrey and Harrison (2015), a guide was created to "develop the study objectives, questions, inclusion and exclusion criteria, and search strategies" (p. 5). The method of critically analyzing research data was applied to this DNP project in order to assure adequate rigor in the research's overall validity.

Research questions were posed to reflect the initial areas of nurses' concerns. These concerns revealed questions of safety, family, preparation, strength, and legalities (ANA, 2010). In order to analyze the data for this project, the systematic literature review protocol was a guide to development of the study objectives, questions, inclusion and exclusion criteria, and search strategies, including the analysis and presentation of results. Research questions were listed to reflect the initial areas of nurses' concerns regarding perceived barriers. These concerns revealed the questions nurses ask regarding safety for themselves and their family, disaster preparation, their own strength, and legalities.

According to Godfrey & Harrison (2015), "a systematic review involves the analysis of all of the available literature to determine the effectiveness of a given practice. The review process provides a predetermined plan to assure rigor and minimize bias" (p.6). The first-step for data selection was to identify the exclusion and inclusion

evidence. According to Godfrey & Harrison (2015), "the exclusion and inclusion evidence should focus on the participants, the interventions, and the outcomes" (p. 7). The decision to use or discard studies is dependent upon how the PICO question is stated. Research methodologies which were considered are randomized control trials, clinical trials, and case studies.

Inclusion criteria consisted of studies which discuss nurses' willingness to report to their unit or to contact the incident command center for mobilization. Disaster response studies in which nurses are asked to respond in some way was considered. As well as worldwide studies, as there is much to learn from how nurses respond to the same similar dangers but in other countries.

Exclusion criteria was determined to be any journal which is not available in English, any article studying students, and any article before 2005. This would be excluded if nurses were not included in the results.

To assure the search is rigorous the search strategy must convey structure. According to Godfrey & Harrison (2015), an initial search should be completed at this time to assure the criteria is on tract. The key search terms produced the initial studies. This was followed by a second, more thorough search in multiple databases, to identify more complete evidence. These two searches were combined and inserted in Table 1. The search words were the same but the databases were different and limits such as scope, were applied. The next step was to perform a hand search to check the relevance of the data collected. A record was maintained to record the databases searched, any limitations, subjects, key words, and number of inclusions articles.

According to Polit & Beck (2008), “confidence in the evidence is enhanced when the research methods are compelling, when there have been multiple confirmatory replication studies, and when the evidence has been systematically evaluated and synthesized” (p. 37-38). The data were collected from individual data bases in order to strive for study replication. In this manner the evidence of nurses’ willingness to respond to a disaster reflected more reliable results.

The sources of evidence and practice-focused questions were studied and developed from Walden University Library internet libraries using databases CINAHL Plus with Full Text, Cochrane Database of Systematic Reviews, Cochrane Methodology Register, MEDLINE with Full Text, and Military & Government**.**

Evidence was ranked with the use of a seven-tiered model of evidence hierarchy. According to Melnyk & Fineout-Overholt (2005), evidence used in scholarly research is ranked based upon the reliability of information and effectiveness of its interventions in a model of seven tiers of evidence. Beginning with Level 1, randomized control trials (RCT), in which reviews of where subjects are chosen at random, to Level 7 containing opinions of authorities or experts. Figure 1 summarizes the model. This DNP project will draw evidence primarily from Level 5, with a few studies form level 4 and 7. By identifying the levels of evidence the systematic review was considered more rigorous.

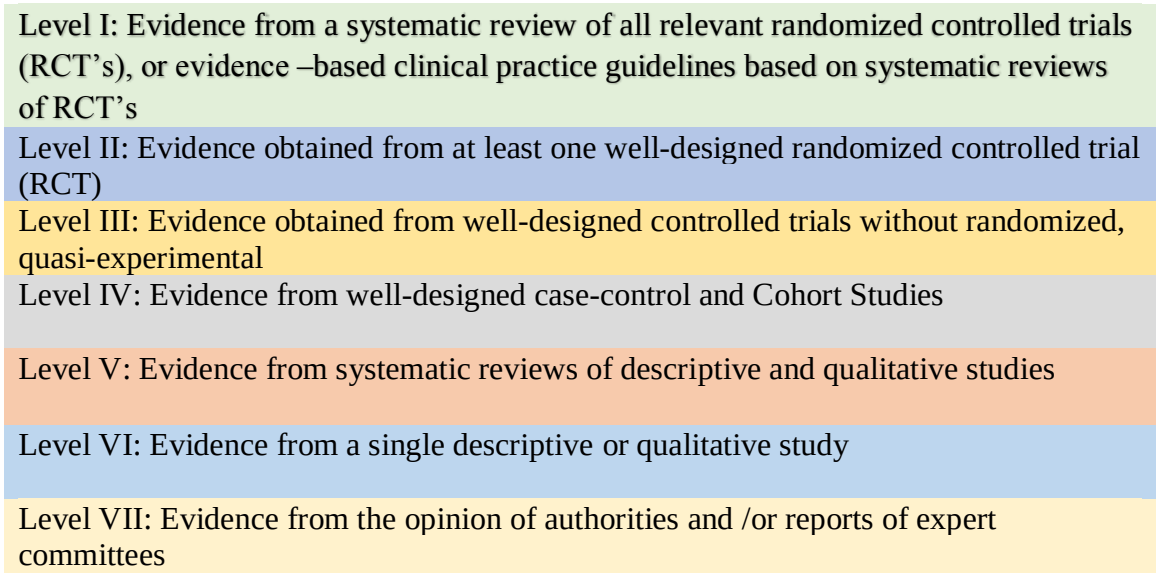

Figure 1. Levels of Hierarchy. "Level I research contains all RCT. Level II contains at least one RCT. Level III has evidence from well-designed control trials without randomization. Level IV contains evidence from well-designed case-controlled or cohort studies. Level V contains qualitative studies. Level VI has evidence from one single qualitative study. Level VII contains evidence from the opinion of authorities or expert committees".

The relationship between this evidence and the original purpose in Section I of this project was to identify the themes regarding the willingness and ability of nurses to report to work after a disaster and to discover the motivational issues influencing decisions. The literature was a mix of studies and was classified as to which level of evidence is used. By creating appropriate questions regarding these topics search words were developed. According to Gough, Oliver, and Thomas (2012), a systematic approach will employ explicit, rigorous, and accountable methods to inform new research questions. In this way the practice–focused questions will be critiqued to assure appropriateness.

Published Outcomes and Research

In order to find outcomes and research related to nurses' willingness to report for work after a disaster, a computer database search was completed. The databases and search engines that were used for this systematic literature review were CINAHL Plus with Full Text, Cochrane Database of Systematic Reviews, Cochrane Methodology Register, MEDLINE with Full Text, and Military & Government**.**

The key search terms and combination of terms were as follows: *nurs**/ OR *hospital worker/* AND *willingness*/ AND *report/* OR *respond/* OR *work/* AND *disaster*/ OR *earthquake* NOT *student**.

The scope of this project in years was expanded to include important data related to the 1964 earthquake with following data which had been collected over the past 52 years. The type of literature searched was peer reviewed journals of nursing. This search was exhaustive and comprehensive as described by Finfgeld-Connett, & Johnson (2013) "when conducting these types of reviews, literature searches should be consistent with the goal of fully explicating concepts and the interrelationships among them" (p.1). To assure integrity it is important to design the research study to be rigorous, transparent, as well as replicable. For this project the literature was searched with the above named criteria.

Protections

According to Abbott & Grady (2011), "the Institutional Review Boards (IRBs) are integral to the U.S. system of protection of human research participants" (p.1). Whenever human subjects are involved an integral part of the process is to assure there will be no harm to participants. This DNP project completed a systematic literature

review which did not include human subjects. An IRB approval number 09-07-16-0065455 was completed to assure all ethical measures are taken and to fulfill Walden University's DNP projects requirements.

Analysis and Synthesis

The process for developing a systematic literature review began with the appropriately asked questions, acquire the evidence, appraise the reviews for quality and confidence, determine applicability, put into practice, and to assess the outcomes. (Holley et al., 2012). The gathering of the literature was completed via internet access to search engines. After analyzing all appropriate studies, the trends which evolved were transferred to a table where the chosen evidence was analyzed, critique and appraised. Trends that arose were analyzed in order to determine if there is an issue of barriers which prevent nurses from reporting to their unit after a disaster. Dissemination of these trends was summarized and presented to be determined for this project.

Summary

Nurses have consistently proved to be compassionate, and reliable care providers during uncertain times (ANA, 2010). If there is a disaster nurses will have to make difficult decisions; to provide care for family or go to work. According to the State of Alaska Emergency Operations Plan (2011), "employees at all levels of government and the private sector will see to the welfare of their families before trying to report to work" (p.7). According to Fung & Loke (2013), inadequate healthcare workforce during a disaster affects the survival and health outcome of victims. It is important to discover what the current culture of disaster preparedness is as it applies to nurses providing care.

This DNP project focused on nurses and hospitals but showed the transferability to include all professions and institutions which provide critical emergency services to the vulnerable.

Section 4 includes findings of the research that resulted from analysis and synthesis and implications of what the results mean, discuss limitations, outcomes and impacts on the findings, describe implications resulting from findings, and potential implications for social change. Recommendations were proposed to present solutions to address the gap-in-practice. Strengths and limitations were discussed and recommendations for future projects.

Section 4: Findings and Recommendations

Introduction

When disaster strikes it usually arrives unannounced and interrupts its victims' previously planned agendas. To question the willingness of health care providers to show up and provide care, is not assuming they had other plans for the day. Perhaps one of these nurses, who is expected to assist in the wake of a disaster, is a single mother whose child was injured in the earthquake that morning. She may be unable to notify her unit due to cell towers being affected. A gap-in-practice occurs when the expected and planned for outcome does not occur. Institutions make their plans but due to the chaotic nature of disaster, in particular an earthquake, it is very difficult to predict the outcome of the response, as described by the chaos theory (Murphy,1996).

The purpose of this doctoral project was to identify the barriers which affect the willingness of nurses to respond for disaster relief after a disaster and to discover what policies can be prepositioned to decrease these barriers and increase the number of nurses available to report to assist in disaster relief.

The sources of evidence were chosen from peer-reviewed professional journals, both from nursing and from other professional disciplines. A systematic review was performed as described in Godfrey and Harrison (2015). The databases used were CINAHL Plus with Full Text, Cochrane Database of Systematic Reviews, Cochrane Methodology Register, MEDLINE with Full Text, and Military & Government. Questions were developed and search criteria were created from these questions:

1. How confident are nurses in themselves, their basic nursing abilities, and being able to assist a community during the time following an earthquake, in both the community and hospital setting?
2. How physically and psychologically prepared are nurses to help their community after a disaster?
3. How willing are nurses to place themselves in danger, perhaps leaving family or children without a caregiver for periods of time?
4. What are the legal and ethical issues nurses must consider when providing care during a disaster?

These questions were combined to reflect the true intent of this study. What barriers face nurses after an Alaskan earthquake which prevents them from reporting for disaster relief? According to ANA (2010), five topics are most prevalent: safety, family, preparation, strength, and legalities. The willingness of nurses to leave their families in order to attend to the needs of others must pass through the lens of these five areas of highest priority.

According to Godfrey and Harrison (2015), a systematic review involves the analysis of all of the available literature to assure rigor and minimal bias.

The following search criteria was performed using the above named search engines:

- Nurs* OR health care worker*
- AND willingness
- AND disaster* OR earthquake*
- AND report OR respond OR work
- NOT student*

The limiters used to further define criteria were articles published within the last 15 years; the text was available in full text from peer reviewed journals and in the English language. The search produced 26 articles, which were critique for appropriateness for inclusion in this literature review. Eleven studies did not meet the selection criteria standards.

Exclusion Criteria

Research studies were excluded due to the following reasons: (a) if willingness to respond or report was not specific to responding to the situation of a disaster or earthquake; (b) if there was no mentioning of barriers which impaired workers from being willing to respond to the disaster; (c) if the willingness measured is related to attending preparedness training. Table 1 reflects the articles of exclusion.

Table 1

Articles of Exclusion

Author, Year	Articles of Exclusion	Rationale for Exclusion
Al-Shaqsi et al, 2015	Self-reported preparedness of New Zealand acute care providers to mass emergencies before the Canterbury Earthquakes	Article includes no barriers that effect nurse's willingness to respond to disaster.
Al Thobaity et al, 2015	Perceptions of knowledge of disaster management among military and civilian nurses in Saudi Arabia.	Article did not address barriers to willingness to respo to disas
Baack & Alfred, 2013	Nurses' preparedness and perceived Competence in Managing Disasters.	Study concentrated on nurse's training in disaster preparedness. Did not discuss barriers effecting willingness.
Baron et al, 2009	Protecting home health care workers: A challenge to pandemic influenza preparedness planning	Article had only data from other studies.
Gershon et al, 2007	Home health care challenges and avian influenza	Study did not discuss willingness of nurses to work in a disaster
Lin et al, 2013	Survey of factors affecting health care workers' perception towards institutional and individual disaster preparedness	Study did not address barriers affecting health care workers' willingness to respond.
Pahlman et al, 2010	Pandemic influenza: human rights, ethics and duty to treat.	Article did not discuss barriers to willingness to report to disaster.

(table continues)

Author, Year	Articles of Exclusion	Rationale for Exclusion
Conner, S.B. 2014	Factors associated with the intention of health care personnel to respond to a disaster.	Article includes no barriers that effect nurse's willingness to respond to disaster.
Ranse et al, 2010	Understanding the willingness of Australian emergency nurses to respond to a health care disaster…8th International Conference for Emergency Nurses, The National Convention Centre, Canberra, 14-16, October 2010	Did not include barriers of effecting willingness.
Smith & Hewison, 2012	Are nurses prepared to respond to a bioterrorist attack: A narrative synthesis	Study did not discuss the willingness of nurses only their preparedness.
Vawter et al, 2008	Health care workers' willingness to work in a pandemic.	Study did discuss financial compensation for working during a pandemic as what impact did it make on staff reporting for work but did not discuss if it was a barrier if there was no financial incentive offered.

Inclusion Criteria

Inclusion criteria included data concerning nurses or healthcare worker's willingness to report to work during or after a disaster. The following table, (Table 2), discussed studies from which the data were discovered. The trends which developed from the analysis and synthesis of this evidence were indicated in the following heading of (Table 3) Findings and Implications.

To assure a search is rigorous, according to Godfrey and Harrison (2015), the first step is a word search for data selection. This search was conducted using a database search with the limiters of full text, peer review, and published within the last 11 years. Studies that were included discussed the willingness of nurses or health care staff to report to duty after a disaster such as an earthquake. Due to the limited number of studies regarding earthquake response, research which describes the willingness of nurses or healthcare workers to respond to disaster was also included. Inclusion criteria must indicate the barriers affecting the willingness of the responders. Articles which may have been excluded discussed the nurses' willingness but there was no breakdown of what affected their willingness to respond and therefore was excluded.

The inclusion criteria were also further delineated by the levels of evidence as described by Melnyk's levels of evidence to describe systematic literature reviews, (Melnyk, 2015). The levels of evidence were mostly found to be Level 5, "evidence from systematic reviews of descriptive and qualitative studies". Other levels analyzed in this study were Pilot Study and Level 7, "evidence from the opinion of authorities and/or reports of expert committees".

Table 2

Articles of Inclusion

Author, Year	Level of Evidence	Study Design	Setting	Participants	Trends
Arbon et al., 2013a	Level 5	Survey	Australia	*n*=451	Concerns for colleagues and personal safety, inability to communicate

(*table continues)*

Author, Year	Level of Evidence	Study Design	Setting	Participants	Trends
					with family while at work fear of illness or death, and assuring prophylaxis was available.
Arbon et al., 2013b	Level 5	Survey	Australia	*n*=41	Participants were more willing to report for duty if they had received formal education in disasters planning, had a family disaster plan or did not have children
American Nurses Association, 2010	Level 7	Professional Organization Issue Brief	ANA Issue Brief		Nurses have difficult decisions to make during disaster. Take care of family and neighbors or report to help at their staff position. Identified gap in practice.
Bell et al., 2012	Level 5	Survey	US National survey of hospital emergency nurses	*n*=332	Of emergency room nurses, 84% stated they would report to work. Those who would not indicated that were willing to work from their home in their neighborhoods if they were needed near their home.
Charney et al., 2015	Level 4	Cohort Study	Kansas City Missouri Hospital setting	*n*=1822	Compared willingness of hospital staff to respond to earthquake related to the willingness to

(*table continues)*

Author, Year	Level of Evidence	Study Design	Setting	Participants	Trends
					respond to a pandemic. Barriers: care of children, elders, disabled family, farm animals. Concerns were also that schools would close for a pandemic with no place for older children to go.
Considine et al., 2009	Level 5	Survey	Melbourne, Australia Emergency Nurses	*n*=64	Concerns were caregiver for children, elders, and disabled.
Couig, 2012	Level 5	Literature Review	United States	*n*=50 studies were identified, *n*=21 studies were coauthored nurses. All contained barriers for responding	Healthcare workers to be less likely to respond if thekr safety of family. Self. And access to protrctive equipment, medicine and vaccines were available. The most significant barriers were caretaking responsibilities for children, elders, and pets.
Damery et al., 2009	Level 5	Survey	United Kingdom Heath care workers		Unacceptable risk to self or family, Greater risk of becoming ill, infecting family. Less willing if partner fell ill. No childcare if schools were closed. Being asked to take on additional duties, work more hours, or in a different location. Concerns expressed for shortage of fuel for transportation. Fear that colleagues would die.

(table continues)

Author, Year	Level of Evidence	Study Design	Setting	Participants	Trends
Goodhue et al., 2010	Level 5	Survey	United States Nurse Practitioner	*n*=2574	Nurse Practitioners surveyed found that increased willingness to respond to a disaster included being male, having former military experience and disaster training. Most likely barrier was childcare responsibility and found that the more children a staff person had the less likely they were to respond. Lastly it was discovered that increased financial incentives increased the willingness to report for duty.
Martin et al., 2013	Level 5	Survey	Maine State Board of Nursing CEUs	*n*=735	Barriers included inadequate PPE or if they feared their family would get sick, had a colleague die or if they were ill.
Qureshi et al., 2005	Level 5	Survey	Health care workers in New York City	*n*=6428	Willingness depends on what kind of disaster. Barriers include childcare, care of elders or pets. Fear for family and self.
Rokach et al., 2010	Level 5	Survey	Israel	*n*=76	Willingness of nurses to respond during a disaster is 50 to 55 higher after receiving disaster preparation. The greatest barrier expressed was the lack of knowing how to respond to the disaster.

(*table continues)*

Author, Year	Level of Evidence	Study Design	Setting	Participants	Trends
Shapira et al, 2015	Pilot Study	Two comparison groups receiving a survey	Israel and Canada considering earthquake preparedness	*n*=56 Israeli and *n*=127 Canadian	Both surveys primary barrier was to take action to protect self. Also concern for family's well-being were most important.
Stergachis et al, 2011	Level 5	Survey	United States Public Health Preparedness for earthquake	*n*=9211	During an earthquake the willingness to report to work depended on adequate child care.
Veenema et al.2013	Level 5	Survey	Ney York State Emergency Nurses Association	*n*=668	Perception of safety

Summary of Sources of Evidence

The search was conducted by applying the search terms named above, including limiters of peer-reviewed journals, full text, and no articles published before 2005. This search criterion was applied to the Walden Library search engine resulting in 26 articles. Eleven articles were excluded leaving 15 articles to be analyzed. Of the 15 remaining studies 12 were Level 5, as described by University of Wisconsin (2016), "evidence from systemic reviews of descriptive and qualitative studies". One study was Level 4, "evidence from a well-designed case control and cohort study". One study was Level 7, "evidence from the opinion of authorities and/or reports of expert committees". Lastly, one study was a pilot study.

Pilot Study

Shapira et al. (2015) studies the willingness to report to work in an earthquake, comparing Canadian and Israeli hospital staff. Both areas have had similar experiences with earthquake aftermath. Knowledge of earthquake preparedness were evaluated. Differences in cultural responses were identified as well as barriers which may influence the decision to respond for disaster relief. Responses for Israeli nurses were *n*=56 and responses from Canadian nurses were *n*=127. Results concluded that Canadian nurses scored higher on questions regarding how to protect self, and who is in charge of staff during an earthquake. Israeli nurses scored higher in patient care after an earthquake. Both studies determined that the willingness of nurses to report was determined by how prepared they felt they were.

Level 4 Study

Charney et al. (2015) conducted a cohort study of measuring the willingness of hospital workers to report to work in two different scenarios. One scenario was during a pandemic influenza outbreak and the other was after an earthquake. In this study, conducted in St. Louis, Missouri, *n*=1822. Results revealed that a significant number of workers were willing to report after an earthquake compared to the other scenario of a pandemic. Barriers to their willingness to respond first were determined by the number of children in the family. Being willing to respond for a pandemic depended upon vaccination being available. Willingness for responding to an earthquake depended upon not having children or family members with special needs, care of elders, and having responsibility for pets or farm animals. In both scenarios concerns were voiced that daycare and schools would be closed making response to an event even more difficult.

Level 5 Studies

Arbon et al. (2013a) surveyed ER nurses in Australia to identify their willingness to work during a pandemic, chemical, biological, radiological or nuclear disaster. Five focus groups were held at four hospitals with an *n*=41 participants. Barriers to report to work were concerns for family, colleagues, and personal safety. According to Arbon (2013a), "healthcare personnel who fear for their own safety in terms of illness, injury or death are reluctant to attend work during a disaster" Another barrier is the concern that they will not be able to communicate with their family. Primarily the barriers to report to work during a disaster are related to "potential risks to family, pets, property, and community" (p. 3-24).

Arbon et al. (2013b) in a Survey of Australian ER nurses regarding the willingness to work during a disaster, in this survey, *n*=451. This study identified that there was more willingness to respond to a conventional disaster such as a fire, flood, or earthquake versus a non-conventional disaster such as a pandemic, chemical, biologic, or radiologic event. The study discovered that there was no influence of willingness regarding the size of the hospital nor locality.

Bell, Dake, Price, Jordan & Rega (2014), conducted a study of *n*=332 ER nurses regarding their willingness of nurses to respond to an avian influenza pandemic. The study uncovered an interesting response. The finding, obtained through a descriptive cross-sectional survey within the United States, showed that during a pandemic, nurses may be willing to work from home. This finding is surprising as these nurses are acute care nurses not office staff. The strategy of creating perhaps a home based clinic is an intriguing development from this research and needs further investigation.

Considine et al. (2009) conducted a study of nurse in Australia concerning their willingness to respond to a chemical, biological, or radiological disaster. A survey was conducted and data were inserted into SPSS for analysis. Results concluded that the barriers affecting the willingness to respond were caregiver of children, elderly, and/or the disabled. Many could not work past their own shift if a disaster occurred. Additional post-graduate degrees in nursing had a positive effect on the willingness to participate as did emergency preparedness training. There was also a decrease in willingness when the agent of exposure was unknown.

Couig (2012), studied the willingness, ability and intentions of health care workers when called upon to respond to a disaster. The study consisted of a literature review of 21 published articles. Willingness was dependent upon the type of disaster. Willingness to respond to natural disasters was higher than to exposure to chemical, biologic, nuclear or radiologic. Barriers listed by participants were safety concerns for exposure of family, safety of self, will there be enough medicine, vaccines, care taking responsibilities of children, elders, and pets.

Damery et al. (2009), in West Midlands, UK conducted a study of healthcare workers' willingness to respond during an influenza pandemic with responses of n=1032. Barriers to working were noted to be provision of childcare. Other concerns raised were fear of becoming ill, family becoming infected, if their partner became ill, and if schools were closed. Other concerns were related to the work environment, having to work long hours or be pulled to an unfamiliar unit, if there was a fuel shortage, and difficulty having transportation. Lastly, there was concern regarding care of colleagues if they fell ill or were dying.

Goodhue et al. (2012), studied the willingness of pediatric Nurse Practitioners (NP) to respond in a disaster. In a national U.S. survey, *n*=2627, NPs were asked to discuss preparedness, both personal and professional. Results revealed that willingness to respond of this group of NPs, depended on gender with men more willing to respond, having military experience, and disaster preparedness training. Concern was also expressed that in a disaster, the smaller children's hospital may be over run and pediatric patients may need to be cared for by adult care nurses. This stresses the need for preparation to all scenarios.

Martin, Brown, and Reid (2009), in a study of the willingness of nurses to work during an influenza pandemic. A survey sent to Maine nurses with the response of *n*=1200, the barriers reported were as follows; nurses were more willing to work if they knew there was PPE available. Many participants feared their family would become ill. They were less likely to respond if their family was ill or if a colleague had died from the flu. There was positive correlation between willingness to work and increased incentives in pay, but some stated they would not work regardless of how much they were paid.

Qureshi et al. (2005), conducted a study regarding the ability and willingness of health care workers to report during a catastrophic disaster. The study looked at all the nurses reported willingness in the U.S. with *n*=6428. The survey looked at how nurses viewed different event barriers to willingness and fears about becoming ill. Barriers to reporting consisted of child or elder care obligations. The study found more willingness to work if close to home compared with traveling outside the community. Most common were concerns for family and self, followed by personal health problems, child, and elder care.

Rokach et al. (2010), conducted a study in Israel regarding the willingness of nurses to come to work during a bioterrorism attack of anthrax. The study with participants *n*=76, found that nurses were 50% more willing to come to work in the group that had the most knowledge of anthrax. The author stated "the enhancement of knowledge among health care workers may improve their willingness to come to work during a bioterrorism attack" (p.1).

Stergachis et al. (2011), conducted a county wide survey regarding home health workers' ability and willingness to report to work during public health emergencies. The study from Washington state with *n*=9211 participants, found that respondents were willing to respond to their usual place of work following a severe earthquake. For a flu pandemic workers were willing to work from home. Barriers for not reporting to work were childcare responsibilities.

Veenema et al. (2008), studied the willingness of hospital-based nurses to respond to a radiation emergency. New York State Emergency Nurses Association members, *n*=668, stated their knowledge base was inadequate and therefore their willingness to respond was negatively affected. Their perception of personal safety had the most effect on willingness to respond.

Level 7 Study

The American Nurses Association (2010), released an Issue brief discussion the state of disaster preparedness and nurses' willingness to respond. The gap-in-practice reported is that while nurses are considered reliable responders there may be barriers which need to be overcome in order to be available for disaster relief. If hospitals are counting on a certain number of nurses to respond and there are issues preventing them

from responding there will not be enough caregivers to attend patient's needs. In a disaster setting nurses are just as vulnerable as anyone. Nurses may have to make hard decisions, to care for their family or respond to a call to go to work. Nurses worry about ethical issues that may arise, and safety issues. Nurses must be personally and professionally prepared.

Findings and Implications

Table 3 will report the findings that resulted from analysis and synthesis of the evidence. After analyzing the hierarchy of evidence, trends of data were evident. Table 3 has ranked the category of barriers most often mentioned at the top in Column 1. Column 2 indicates how many times each barrier was mentioned throughout this study as a barrier to the willingness of nurses to respond. The barriers regarding willingness to respond during a disaster fell into two categories; personal barriers and institutional policy barriers.

Personal barriers directly affected the nurse, the nurse's family, and community. These barriers included childcare, elder care, disabled family member care, and pet /farm animal responsibilities. Individual nurses' fear level was also reflected in this table. These include fear of their own illness or death, fear of their family becoming ill because, 1) they were not there to protect their family, or 2) staff may infect their own family by bringing home a contagion. Other fears were their concerns over colleagues becoming ill. Additional concerns raised were the inability to communicate with their family due to cell problems. Personal barriers would affect the nurse's willingness to work regardless of where she/he was needed.

Institutional barriers affect the willingness of nurses to respond to an institutional setting. The concerns raised by this study are related to how the institution provides a safe secure environment for its workers. The willingness of nurses to report during a disaster is related to how safe they believe they will be, how long they will have to stay, if they have been properly trained for this duty, and if they will have the equipment needed to do their job.

Questions were developed during the initial phases of project. Search criteria were and analyzed for trends through a rigorous process through Melnyk's Levels of evidence.

1. *How confident are nurses in themselves, their basic nursing abilities, and being able to assist a community during the time following an earthquake, in both the community and hospital setting?*

In the final results of trends identified nurses reported not feeling prepared to work in a different units and extra long shifts. Most stated they felt their emergency training was inadequate.

2. *How physically and psychologically prepared are nurses to help their community after a disaster?*

One study discussed the physical and psychological trauma induced by nurses experiencing the trauma of a disaster as being a key factor in post traumatic stress disorder. Many nurses declined to participate in a disaster due to personal physical maladies.

3. *How willing are nurses to place themselves in danger, perhaps leaving family or children without a caregiver for periods of time?*

This question was the primary reason for nurses being unwilling to respond to a disaster. The concerns for not responding were a) caregiving responsibilities, children; b) concerns for personal safety, c) concers for safety of family, d) Caregiving responsibilities for elders/ disabled family, e) fear of illness or death.

4. *What are the legal and ethical issues nurses must consider when providing care during a disaster?*

Nurses concern regarding institutional barriers which impacted their willingness to report to work included being asked to work in an unfamiliar unit or for extended hours. They described a fear of not knowing what to do.

These questions were combined to reflect the true intent of this study. What barriers face nurses after an Alaskan earthquake which prevents them from reporting for disaster relief? According to ANA (2010), five topics are most prevalent: safety, family, preparation, strength, and legalities. The willingness of nurses to leave their families in order to attend to the needs of others must pass through the lens of these five areas of highest priority.

Table 3

Findings and Implications: Barriers that nurses report affect nurses' willingness to report to work after disaster

Personal Barriers listed as influencing their willingness to report to work after a disaster	How many times each barrier was mentioned throughout this study as a barrier to the willingness of nurses to respond.
Caregiver responsibilities, children	5
Concern for personal safety	4
Concern of safety of family	4
Caregiver responsibilities, elders	3
Concern for colleagues' safety	2
Fear of illness or death	2
Caregiver responsibilities, disabled family member	2
Responsibility for pets/ farm animals	2
Inability to communicate with family	1
Care of community/neighbors	1

Institutional Barriers: Those barriers that concern policies within the institution to where they are to report	How many times each barrier was mentioned throughout this study as a barrier to the willingness of nurses to respond.
Availability of safety equipment	3
Disaster preparedness training	2
No transportation	1
Having to work a different unit	1
Having to work additional hours	1
Fear of not knowing what to do	1

Limitations and Outcomes

Limitations and outcomes of this study include the discovery of the small amount of research in peer reviewed journals concerning Alaskan earthquakes and nurses' willingness to provide disaster relief. This study therefore looked at all types of disasters and the willingness of nurses to respond and provide relief. By opening the search criteria to disasters as well as earthquakes the results depict the willingness of nurses to go into the unknown during a time of uncertainty. It is not just about earthquake response, but more about the readiness of nurses to come to the aid of their discipline, to support co-

workers, and to care for patients wherever they are. It is all about readiness and preparedness, making this study transferable to all disasters.

This study also looked at nurses' response to disasters globally, not just in Alaska. To study Alaska only would be to again focus on the location and not the key focus which was nurses' willingness to respond. The data gathered was applied to the aspect of willingness and the barriers which affect that willingness, therefore making the outcomes more transferable to other geographic locations.

One limitation which was not identified was the influence that different cultures bring to the discussion of willingness. No data was found which identified cultural considerations when discussing the willingness of a nurse to leave their family, neighbors, and community to go to work to assist strangers. Do cultural pressures play a part in the professional and ethical responsibilities which nurses must consider when deciding to respond? This would be a topic for further research in this area, especially when discussing the complexities of Alaskan culture.

The implications resulting from these findings effect the individual nurse on a very personal level. To be prepared for a disaster such as an earthquake must begin long before the event. The data showed that the highest ranked barrier for being unwilling to respond to a disaster was responsibility for children or elders. If a nurse is able to assist during an emergency there must be a backup child/elder care plan. The CDC (2015), discussed a personal plan for nurses to assist them in readiness.

Communities must prepare to assist in disaster relief when the presumed number of healthcare workers are not there to provide patient care. The community organizations,

such as the Red Cross and Alaska Respond, must recruit from the professional base to provide additional assistance to assure patients receive care.

Institutions must continue to provide disaster preparation education, providing a culture which is welcoming to nurses who respond. Administrator's need to always look for ways to encourage nurses to keep skills sharp and be flexible to work in different environments if called upon to do so. Also, institutions need to keep many options available and consider unusual or atypical solutions to otherwise an improbable situation. For example, ER nurses, according to Bell et al. (2014), who were asked to work during a flu pandemic said they would work from home. The implications for this method of care provision could be tremendously valuable but it would take pre-planning of personnel, supplies, and procedures.

"Positive social change occurs when individuals strongly believe they have the power to make a difference - and they take action" General Board of Church and Society, (2014). Social change does not usually happen until it is driven by a critical need. By keeping current in personal and family preparedness, nurses will have a plan including how to maintain family responsibilities as well as assist in a disaster scenario. Communities have many opportunities to volunteer and provide necessary leadership and skills to assist during a disaster. Institutions must provide education and a strong leadership to provide a safe haven for victims of disaster.

Recommendations

Nurses are reliable responders to disaster relief as described by ANA (2010), but they often have difficult choices to make when the call comes for them to respond after a disaster. Do they stay with their family who may have been injured in the earthquake, do

they check in on their neighbors to assure they are uninjured, or do they respond to a call on their cell to report to the ER to assist in disaster relief? Many barriers may be in the way of responding. The most important thing a nurse can do is to prepare for the unknown situation early. Taking a disaster preparedness course, registering with a community agency, and taking steps to personally prepare are important. Personal preparation according to CDC (2015), could include keeping a bag or backpack with things you may need to take to a relief site. This could include a change of clothes, 24-48 hours of essential medicine, protein bars, emergency money, stethoscope, and hospital ID for entrance into the ER. A charged cell phone and charger is good to bring as well as a written list of emergency phone numbers to contact family members.

Nurses should always have a backup caregiver for children, elders, pets, or anyone who would prevent you from responding to an emergency if you choose to do so. They should also have an alternative method of transportation available.

Communities, faith based organizations, and institutions should coordinate an emergency childcare center in an area such as a school gym, where nurses could bring children to leave in the care of vetted, compassionate volunteers so hospital workers are free to provide an emergency shift. Nursing homes or assisted living could provide emergency respite for elder care during a disaster to allow nurses to be able to respond. The humane shelter may offer staff to provide pet care also during an emergent event. This takes great coordination and preplanning but is of highest importance. But the primary responsibility for these arrangements is by the health care staff. To have an emergency bag, or to have someone already prepared to take a child or elder in an emergency, and to prepare for alternate transportation.

Strengths and Limitations

The strength of this study is its transferability. While the basis of the project is to look at the willingness of nurses to respond after an earthquake in Alaska, the subject in this title of nurses can be applied to any person who is responsible to provide care to a vulnerable population. This study is just as prevalent to physicians in the acute hospital setting to the Certified Nursing Assistant in a nursing home. It may include the maintenance workers who keep the water and sewage under control. Every caregiver has a critical role to play in the care of those who cannot care for themselves are indispensable. Their willingness to report to work after a disaster must be addressed before the time comes when they are needed.

The study was transferable to not only the caregiver and the institution, but also to the type of event. As the literature review demonstrates, it is not about the type of emergent event but about the willingness of the health care worker to respond. This transferability allows this study to be practical and beneficent. The study, structured around the response of nurses after an earthquake, support the willingness of health care staff in many different disaster situations, and in every country around the globe. The events discussed in the researched data included influenza pandemic, bioterrorist attack, nuclear, biologic, chemical, attack as well as hurricane, flood, earthquake, and tsunami events. The geographical locations studies nurses from Alaska to Maine, from Israel to Iran, and the United Kingdom to Australia. The transferability allows this study to be appropriate as it identifies barriers preventing willingness to respond.

Limitations of this study is that it does not account for cultural differences. Cultural influences may be instrumentally different in how nurses respond. In certain

culture's it may be considered shameful to abandon your family to help strangers. Community planners in areas where this belief is practices must take lower response numbers into consideration when planning for relief after an earthquake.

Other limitations are the lack of inclusion of volunteer agencies, faith based facilities, military operations as well as governmental support such as FEMA.

Recommendations for Future Projects

A recommendation for a future project would be to survey nurses regarding personal preparedness. A list could be provided to the nurses of what to pack in an emergency bag. Also, an online course could be provided to staff in Alaskan hospitals to see if there is a cultural or community bias toward providing.

Section 5: Dissemination Plan

The plan for dissemination of this project is to create a professional poster and present it at all three hospitals in Anchorage, Alaska. In addition, I would like to present this project to the University of Alaska, Anchorage and simultaneously video broadcast to the 13 distance sites in the remote villages in the state. The information contained in this DNP project is important for all healthcare workers in this state. Due to the geological instability of the area, all of Alaska is vulnerable to the effects of this problem in practice.

The audiences to whom this project will be disseminated initially are health care workers at the major trauma hospitals in Anchorage, Alaska. It would be beneficial to disseminate to the other hospitals in Alaska which may be able to benefit regarding their emergency planning for disasters. This may be possible through the distance capabilities of the universities in distance sites.

Analysis of Self

To analyze oneself is never an easy task. This journey has taken me through four different topics before finding my passion in nurses' preparedness. Before moving to Alaska 15 months ago, I had never realized the complexities of the tasks of community leaders, governmental officials, and hospital administrators in the preparation which must take place in order to keep the public safe. Through the analysis of this data I have discovered an important truth. Plans are great but there must have enough people to put the plan into motion.

In the role as a project manager I would like to see the dissemination thorough to the distance sites personally instead of broadcasting it electronically. I would like to

address my passion for the project and assure that all who are responsible for the vulnerable are able to prepositioned responsibilities in their life to assure that those barriers do not conflict with the ability to assist in disaster relief. For long-term professional goal, I would like to look at the cultural influences that Alaskan that nurses face, especially in the Alaskan Native population in remote villages.

The completion of this project has been long in coming. I believe I have encountered an important topic. I have spoken to many people who tell me they do not have any idea what to do if a disaster occurs. I have been so blessed to have this opportunity to meet with amazing people, including some who experienced the 1964 earthquake personally. I have spoken with nurses who were on the rooftops in the aftermath of Hurricane Katrina. These conversations have made the urgency of preparation that more clear.

By assuring nurses are personally prepared, that communities are able to assist in providing additional help for hospital staff, and hospitals to create a safe, welcoming environment for caregivers, those who have made the decision to report to work will greatly impact patient care and patient survival.

This DNP project was not just an academic exercise. It could have life or death implication for those caught in the next disaster. It could be an Alaskan earthquake, or it could be something worse. That which is important in regards to preparation is that nurses is not merely expecting that which is taught in disaster preparedness seminars. They must be aware that destruction may come from any direction, in any form, at any time and to be able to adapt. Nurses must be ready to answer the call, to care for the vulnerable, to ignite and enable positive social change.

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