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EAST MEETS WEST: CULTURAL VALUES AND DUTY TO CARE FOR DISASTER RESPONSE

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EAST MEETS WEST: CULTURAL VALUES AND DUTY TO CARE FOR DISASTER RESPONSE

by

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Abstract

EAST MEETS WEST: CULTURAL VALUES AND DUTY TO CARE FOR DISASTER RESPONSE

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The University of Texas at Tyler
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Nurses' readiness for disaster response has assumed front and center-stage in recent years, due to the heightened number of natural and human-induced disasters across the globe. Scientific literature affirms that without nurses' personal and professional readiness for disaster situations, patient and public health outcomes will likely decline. Three research manuscripts presented in this dissertation portfolio targeted this significant, but overlooked public health issue. First, a quantitative pilot study addressing nurses' personal preparedness for disaster response was considered. Findings from the study not only justified personal readiness as a significant concept, but also prompted review of the scientific literature to further explore the effects of personal barriers to disaster response. While a variety of issues emerged for consideration, *duty to care* was identified as reoccurring concept still uncharted and unmeasured by nursing scholars. This resulted in a psychometric study describing the development, testing, and measurement qualities of the Nash Duty to Care Scale, the second manuscript in this

portfolio. While the instrument was psychometrically sound, the study sample maintained limitations. Therefore, the third manuscript reexamined the concept of duty to care among nurses from the United States and Taiwan, while also considering the effects of *cultural values* on nurses' perceived duty to care for disasters. Results from the 229 member sample demonstrated that while nurses' cultural values were characteristic of their native traditions, general duty to care did not differ significantly between the two countries. Limited internal consistency reliability of the duty to care scale will require follow-up retesting and revisions.

Chapter One

Overview of the Program of Research

While scientific research on emergency and disaster nursing has steadily increased in recent decades, disaster nursing is still a new specialty field only in its infancy. Natural and human-induced disasters' increase in scale, frequency, prevalence, and complexity worldwide has not only posed personal and professional challenges for nurses, but also challenges for health care systems' ability to sustain emergency management plans that protect the well-being and safety of nurses and the populations they serve (U.S. Agency for International Development, 2016). Nurses are the largest sector of the professional health care workforce (U.S. Department of Labor Statistics, 2014), and the demand for nurses' expertise during disasters is much greater than other health care professionals (Fung, Lai, & Loke, 2009). The rise of disaster and mass-casualty events across the globe, along with the high demand for nursing professionals, has recently focused attention on nurses' readiness or preparedness to participate in the uncertain and unpredictable situations associated with disaster events.

According to the World Health Organization and International Council of Nurses (2009), registered nurses' ability to effectively detect, manage, and mitigate circumstances associated with disaster events can affect patients' physical, emotional, and psychological well-being. Understanding factors that affect nurses' response to workplace demands during disasters is crucial, since adequate surge capacity, workplace safety, community safety, and public health outcomes will be affected by nurses'

readiness to assume assigned work roles during disaster response efforts. For these reasons, it is essential to explore unanswered questions and existing gaps in the scientific literature that can inform nurse managers, nurse administrators, nurse educators, nurse policy makers, and bedside nurses about attainable methods to improve disaster readiness and ultimately promote global health outcomes. The purpose of this program of research was to explore the scope, strength, and limitations of registered nurses' disaster preparedness and duty to care among national and international samples through three original scientific research studies. The aim was to bridge multiple gaps in the scientific nursing literature by disseminating findings to professional nursing colleagues through peer-reviewed publications.

Introduction to the Articles

The research presented in this dissertation portfolio began with a pilot study that examined the effects of an online personal preparedness education intervention on nurses' readiness to respond to the workplace for disaster events. While a literature review supported that many nurses were not personally prepared to respond to their work roles during disaster situations (Al Khalaileh et al., 2012; Lim, Lim, & Vasu, 2013; Melnikov et al., 2014; Smith & Hewison, 2012), evidence similarly demonstrated that nurses who maintained personal readiness were more likely to report to assigned work duties (Arbon et al., 2013b; Goodhue et al., 2012; Tichy et al., 2009). *Unveiling the Truth about Nurses' Personal Preparedness for Disaster Response: A Pilot Study* (Nash, 2015), is the draft of a quantitative research study that was published in a peer-reviewed journal. It utilized convenience sampling for the recruitment of licensed graduate nursing students at one college of nursing in the southern United States (see Chapter 2). The

American Nurses Association (ANA, 2015) *Code of Ethics for Nurses with Interpretive Statements* was the study's conceptual framework. All participants viewed an online researcher-generated educational intervention on personal preparedness for disaster response. A nonexperimental, repeated-measures design was used to compare pre-intervention and post-intervention results gathered through a researcher-generated, online Qualtrics survey. Descriptive statistics were used to determine pre-intervention sample demographics and whether participants' maintained preparedness items in the home. Paired *t*-tests were also used to compare general preparedness and pet preparedness before and after the education intervention. Limitations, nursing implications, and recommendations for future nursing research were explored and appropriately considered.

Following this study, a subsequent review of the scientific literature revealed another gap in knowledge related to nurses' emergency preparedness for disaster response. While all nurses must maintain emergency and disaster readiness competencies, evidence confirmed that many nurses struggled with the decision to report to the workplace during disasters and questioned their *duty to care* for disaster victims (Adams & Berry, 2012; ANA, 2010; Arbon et al., 2013a; Grimaldi, 2007; Iserson et al., 2008; Malm et al., 2008; Twedell, 2009). Careful scrutiny of five major electronic databases from 2005-2016 demonstrated that peer-reviewed scientific nursing literature was void of an instrument to measure the concept of nurses' perceived duty to care for disaster response. The second article titled *Development, Testing, and Psychometric Qualities of the Nash Duty to Care Scale for Disaster Response* (Nash, in press), is the draft of a psychometric research study that used convenience sampling for recruitment of

licensed registered nurses from three universities in the United States (see Chapter 3). Now accepted for publication, the study was conceptually underpinned by the ANA (2015) *Code of Ethics for Nurses with Interpretive Statements*, the four tenets of the International Council of Nurses (ICN, 2012) *Code of Ethics for Nurses*, and the disaster management continuum (WHO & ICN, 2009). The use of parametric statistics, or exploratory factor analysis, supported a four-factor model, while Cronbach's alpha supported internal consistency reliability. These findings provided evidence that the scale was a psychometrically sound instrument for measuring nurses' perceived duty to care during disasters or mass-casualty events.

While statistical evidence established the Nash Duty to Care scale (Nash, in press) as a pragmatic and psychometrically sound instrument, further evaluation was recommended with a more diverse nursing population. Therefore, the final manuscript or dissertation study in this portfolio considered the concept of duty to care across two distinct nursing populations: Taiwanese and American nurses. The *cultural values* variable was similarly measured, since the emergence of globalization in present-day workforces require nurses from diverse populations to come together, collaborate, and establish professional working partnerships during major disaster relief efforts (Alfred et al., 2013; Giarratano et al., 2014). Both Eastern and Western societies were explored in the third article presented in Chapter 4, titled *East Meets West: Cultural Values and Duty to Care for Disaster Response*.

The overall purpose of the final quantitative research study was to identify how nurses from two different cultures perceived their duty to care for disaster response. Similarly, the study considered how cultural ideologies affected ethical reasoning and

motivation to respond. Potential applications in the field of disaster nursing were also considered, especially those that could be implemented on a global level.

A nonexperimental, comparative-descriptive research design and two instruments, the Nash Duty to Care scale (Nash, in press) and the Personal Cultural Orientation (PCO) scale (Sharma, 2010), were used to survey nurse participants. Convenience sampling was utilized to support study recruitment among licensed nurses in Taiwan and the United States. Surveys distributed in Taiwan were developed in English, translated into Traditional Chinese, then back-translated into English to support culturally competent research. Independent *t*-tests, and chi-square (χ^2) tests, descriptive statistics, and content analysis were used to report research findings. Strengths and limitations, future recommendations, and a summary were provided.

Chapter Five culminates in a brief summary and conclusion. Limitations of current scientific studies and discussion about the pertinence and legitimacy of this developing program of research are summarized. Recommendations for future scientific research, discussion about disaster nursing policy development, and potential global applications are ultimately addressed in the concluding remarks.

Chapter Two

Unveiling the Truth about Nurses' Personal Preparedness for Disaster Response: A Pilot Study

Abstract

Problem: Although nurses are essential caregivers in disaster response, many nurses are not personally prepared to report to the workplace during disaster situations.

Conceptual Framework: The *Code of Ethics for Nurses with Interpretive Statements* conceptually underpinned this research study. The *Code's* nine provisions maintain that all nurses must promote health care equity to uphold ethical standards of professional nursing conduct, regardless of work situations or practice settings.

Research Question: The study addressed the research question: "Is there an effect on nurses' intent to engage in personal preparedness after a disaster preparedness education intervention?"

Design: A nonexperimental, repeated-measures design was used to compare pre-intervention and post-intervention intent to engage in personal preparedness for disaster response.

Methods: A convenience sample of 57 nurse participants who were registered or licensed graduate students and were able to read and understand English were recruited from a college of nursing in the southern United States. Recruitment took place from April, 2014 through July, 2014.

Analyses: Parametric paired *t*-tests were used to compare a 27-item general preparedness scale and a four-item pet preparedness scale before and after an education intervention which demonstrated significant differences in summed scores.

Keywords: personal preparedness, disaster preparedness, personal readiness, disaster, disaster response

Disasters damage the capability of public health infrastructures, resulting in injury, suffering, and most importantly the loss of life in communities and populations spanning the globe (World Health Organization, 2015). Although no single definition exists for the term *disaster*, the World Health Organization (WHO) and International Council of Nurses (ICN, 2009) define disaster as "a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, economic or environmental losses that exceed the community's or society's ability to cope using its own resources" (p. 3). Nurse scientists frequently characterize disasters in terms of their effects on health care delivery systems and nurses' capacity and preparedness to respond effectively to patient demands (Al Khalaileh, Bond, & Alasad, 2012; Tichy, Bond, Beckstrand, & Heise, 2009; Veenema, 2013). While *disaster preparedness* is defined as "a continuous cycle of planning, organizing, training, equipping, exercising, evaluating and taking corrective action" by the Federal Emergency Management Agency (2013, Preparedness Cycle section, para. 1), its definition in nursing encompasses the comprehensive knowledge, skills, and abilities to provide care, prevent disease and disability, and promote health to individuals, families, and communities when local resources are scarce (World Health Organization and International Council of Nurses, 2009). This comprehensive readiness requires nurses to maintain both professional and personal disaster preparedness. Nurses' *professional preparedness* is exemplified by receiving education and training in disaster prevention, management, mitigation, and recovery to effectively assess, prioritize, and function in disaster situations (American Nurses Association, 2013), while nurses' *personal*

preparedness is characterized by possessing an emergency supply kit, family disaster plan, and maintaining disaster awareness (American Red Cross, 2015).

In the United States, The Joint Commission (2015) requires health care facilities to maintain preparedness by sustaining disaster drills and emergency plans to meet surge capacity during disaster events. *Surge capacity* refers to the allocation of supplies, nurses, and other health care providers for a rapid rise in the number of patients during disaster situations (World Health Organization, 2011). Nurses are the largest division of the professional health care workforce (U.S. Department of Labor Statistics, 2014) and essential caregivers during disaster response efforts. Although nurses are assigned key roles in health care institutions' mandatory disaster management plans (The Joint Commission, 2015), many facilities have substantial gaps in their emergency response systems (U.S. Department of Health and Human Services, 2014). One example is that a majority of disaster management plans are based on the assumption that nurses will participate and respond to their given roles when disasters occur (Adams & Berry, 2012; Melnikov, Itzhaki, & Kagan, 2014).

Overall, it is important to consider that the nursing profession is predominantly female, many with personal roles and commitments that exist across and beyond the profession. Research indicates many female nurses bear childcare, eldercare, and pet care responsibilities that serve as potential barriers for reporting to the workplace during disaster situations (Goodhue et al., 2012; Grimes & Mendias, 2010; Smith & Hewison, 2012). Similarly, evidence also shows the number of nurses who respond to disaster events will be less than anticipated by health care providers due to such personal barriers (Grimes & Mendias, 2010; Masterson, Steffin, Brin, Kordick, & Christos, 2009; Qureshi

et al., 2005). If nurses cannot report for duty, surge capacity will be affected and patient outcomes will be jeopardized (Adams & Berry, 2012). While research suggests many nurses are not personally prepared to respond to their roles in disaster situations (Al Khalaileh et al., 2012; Lim, Lim, & Vasu, 2013; Melnikov et al., 2014; Smith & Hewison, 2012), evidence also indicates that nurses who maintain personal readiness are more likely to report to work (Arbon et al., 2013; Goodhue et al., 2012; Tichy et al., 2009). Therefore, the purpose of this pilot study was to examine the effects of an online personal preparedness education intervention on nurses' readiness to respond to the workplace for disaster events.

Review of the Literature

A literature review was conducted on three major electronic databases: the Cumulative Index of Nursing and Allied Health Literature (CINAHL) Complete, the Medical Literature Analysis and Retrieval System Online (MEDLINE), and PubMed from 2010 through 2015 using the search terms *nurs*, disaster or emergency,* and *preparedness*. Primary research, literature reviews, and professional organizational white papers written in English and published in national and international peer-reviewed electronic journals were the inclusion criteria. Exclusion criteria included unpublished studies, opinion papers, and conference abstracts. Supportive literature related to personal preparedness was also scrutinized, since no research studies in the scientific literature were found to focus exclusively on nurses' personal preparedness for disaster response.

One research study by Öztekin, Larson, Altun, Yüksel, and Savaşer (2015) explored nurse educators' perceptions about disaster preparedness and response. An 18-

question descriptive survey was distributed to 144 nurse educators with an average age of 40 and 1-15 years of teaching experience in Istanbul, Turkey, and Miyazaki, Japan. Findings demonstrated nurses' perceived personal responsibilities as a primary concern with regard to disaster preparedness and response, supporting the need for supplementary research focused on personal preparedness. Likewise, a narrative synthesis of seven original qualitative and quantitative research studies by Smith and Hewison (2012) similarly identified personal factors as a barrier to nurses' preparedness to respond to disaster events. While this narrative synthesis focused primarily on preparedness for bioterrorism, the authors recommended all nurses receive training and education to improve personal and general preparedness.

Different aspects of disaster preparedness were similarly measured among nurse participants in other recent scientific research studies. For example, it was demonstrated in one study that less than half of nurse participants reported to work during previous disaster events (Melnikov et al., 2014), while research by other nurse scientists discovered that less than half of nurse participants had personal disaster preparedness plans in place to manage disaster situations (Al Khalaileh, Bond, & Alasad, 2012). Furthermore, across multiple scientific studies, the majority of participants identified personal preparedness (Lim et al., 2013), especially childcare (Melnikov et al., 2014) and eldercare (Adams & Berry, 2012; Melnikov et al., 2014) demands as the greatest obstacles to workplace response. These findings further supported the need for personal preparedness education and the relevance of this pilot study's personal preparedness education intervention.

The positive effects of maintaining personal disaster plans were also documented in the scientific literature. More specifically, Goodhue and colleagues (2012) research study among a 2,627 member sample of pediatric nurse practitioners working in primary (56%) or acute (13%) care explored personal preparedness on a 27-item national survey. Findings demonstrated that nurses with personal disaster plans were more likely to report for duty than those without a plan. Arbon et al. (2013) also reported similar findings, providing evidence that nurses with disaster plans had 7.74 times higher odds of attending work during disaster events. These scientific studies reinforced the significance of personal preparedness and the pertinence of personal disaster preparedness education.

Conceptual Framework

The *Code of Ethics for Nurses with Interpretive Statements* (*Code*, American Nurses Association [ANA], 2015) served as the conceptual underpinning of this study. The *Code* provides an ethical blueprint to guide nurses' actions and decisions regarding patient care. All nurses, regardless of work situations or settings, are expected to promote health care equity as explicated in the *Code's* nine provisions of ethical conduct. The uncertain nature of disasters does not provide nurses with immunity from upholding the high ethical standards of professional nursing practice.

Careful scrutiny of the *Code* (ANA, 2015) revealed several provisions that supported the need for all nurses to acquire personal preparedness competencies. For example, the second provision states a nurse's primary commitment is to the patient, defined as an individual, family, neighborhood, society, or entire population. The third provision requires nurses to protect the health and safety of the patient, while the fourth provision establishes nurses' culpability for their own decisions and actions, requiring

accountability and responsibility to promote health, well-being, and optimal care in all practice settings. It is equally important to note that the fifth provision recognizes that nurses owe the same responsibility to self as to others and within the scope of professional practice, have the right to promote their own health, safety, integrity, and character during the decision making process (ANA, 2015; Baack & Alfred, 2013; Twedell, 2009). Although the literature does not delineate when duty to perform professional obligations supersedes duty to care for oneself (Twedell, 2009), evidence demonstrates that lack of personal disaster preparedness can result in poor planning, poor work attendance, and ultimately poor patient outcomes (Grimes & Mendias, 2010; Masterson et al., 2009; Qureshi et al., 2005).

Research Question

The study addressed the following research question: "Is there an effect on nurses' intent to engage in personal preparedness after a disaster preparedness education intervention?" This pilot study also evaluated the feasibility and benefit of a larger scale study among a more diverse population of nursing professionals.

Design

A nonexperimental, repeated-measures design was used to compare participants' pre-intervention and post-intervention intent to engage in personal preparedness for disaster response. The design was appropriate since there is a planned intervention and the same subjects participated in both the pre-and post-test. Both non-parametric and parametric statistical analyses were used to describe and summarize the study data.

Methods

Sample

A convenience sample was used to recruit licensed registered nurses in this study. The target population was nurses who were able to read, write, and speak English and who lived and were licensed to practice nursing in the United States. The accessible population was graduate nursing students from a college of nursing in the southern United States. Permission to access nursing students was sought after receiving approval from the University of Texas at Tyler, Institutional Review Board (IRB).

A priori power analysis using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) was calculated for 2-tailed, paired *t*-tests to determine the sample size. Standard parameters included a preset alpha of 0.05, a medium effect size, and power of 0.8. With a medium effect size (d=0.5) a minimum sample of 37 participants was calculated to maintain confidence in the sample size. The researcher recruited a sample of 57 complete pre- and post-intervention surveys, supporting the allowance of a 10% attrition rate and representing approximately 16.3% of the available graduate nursing student population at the university.

Procedure

Participants were recruited through a written invitation posted on Blackboard (the college's online course management site) and Facebook. Invitations were also shared face-to-face and by word-of-mouth. Reminder postings were distributed via Blackboard and Facebook throughout the study period in two to four week intervals. Graduate nursing students (N = 57) responded to an online invitation that provided a link to a private web site owned by the principal investigator (PI). Participants were directed to

take a pre-intervention survey, watch an educational voice-over video PowerPoint presentation (intervention) on nurses' personal preparedness for disaster response (approximately 24 minutes in duration), then take a post-intervention survey. Research participants were permitted to begin the study and return to it at a later point in time. The education intervention was created by the PI from varied peer-reviewed research and training literature from the American Red Cross (2009, 2015). A copy of the presentation is available upon request.

The survey was available April-July 2014 and was administered using Qualtrics online survey software. The PI and faculty sponsor were the only individuals with access to the survey and subsequent data, which were downloaded into an SPSS 20 data file for analysis. Descriptive statistics were used for analysis of demographic data, and paired *t*-tests and correlations were used to determine differences and relationships between the pre- and post-intervention summed scores.

Sample eligibility, or inclusion criteria, were registered nurses who were: (a) male and female; (b) 18 years of age or older; (c) licensed to practice in the US; and (d) able to read, write, and speak English. Eligibility criteria were carefully delineated in the online introductory letter/informed consent presented to participants at the beginning of the online survey, prior to study participation. Nurses were invited to participate only if they met eligibility requirements and were informed that taking the survey implied their informed consent.

Instrument

The instrument was a researcher-generated survey with no prior reliability or validity. One of the purposes of this study was to determine if the survey would serve as

a reliable and valid instrument for future research on personal preparedness. The pre-intervention survey contained 56 items in six sections: introduction; demographics; general preparedness; medical preparedness; baby, child, and pet preparedness; and evacuation preparedness. The demographic section collected data on age, sex, marital status, race/ethnic background, and number of dependents (children, handicapped, and older adults). Most survey questions focused on general preparedness (31 yes/no items, two 5-point Likert Scale items). Scaled, Likert-items addressed overall preparedness to handle the first 72 hours following a disaster (1=not all prepared to 5=definitely prepared). Remaining sections included medical preparedness (5 items); baby, child, and pet preparedness (9 items); and evacuation preparedness (4 items) with yes/no responses. The 47-item post-intervention survey assessed participants' *intention* to take action; it contained the same sections and questions as the pre-intervention survey with the exception of demographic items.

Protection of Human Subjects

Ethical approval was received by the University of Texas at Tyler Institutional Review Board (IRB). Prospective informed consent was waived since participation posed no foreseeable or known serious risks to study participants and a detailed description of the study's purpose, risks, benefits, and participants' rights were embedded in an introductory letter/informed consent at the beginning of the Qualtrics survey. Contact information for the PI, faculty sponsor, and UT Tyler IRB Chair, including current email addresses and phone numbers, were provided in the introduction. The PI and faculty sponsor were the only individuals with access to the raw study data and subsequent study results. All data were maintained on a password-encrypted database to

strictly maintain participants' confidentiality. Completion of the survey implied informed consent.

Findings

Of 350 eligible graduate students, 18.9% (n = 66) agreed to participate in the pilot study. While 27.3% of the research participants selected not to report their age, 92.4% of the sample was female, with 81.8% White, Non-Hispanic. The majority of participants (74.6%) also had some previous education in disaster preparedness. A summary of the demographic findings are reported in Table 1.

Table 1. Pre-Test Participant Demographics (N = 66)

Variable	Categories	Frequency (n)	Percentage (%)
Age			
	25-66	48	72.7
Sex			
	Female	61	92.4
	Male	5	7.6
Race			
	White, Non-Hispanic	54	81.8
	Black, African American	7	10.6
	Hispanic, Latino	2	3.0
	Native-American	1	1.5
	Asian, Pacific Islander	1	1.5
	Other	1	1.5
Marital Status			
	Single	4	6.1
	Married/Committed Relationship	53	80.3
	Separated/Divorced	8	12.1
Living Alone			
	Yes	7	10.6
	No	59	89.4
Number of Dependents Living in Household (children, handicapped, older adults)			
	0	18	27.3
	1	12	18.2
	2	21	31.8
	3	7	10.6
	4	5	7.6
	+5	3	4.5

Of special interest were the items nurses identified as areas of least preparation. Pre-intervention survey results indicated a significant percentage of nurse participants did not possess a variety of common preparedness items to care for family members, pets, and self in disaster events (see Table 2). Many of these items, such as evacuation plans, emergency/disaster supply kits, and water, are essential survival supplies in disasters. If nurses do not have basic preparedness supplies readily available at home when disasters strike, their availability and response time may be affected.

Table 2. Pre-Intervention Survey Results for Personal Preparedness (N = 66)

Pre-Intervention Survey Questions	Frequency (n)	Percentage (%) Stated "No"
Do you have a written evacuation plan?	62	93.5
Do you have an emergency/disaster supply kit?	46	69.7
Do you have a supply of water that would provide at least 1 gallon per person per day for 3 days?	44	67.7
Do you have a bleach set?	40	60.6
Do you have nose and mouth protection masks?	47	71.2
Do you have a battery-powered emergency alert radio or standard radio with extra batteries?	44	66.7
Do you have flashlights and extra batteries for each person living in your household?	32	49.2
Do you have matches and a lighter (in a waterproof container)?	37	56.9
Do you have a whistle?	47	72.3
Do you have plastic sheeting and duct tape?	33	50.8
Do you have a document bag?	42	64.6
Do you have extra medicine set aside in case you cannot get to your pharmacy? (Response from participant's who indicated they took medication)	26	57.8
Do you have copies of prescriptions from your doctor(s)/care provider(s) in case you shelter away from home and need medication? (Response from participant's who indicated they took medication)	41	91.1
Do you have a list of medication(s) with dosages and doctor(s)/care provider(s) phone numbers? (Response from participant's who indicated they took medication)	25	55.6
Have you identified an alternate health care provider to contact in case of an emergency? (Response from participant's who indicated they had a health care provider)	12	75.0
Do you have special diet food, syringes, glucose monitoring strips, and other health related items? (Response from participants who indicated they had diet and medical needs)	5	83.3
Do you have a plan for any power needs, such as medical equipment operation or medication refrigeration? (Response from participants who indicated they had electrical power needs)	4	66.7
Do you have items such as a 3-day supply of formula, bottles, and baby food? (Response from participants who indicated they had infants)	7	46.7

(*Table 2 Continued*)

Do you have a pet photo available in case you are separated? (Response from participants who indicated they were pet owners or responsible for pets)	23	48.9
Do you have a pet first aid kit? (Response from participants who indicated they were pet owners or responsible for pets)	44	93.6
Do you have a 3-day supply of pet medication for an emergency/disaster supply kit? (Response from participants who indicated they were pet owners or responsible for pets)	46	98.5

Overall, the 27-item general preparedness scale and the 4-item pet preparedness scale contained related items. A paired-sample *t*-test showed a significant improvement ($p < .001$) in summed scores for nurses' perceived general preparedness and pet preparedness before and after the personal preparedness education intervention (see Table 3). A large effect size found in general preparedness (r=0.83) and pet preparedness (r=0.76) indicated a very strong relationship between the disaster education intervention and these variables in the survey.

Table 3. Paired-Sample t-Test Results for RN General Preparedness and Pet Preparedness (n = 57)

Outcome	*M*	*SD*	n	95% CI of the Difference Lower	Upper	*r*	*t*	*df*
General Preparedness	-6.62	4.51	53	- 7.87	- 5.38	0.83	- 10.68***	52
Pet Preparedness	-1.08	0.92	37	- 1.39	- 0.77	0.76	- 7.11***	36

*** $p < .001$

Correlations between pre- and post-intervention scores and independent variables also were examined. A non-significant negative correlation was found between the number of dependents living in the household and the pre-intervention general preparedness sum score, $r = -0.052$, $p = 0.690$. However, a significant positive correlation was discovered between the number of dependents living in the household and the post-intervention general preparedness sum score, $r = 0.329$, $p = 0.014$. Overall, the intervention had a significant effect on participants with dependents. As a

participant's number of dependents increased, the intent to prepare also increased following the disaster preparedness education intervention. This is a particularly meaningful change considering pre-intervention results demonstrated a non-significant negative correlation, while post-intervention results demonstrated a significant positive correlation.

The post-intervention survey in this study served as a measure of nurses' intent to take action and become more personally prepared. Although the post-intervention findings suggested the majority of nurse participants (64.9%) changed their opinions about the importance of personal disaster preparedness after the education intervention, many nurses were still not personally prepared. The two scaled items revealed only 10.4% of nurse participants felt definitely prepared for a disaster situation, while even fewer (9.0%) felt confident to handle the first 72 hours following a disaster event. This evidence supports the need for future attention, action, and research to improve nurses' awareness of personal readiness.

Overall, there were some missing scale data on the post-intervention survey that were likely due to attrition. Of the 66 nursing students who agreed to participate, 13.6% did not complete the post-intervention survey. It is unknown whether nursing students discontinued participation prior to, during, or after the 24-minute, voice-over, video PowerPoint education intervention. Results confirmed that many nurses were not prepared personally to respond to disaster situations at work. A personal disaster preparedness education intervention increased nurses' awareness and intent, as well as their understanding of pet preparedness for disaster events. These findings supported the

hypothesis that an online disaster preparedness education intervention had an effect on nurses' reported intention to become personally prepared to respond to disaster situations.

Discussion of Findings

Very little information is known about nurses' personal preparedness to respond to disasters. A growing body of nursing literature has focused on the demand for nurses' disaster education and training (Adams, Canclini, & Frable, 2015; Jose & Dufrene, 2014; Wilkinson & Matzo, 2015). Although the importance of this knowledge cannot be overstated, nurses' personal preparedness is also relevant and requires further consideration and attention (Adams & Berry, 2012; Al Khalaileh et al., 2012; Goodhue et al., 2012; Melnikov et al., 2014). Because the majority of nurses are female, many with caregiver responsibilities, the need for personal preparedness status is particularly timely and pertinent (Goodhue et al., 2012; Grimes & Mendias, 2010; Qureshi et al., 2005; Smith & Hewison, 2012).

The conceptual framework of this study affirmed the relevance of personal preparedness with respect to the ethical demands of the profession. As the *Code* (ANA, 2015) clearly delineates nurses' caregiving responsibilities, it similarly recognizes nurses' rights to promote and protect their own health and safety. This logically includes personal commitments and obligations, such as care for family members. However, without nurses' preparation and participation, surge capacity will be threatened and patients' health and safety may be jeopardized (Adams & Berry, 2012). Since medical-surgical nurses maintain a vast set of nursing skills, their readiness to serve as key players in surge capacity during disaster response is essential.

Limitations

This study maintained threats to both internal and external validity. Attrition, or participant dropout, was a threat to internal validity since online surveys are associated with poor response rates (Portney & Watkins, 2015). While this study maintained a 13.6% dropout rate, oversampling (>10%), a small incentive for participation (random drawing for gift cards), and a summary of demographic results were reported to help minimize this threat.

Instrumentation was another threat to internal validity, since validity and reliability of the researcher-generated survey instrument was not established. Similarly, questions focused on specific family commitments, which are identified as barriers to nurses' participation in disaster response efforts (Adams & Berry, 2012; Melnikov et al., 2014; Qureshi et al., 2005), were omitted from the study instrument. Control of this threat included dissemination of the study invitation and survey instrument by only the principal investigator, who also owned the website that hosted the study intervention.

Generalizability was a threat to external validity in this study. Although the online study setting enabled nurses from a wide variety of geographic locations to participate, only one college of nursing was accessed. Geographic bias is a serious consideration, since registered graduate nursing students (both MSN and PhD) from a single college of nursing is not indicative of the national or global professional nursing workforce.

Nursing Implications

Personal preparedness is one aspect of disaster readiness that can be encouraged and promoted within many nursing specialties at little or no cost to yield potentially

measurable benefits. Because medical-surgical nurses are trained to manage the care of patients across many areas, they will likely be required to supplement staffing needs to meet surge capacity demands in disasters. Since online personal preparedness education is available to all nurses free-of-charge from the American Red Cross (2009), medical-surgical nurse managers should consider sharing educational resources with nursing staff and require personal disaster preparedness plans from all nurses. Additionally, open discussions about nurses' family obligations in relation to their assigned work obligations in disaster response plans should be encouraged, since identification of potential barriers to response can help minimize absenteeism during disaster events. Moreover, open discussions may encourage nurses to participate in family dialogues regarding disaster preparedness and allow nurse managers to learn about their employees' family commitments. Above all, open dialogues can result in improved planning for surge capacity, policy reform based on nursing needs, and improved patient outcomes. Overall, findings from this pilot study direct attention to personal preparedness, which can benefit nurses working in all settings.

Recommendations for Future Research

Because nurses' personal preparedness has been found to affect disaster response (Arbon et al., 2013; Goodhue et al., 2012; Tichy et al., 2009), nursing leaders should support additional research on ways to help nurses become better equipped to meet personal demands. Results from further research may suggest rethinking priorities associated with effective disaster response all together. Because many disaster management plans are built on the assumption that nurses will participate, additional research should examine barriers that can affect the feasibility of these plans. Although

previous research has focused efforts appropriately on the need for disaster nursing education and training competencies, nurses may not have the opportunity to use these skills if they do not have personal plans that enable them to report for work during disaster situations. Because this study provides only a limited evaluation of the effects of an education intervention on nurses' personal preparedness, future research should target a broader sample of participants representative of the country's nursing profession with a range of educational and geographic backgrounds. A larger sample would promote awareness of the relevance and positive effects of personal disaster readiness among nursing professionals. Moreover, future research should query nurse participants about their family obligations, to better understand the effects of this potential barrier to disaster response.

Conclusions

The purpose of this study was to identify the effects of an online personal preparedness education intervention among a small sample of graduate nursing students' disaster preparedness. Findings confirmed many nurse participants were not prepared personally for disaster response. However, a brief online educational intervention significantly increased nurses' intention to become prepared for future disaster events. If nurses are not prepared to respond when they are in highest demand, the health and safety of patients and the feasibility of institutional response plans may be jeopardized. Personal preparedness research is worth further scrutiny, especially since educational interventions can potentially benefit patient outcomes.

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Chapter Three

Development, Testing, and Psychometric Qualities of the Nash Duty to Care Scale for Disaster Response

Abstract

Problem and Purpose: Although nurses struggle with the decision to report for work during disaster events, there are no instruments to measure nurses' duty to care for disaster situations. The purpose of this study was to describe the development, testing, and psychometric qualities of the Nash Duty to Care Scale.

Methods: A convenience sample of 409 registered nurses were recruited from three universities in the United States.

Results: Exploratory factor analysis resulted in a 19-item, four-factor model explaining 67.34% of the variance. Internal consistency reliability was supported by Cronbach's alpha ranging from .81 to .91 for the four-factor subscales and .92 for the total scale.

Conclusions: The psychometrically sound instrument for measuring nurses' perceived duty to care during disasters is applicable to contemporary nursing practice, institutional disaster management plans, and patient health outcomes worldwide.

Keywords: duty to care, disaster response, disaster preparedness, disaster management, *Code of Ethics for Nurses*, disaster management continuum

In an era when disasters continue to increase in scale, complexity, and prevalence worldwide, nurses' emergency preparedness is imperative to mitigate the health care demands of individuals, families, and communities during disasters or mass-casualty events. Natural and man-made disasters not only disrupt health care delivery systems, but also cause human migration, injury, suffering, and loss of life among communities and populations spanning the globe. While all nurses must be prepared to work during both natural and man-made disasters, evidence supports that many nurses struggle with the decision to report to the workplace and question their *duty to care* when disasters take place (Adams & Berry, 2012; ANA, 2010; Arbon et al., 2013a; Grimaldi, 2007; Iserson et al., 2008; Malm et al., 2008; Twedell, 2009). Duty to care, or the "professional rights and responsibilities" of nurses (Godderis & Rossiter, 2013, p. 304), is a fundamental concept underpinning the profession's ethical practice standards. While the *Code of Ethics for Nurses* outlines nurses' moral duty to provide care for patients (American Nurses Association [ANA], 2015; International Council of Nurses [ICN], 2012), ethical conflicts often arise in disaster situations, especially when dangerous, uncertain, and unstable work conditions threaten nurses' health, safety, and well-being during workplace response efforts.

Historically, duty to care first received significant attention in the medical and nursing communities within the context of providing care for patients with human immunodeficiency virus (HIV; Iserson et al., 2008; Twedell, 2009). While it initially elicited robust discussion and debate about caregiver safety, over time professional organizations agreed that transmission of the disease was limited and that health care

providers could not deny patients care based on HIV diagnoses. The concept of duty to care was not measured or further explored.

Today, with the emerging threats of climate change and natural disasters, severe acute respiratory syndrome (SARS), drug-resistant tuberculosis, Ebola, smallpox, monkey pox, and other infectious and communicable diseases, as well as chemical, biological, radiological, nuclear, explosive (CBRNE), and terrorist threats to human health and human existence, discussion about duty to care has reemerged and is positioned at the forefront of unanswered questions about disaster ethics in contemporary nursing practice (ANA, 2010; Grimaldi, 2007; Paixão, Barreto, Teixeira, Costa, & Rodrigues, 2016; Malm et al., 2008; Twedell, 2009). Pragmatic questions about nurses' ethical duty to provide care are paramount (Qureshi et al., 2005), as emerging threats can result in unprecedented patient surge and patient demands in hospitals and health care systems worldwide (Sobieraj et al., 2007). These unrivaled demands can pose ethical challenges for providers that are more daunting than those confronted with the provision of care to HIV patients in the past. Moreover, duty to care is identified as an urgent ethical issue with regard to the success of current disaster management plans (ANA, 2010). Overall, the concept is an aspect of disaster preparedness that remains overlooked in the scientific nursing literature (ANA, 2010; Johnstone & Turale, 2014; Martin, Brown, & Reid, 2013; O'Boyle, Robertson, & Secor-Turner, 2006; Secor-Turner & O'Boyle, 2006), despite its relevance and potential social consequences across the globe.

The effects from major disaster events reported in recent statistics support the urgency of understanding nurses' perceived duty to respond to the workplace when catastrophic events occur. For example, in 2014 alone, 107,000,000 people were affected

by disasters across the globe, with 58,000,000 people impaired by floods, drought, and storms in China and 8,600 people killed by Ebola in West Africa (International Federation of Red Cross and Red Crescent Societies [IFCR], 2015). Likewise, this same year technological disasters were responsible for 5,884 deaths, while 317 natural disasters were reported worldwide, affecting 94 countries (IFCR, 2015). From 2004-2013, it was estimated that 6,525 natural or human-induced disasters resulted in 1,059,072 deaths that affected 1.99 billion people across the globe (IFCR, 2014). Among disasters that occurred in the United States and other countries abroad, nurses served as the largest sector of the professional health care workforce (U.S. Department of Labor Statistics, 2014) and essential caregivers in disaster response, regardless of the type or cause of disaster situation (ANA, 2010; World Health Organization [WHO] & International Council of Nurses [ICN], 2009).

Currently, the nursing literature is void of a research instrument to measure the concept of nurses' perceived duty to care in disaster or mass-casualty events. The purpose of this study was to describe the development, testing, and psychometric qualities of the Nash Duty to Care scale for disaster response. Validity and reliability of the instrument will be discussed to support its overall strengths and limitations for utilization to measure nurses' duty to care in future scientific research.

Review of the Literature

A comprehensive review of the literature from 2005 to 2016 was analyzed to explore the concept of nurses' duty to care in disasters and mass-casualty events. Characteristics of the concept were evaluated, summarized, and categorized into three central domains: preparedness, organizational trust, and ethical accountability. These

domains were narrowed into dimensions, then narrowed again into empirical indicators, which were ultimately utilized for the development of scale items to operationalize the concept of duty to care.

Preparedness

Preparedness is identified as the first domain of nurses' duty to care in disaster or mass-casualty events. According to Slepski (2005), *emergency preparedness* is the "comprehensive knowledge, skills, abilities, and actions needed to prepare for and respond to threatened, actual, or suspected chemical, biological, radiological, nuclear or explosive incidents, man-made incidents, natural disasters, or other related events" (p. 426). Nurses' preparedness competencies are crucial for effective response in these varied types of disaster situations.

Professional preparedness. Professional preparedness is one dimension of nurses' overall readiness to report for duty during disaster events. The scientific literature supports that the majority of today's nurses lack professional preparedness competencies to adequately participate in disaster response efforts (Alfred et al., 2015; Evans & Baumberger-Henry, 2014; Twedell, 2009; Wenji, Turale, Stone, & Petrini, 2015). More specifically, lack of formal disaster nursing education (Alfred et al., 2015; Arbon et al., 2013a; Goodhue et al., 2012; Grimes & Medias, 2010), perceived knowledge and awareness (Arbon et al., 2013a; Fung & Loke, 2013; Goodhue et al., 2012; Lim, Lim, & Vasu, 2013; Wenji et al., 2015), previous disaster experience (Baack & Alfred, 2013; Goodhue et al., 2012; Grimes & Medias, 2010; Melnikov, Itzhaki, & Kagan, 2014), and lack of perceived competence or self-efficacy to manage disasters in a variety of settings (Baack & Alfred, 2013; Balicer et al., 2010; Ben Natan, Nigel,

Yevdayev, Qadan, & Dudkiewicz, 2013; Hope, 2010) has influenced nurses' willingness to report for duty in disaster situations. Some nurses have also indicated that they are less willing to work during human-induced disasters (Arbon et al., 2013b; Grimes & Medias, 2010), compared to natural disasters (Arbon et al., 2013b; Cone & Cummings, 2006).

Personal preparedness. Personal preparedness is a second dimension of nurses' overall readiness to report for duty during disasters. A paucity of personal disaster preparedness competencies, such as the possession of an emergency supply kit, personal or family written disaster plans (Arbon et al., 2013a; Chaffee, 2006; Fung & Loke, 2013; Goodhue et al., 2012; Lim, Lim, & Vasu, 2013; Nash, 2015; Qureshi et al., 2005), and readiness at home to maintain quarantine at the workplace (Hall & Kashin, 2016; Liu & Liehr, 2009; Nathawad, Roblin, Pruitt, & Arquilla, 2013) are demonstrated to effect nurses' willingness to respond to designated work roles during disasters. In particular, one research study about personal preparedness among nurses and other allied health professionals (N = 1, 534) highlighted the scarcity of personal readiness skills among health care providers, reporting that only a very small percentage (36.4%, n = 558) of participants were personally prepared to respond to disaster or mass-casualty events (Lim et al., 2013). These results are consistent with other scientific findings, which demonstrated that nurses without written personal preparedness plans are less willing to provide care in disaster situations (Adams & Berry, 2012; Martin et al., 2013; Nash, 2015; Melnikov et al., 2014). Similarly, scientific research also supports that nurses with dependent care obligations, such as childcare, eldercare, or pet care demands are less willing to report for duty during disasters (Chaffee, 2006; Goodhue et al., 2012; Grimes & Medias, 2010; Martin et al., 2013; Nash, 2015; Qureshi et al., 2005).

The effects of personal preparedness with regard to duty to care was further established in a study by Arbon et al. (2013a), who reported that nurses with disaster plans had a 7.74 times higher odds of responding to work during disaster incidents than those without a plan. This evidence substantiated the relevance of personal preparedness with regard to meeting patients' demands during disaster or mass-casualty events and, likewise, the success of organizational disaster management plans (Adams & Berry, 2012; Grimes & Mendias, 2010; Lim et al., 2013; Melnikov et al., 2014; Qureshi et al., 2005). Overall, inadequacies in both professional and personal preparedness competencies demonstrated a gap in nurses' disaster readiness skills, which can have an effect on nurses' duty to care in disaster situations.

Organizational Trust

The second domain of nurses' duty to care in disaster or catastrophic events was organizational trust. According to Altuntas and Baykal (2010), the concept of trust is a crucial component of successful professional work relationships. Saran et al. (2004) define *trust* as "a feeling of confidence and commitment without the perceptions of fear, hesitation and doubt, where the person believes he/she will receive support and collaboration in resolving problems in times of need without any underlying ulterior motives and/or negative thoughts on the part of others" (as cited in Altuntas & Baykal, 2010, p. 187). Although organizational trust has a variety of definitions in the nursing literature, for the purpose of this manuscript it is defined as "the way an employee perceives the support offered by the organization and his/her confidence in leaders or associates" (Demircan & Ceylan, 2003, p. 142) to maintain minimal risk to themselves and/or their family members during disaster response.

Confidence in employers. Nurses' lack of confidence in employers to support disaster response efforts is one dimension of organizational trust evidenced in the scientific literature. Many nurses reported unwillingness to work because of uncertainty about chaotic work environments (Frank & Sullivan, 2008; O'Boyle et al., 2006; Secor-Turner & O'Boyle, 2006) and concerns about severe staffing shortages (Malm et al., 2008; Secor-Turner & O'Boyle, 2006). Similarly, many nurses reported lack of confidence in adequate workplace disaster policies, plans, and procedures (Grimes & Medias, 2010; Martin et al., 2013), also limiting their decision to respond to disaster events. Mistrust and uncertainty among nurses was especially apparent following the Ebola crisis in 2014, after two US nurses in Texas contracted the virus due to inadequate personal protective equipment (PPE) at the workplace (Hollis, 2014; Sagar, 2015). Lack of confidence with regard to Ebola has resonated at a global level, resulting in fear, anxiety, and doubt for many nursing professionals, both in the US and abroad (Hollis, 2014; Li et al., 2015; MacIntyre, Chughtai, Seale, Richards, & Davidson, 2015; Sagar, 2015).

Perceived risk. Nurses' perceived risk to participate in disaster response efforts is another dimension of organizational trust evidenced in the scientific literature. Nurses reported unwillingness to work because of perceived harm to self (Kagan, Ovadia, Gazit, & Silner, 2004; Ovadia, Gazit, Silner, & Kagan, 2005) and their family members (Davidson et al., 2009; Grimes & Mendias, 2010; Kagan et al., 2004; Ovadia et al, 2005), as well as perceived risk associated with loss of freedom in their professional work roles (Chaffee, 2006; Grimes & Medias, 2010; Secor-Turner & O'Boyle, 2006). More specifically, nurses' concerns about adequate organizational measures to secure personal

and family members' safety during disaster events was apparent (Adams & Berry 2012; Chaffee, 2006; Martin et al., 2013; Qureshi et al., 2005; Secor-Turner, & O'Boyle, 2006). Nurses who perceived risk associated with inadequate provisions in the workplace, such as lack of PPE (Grimes & Medias, 2010; Hollis, 2014; Martin et al., 2013; Sagar, 2015), inadequate communication equipment (Cone & Cummings, 2006; Goodhue et al., 2012), and abandonment by organizational leaders (Good, 2007; Iserson et al., 2008) were often not willing to report for work. Similarly, many nurses who reported fear of personal harm because of erosion of professional work conditions, such as not receiving adequate provisions of water, food, rest, and sleep, similarly reported unwillingness to report for duty (Secor-Turner & O'Boyle, 2006). Overall, perceived risk caused trepidation (O'Sullivan et al., 2008; Secor-Turner, & O'Boyle, 2006), thereby hindering nurses' willingness to report for work when they were potentially in greatest demand. Although the overall domain of organizational trust has received little attention in the scientific disaster nursing literature, its implications are far reaching and represent a gap that would benefit from further scrutiny understanding.

Ethical Accountability.

A third and final domain of nurses' duty to care in disasters or mass-casualty events is their perceived ethical accountability to the profession. Nurses have reported to face a number of ethical challenges with regard to what they must be answerable for, as well as their moral obligation to care in disaster situations. *Moral obligation* is defined as "a process that occurs after a moral judgement is made" (Haines, Street, & Haines, 2008, p. 387), with *moral* meaning "conforming to the rules of right conduct" ("Moral," 2015, para. 5).

Perceived obligation. One dimension of nurses' ethical accountability in disaster situations is their perceived obligation to professional practice. Ethical obligations (Aliakbari, Hammad, Bahrami, & Aein, 2015; Chaffee, 2006; Iserson et al., 2008; Johnstone & Turale, 2014; Martin et al., 2013; Qureshi et al., 2005) professional obligations (Aliakbari, et al., 2015; Chaffee, 2006; Grimes & Medias, 2010), and legal obligations (Aliakbari, et al., 2015) have raised questions about moral norms of professional nursing practice standards in disaster events. Likewise, ethical codes have also been focused on ethical obligations in professional practice (Aliakbari, et al., 2015; Chaffee, 2006; Grimes & Medias, 2010; Twedell, 2009). A code of ethics can be described as "a standard by which nurses conduct themselves and their practice, observing ethical obligations of the profession and providing quality care" (Aliakbari et al., 2015, p. 494). Although the *US Code of Ethics for Nurses with Interpretive Statements* (ANA, 2015) and the *International Code of Ethics for Nurses* (ICN, 2012) outline the need for nurses to follow moral practice standards, there are no specific protocols for nurses' duty to care in extreme conditions or disaster events (Aliakbari, et al., 2015; Chaffee, 2006; Grimaldi, 2007; Twedell, 2009). Overall, nurses' ethical commitments to report for duty in disaster situations has not been given ample consideration (ANA, 2010; Grimes & Medias, 2010; Johnstone & Turale, 2014; Martin et al., 2013), compromising nurses' ethical obligations to provide care and promote health care equity as they would during routine work situations (ANA, 2015).

Ethical guidelines. Lack of ethical guidelines is the dimension of ethical accountability that nurses frequently struggle with in disaster situations. Since the ANA (2015) and ICN (2012) *Codes* do not specify guidelines for nurses during disaster or

mass-casualty situations, nurses are often challenged with teasing out moral obligations and ethical practice standards from codes that primarily address routine work situations, which may not be applicable in disasters (Aliakbari et al., 2015). This was evident in the SARS outbreaks in Hong Kong, Taiwan, and Canada in 2003, when many nurses worked involuntarily: some worked because hospitals were quarantined, while others worked because of lack of guidelines, questions about professional obligations, and fear of losing their jobs (Beardwood & Kainer, 2015; Campbell, 2006; Hsin & Macer, 2004).

Although the American Medical Association has provided physicians with guidelines for duty to care in extreme events since the terrorist attacks of September 11, 2001 in the US, other health care professions have not followed suit (Grimaldi, 2007; Iserson et al., 2008). For example, while the ANA (2015) *Code of Ethics for Nurses with Interpretive Statements* posits that "nurses' primary commitment is to the patient" (p. 5) in its second provision, its fifth provision maintains that "nurses have a duty to take the same care for their own health and safety" (p. 19). This ambiguity in duty to the patient versus duty to self leaves considerable room for self-interpretation and the need for the concept of duty to care to be examined and explicated before future disaster situations arise (Chaffee, 2006; Grimaldi, 2007; Twedell, 2009). Moreover, this overlooked issue not only places all nurses in precarious positions, but illuminates a potentially widening gap in the safety, reliability, and readiness of disaster management plans and systems worldwide.

Conceptual Framework

Regardless of the wide range of professional practice settings and circumstances nurses work in, their duty to provide care for patients is clearly articulated in the nine

provisions of the ANA (2015) *Code of Ethics for Nurses with Interpretive Statements* and the four tenets of the ICN (2012) *Code of Ethics for Nurses*. The disaster management continuum (WHO & ICN, 2009) also provides guidelines for managing disasters or catastrophic events. The continuum's framework is the culmination of 30 years of policy and administrative decisions from world leaders in public health that address a variety of health care challenges in the prevention, response, and recovery phases of disaster events (WHO & ICN, 2009). Although nurses are essential caregivers in all three phases of the disaster management continuum, this study focused primarily on the incident response phase. Ultimately, the ANA (2015) and ICN (2012) *Codes* and the disaster management continuum (WHO & ICN, 2009) framed nurses' ethical practice standards in disasters and served as the conceptual framework in this research. Since many organizational and institutional emergency and disaster preparedness response plans are based on the assumption that nurses will report to their given roles, understanding how nurses perceive their moral obligations to respond is critical to support the validity and reliability of these existing preparedness plans.

Methods

The concept of duty to care was carefully researched, evaluated, and illustrated following an extensive literature review of five major databases from 2005-2016: Cumulative Index of Nursing and Allied Health Literature (CINAHL) Complete, the Medical Literature Analysis and Retrieval System Online (MEDLINE), PubMed, Health Reference Center Academic, and Health and Psychosocial Instruments (HaPI). To begin, all databases were searched for an existing duty to care instrument. No instrument was located. Next, primary characteristics of the concept of duty to care in disaster situations

were extracted, analyzed, and sorted into three domains as the first step in operationalizing the construct for instrument design, development, testing, and implementation. Three domains of duty to care for disaster or mass-casualty situations identified included preparedness, organizational trust, and ethical accountability. Each of the three domains were scrutinized for common dimensions or attributes. Scientific literature regarding the domain of preparedness was classified into the two dimensions of professional preparedness and personal preparedness, while the domain of organizational trust was classified into the two dimensions of confidence in the employer and perceived risk. Moreover, ethical accountability was separated into the dimensions of perceived obligation and lack of ethical guidelines. Finally, there were four open-ended questions that asked the participants to provide their opinions about what they liked and did not like, clarity of the items, and what could be improved. In the final step, the dimensions were further analyzed and narrowed into common empirical indicators or items.

Design

A descriptive survey for the psychometric testing of a new instrument was the design for this study. The Nash Duty to Care scale was constructed into a three-section, 29-item survey instrument. The three sections included the introduction, survey items (attitudinal or behavioral items, demographic items, and open-ended opinion items), and closing instructions. The scales' three duty to care domains or subscales, including preparedness, organizational trust, and ethical accountability featured self-reported, ordinal level, Likert-scale items that ranged from 1 (strongly disagree) to 5 (strongly agree) or 1 (definitely will not go to work) to 5 (definitely will go to work). The Likert-scale was based on the classical measurement theory (CMT), incorporating items in each

subscale that were assumed to be comparable indicators of the underlying construct (Polit & Beck, 2012).

Scoring

A 5-point Likert scale was selected since it is concise and has a central midpoint, which allowed the participants to provide a neutral response and discouraged participants from leaving scale items blank. Although some researchers consider blank items as a neutral or uncertain answer, this can lend itself to difficult interpretation and was therefore avoided (Burns & Grove, 2009; Portney & Watkins, 2015). The Likert-scale items in this instrument provided short descriptive phrases reflecting each empirical indicator with regard to the provisions of the ANA (2015) *Code of Ethics for Nurses with Interpretive Statements* or tenets in the ICN (2012) *Code of Ethics for Nurses.* Moreover, items addressed nurses' duty to care during the three phases of disaster described by the disaster management continuum – pre-incident (prevention/preparedness), incident (response) and post-incident (recovery/ reconstruction /rehabilitation) – primarily focused on disaster response.

Overall, participants were asked to indicate the degree to which they disagreed or agreed (1 = strongly disagree to 5 = strongly agree) or their degree of willingness to respond (1 = definitely will not go to work to 5 = definitely will go to work) to specific circumstances or situations during the three phases of disaster, to score and measure their response. Items were phrased in both positive and negative directions to minimize response bias (Burns & Grove, 2009). Negatively worded items were reverse scored in the analysis stage of the study. Item data yield ranged from 1 to 5, with potential instrument data yield of 29 to 145 prior to survey analysis. Statistical analysis ultimately

resulted in a 19-item final scale with data yield ranging from 19 to 95. Higher scores reflected a stronger perceived duty to care in disaster events. Summed Likert-items were treated as interval-level data for statistical analyses.

Wording of the items focused on clarity, brevity, simplicity, relevance, and the avoidance of jargon, and double-barreled phrases. Scientific experts agree that surveys should be evaluated for readability by at least two methods (Calderon & Beltran, 2004). The items in the Nash Duty to Care Scale had a Flesch-Kincaid grade level of 10.5 (rounded off to the 11th grade) and a SMOG readability score of 13.0. Although the sample population included nurses who all completed a minimum of two years of college education (associate's degree), questions were further revised following data analysis to obtain a Flesch-Kincaid grade level of 9.5 and a SMOG index of 9.8 (both rounded off at the 10th grade) to support greater readability.

Content Validity

Three registered nurses with expertise in the ANA (2015) and ICN (2012) *Code of Ethics for Nurses* and three registered nurses with expertise in the field of disaster nursing assessed the instrument for content validity. The nurse panel included doctorally prepared nurse educators and researchers who taught and published in peer-reviewed journals in their areas of expertise and who were knowledgeable about the target population. Instrument assessments incorporated three stages of review. In the first stage, the expert nurse panel reviewed the domains, dimensions, and empirical indicators prior to item construction. In the second stage, the expert nurse panel completed a preliminary review of the instrument by rating items among several dimensions, including relevance, clarity of wording, and suggested level of revision by completing an

item evaluation form, focusing on the evaluation of content validity. Recommendations from the expert panel, including but not limited to clarifications, additions, deletions, and suggestions for refinement were incorporated to ensure all dimensions of each domain were adequately tested (Polit & Beck, 2012). Ultimately, factor analysis of the pilot study's data provided further support for content validity. The third stage included review of the final revised instrument by nurse experts following factor analysis.

Research Question

This psychometric study focused on the development of a new instrument to measure nurses' duty to care during disaster events and answered the research question: "Is the Nash Duty to Care scale a psychometrically sound instrument for measuring the domains of nurse's duty to care during disasters or mass-casualty events?"

Setting and Sample

The target population in this study included registered nurses who were able to read, write, and speak English and who lived and practiced nursing in the United States. The accessible population was registered nurse students who were enrolled in RN to BS/BSN, MS/MSN, DNP, or PhD programs at the University of Texas at Tyler, College of Nursing (CON) and Health Sciences; the University of Utah, CON; and the University of Arkansas, Eleanor Mann School of Nursing. Nurse faculty members from the three universities were also invited to participate. The study took place in an online setting and required a sample size of 319 registered nurse participants, based on the common rule of estimating 10 participants for each item on the test survey (Polit & Beck, 2012) and the potential loss of 10% of the participants due to attrition. Since there was only one point of data collection, attrition was projected to remain low (Polit & Beck, 2012).

While a convenience sample of 409 participants initially responded to the online survey link, only 372 participants completed the Nash Duty to Care scale and the demographic survey, accounting for a 9% attrition rate. Participants included 30.2% RN to BS/BSN students, 28.3% MS/MSN students, 9.6% DNP students, 11.0% PhD students, and 20.1% nurse faculty members. Overall, 88.7% of study sample were female, while 11.3% were male. Male nurses were represented more highly in this study compared to a recent US national average of female (91%) and male (9%) RNs (U.S. Department of Health & Human Services, 2013). Likewise, the average age of study participants was 41 years old; nine years younger than the US national average of 50 years old (U.S. Department of Health & Human Services, 2013). The race/ethnicity of the sample included 79.6% White, Non-Hispanic; 4.7% Hispanic/Latina; 7.7% Black/African American; 3.97% Asian; 0.6% Native American; and 3.6% representing two or more races. Overall, 65.0% of the participants in this study maintained a primary area of expertise in inpatient and outpatient specialty care areas, while similarly 63% of the RN national average maintain roles in these areas (U.S. Department of Health & Human Services, 2013). Also, 27.2% of participants previously practiced nursing in response to a disaster event, while 72.8 % reported not having previous disaster nursing experience.

Protection of Human Subjects

Ethical approval for this study was sought by The University of Texas at Tyler, the University of Utah, and the University of Arkansas Institutional Review Boards (IRBs) prior to any study related activities. All data were maintained on a password-encrypted database where only the PI and faculty sponsor had access to the raw study

data and subsequent study results. The researcher protected study participants' rights to self-determination, anonymity, confidentiality, privacy, fair treatment, and protection from harm (ANA, 2015). Since participation in this study posed no foreseeable or known serious risks to nurse participants, a waiver of written and signed prospective informed consent was sought from participating IRBs. The waiver was appropriate since the research involved minimal risks to the participants, did not adversely affect the rights and welfare of the participants, and the study could not practically be carried out otherwise. A detailed description of the study's potential risks and benefits, participant's rights, purpose, and protection of the participant's personal information was embedded in the introduction to the online survey. The introduction informed participants that their participation was completely voluntary, they were free to discontinue participation at any time without prejudice, and that completion of the survey would imply their informed consent. It also provided appropriate contact information for the Principal Investigator (PI) and supporting faculty sponsor.

Procedure

Participants were recruited by the researcher, or PI, through a written invitation via various online access points, such as email lists, Blackboard course discussions and/or announcements, word-of-mouth, Facebook (a social media site), and face-to-face invitations. The written invitation provided one link to the survey, which took approximately 10 to 15 minutes to complete. Data were collected through Qualtrics, an online data software package. The Qualtrics survey was prepared by the PI; only the PI and faculty sponsor had access to the online survey and subsequent data. The survey was available for the months of March 2016 through July 2016.

Eligibility Criteria

Sample eligibility for this study included registered nurses (RNs) who were: (a) male and female 18 years of age or older; (b) licensed to practice in the US; (c) able to read, write, and speak English; (d) and willing, able, and had access to a computer to complete the online survey. Eligibility criteria was delineated in the online introductory letter presented to participants prior to participation in the survey. Participants were instructed to participate only if they met all eligibility requirements. Likewise, eligibility criteria was also included in the demographic portion of the survey, which confirmed that inclusion study requirements were met, thereby enhancing construct validity.

Data Collection

Data collection began on March 31, 2016 via Qualtrics online survey software and was downloaded into a Statistical Package for the Social Sciences (SPSS) 20 data file for analysis. The Qualtrics survey was prepared by the PI; only the PI and faculty sponsor had access to the online survey and subsequent raw data. Reminder postings were distributed via online access points throughout the study period in two-week intervals. The survey remained open through July 9, 2016.

Results

Exploratory factor analysis (EFA) was the data-driven, statistical technique chosen to summarize the latent variables of nurses' *duty to care* in this dataset. After incomplete cases were removed to prevent overestimation and negatively worded items were reverse-scored, principal axis factoring without rotation was utilized for an initial assessment of the assumption tests. The *Correlation matrix* was explored for low (<.30) and high (>.90) correlations and communalities were examined for common variance in

each variable. The *Kaiser-Meyer-Olkin measure of sampling adequacy (KMO)* was .918, well-above the suggested .50 minimum value, while *Bartlett's Test of Sphericity* was highly significant, χ^2 (372) = 4987.026, p = .000. Both values met assumption testing and patterned relationships among the factors were supported. Likewise, the diagonal element of the *Anti-Correlation matrix* maintained 'a' superscripts above .50 (ranging from .55 to .95, with the majority greater than .85), supporting that reliable factors could be produced. Furthermore, the *Determinant score*, t = 8.08E-007, while low was different from zero indicating the absence of multicollinearity among the dataset (Yong & Pearce, 2013).

The data were then subjected to EFA with orthogonal varimax rotation and Kaiser Normalization, since this technique is frequently recommended by research scientists as a good starting point for factor analysis (Field, 2013; Yong & Pearce, 2013). Moreover, varimax rotation was initially selected since it aims at maximizing the variance of the loadings within the factors, thereby simplifying interpretation. Eight factors were first extracted, supported by the initial screening of the *Total variance explained* summary for eigenvalues. Eight eigenvalues with a factor greater than 1.0 explained 67.34% of the total variance and were retained. The *scree plot* was also scrutinized, however, it was difficult to discern a point of inflection since there were multiple variables clustered closely and the curve tailed-off after only a few factors. According to Tabachnick and Fidell (2007), a sample size of approximately 300 participants requires a minimum of three rotated factor loadings of at least .32 on each factor to be considered statistically meaningful. Of the 372 participant sample, the eight-factor *Rotated factor matrix* demonstrated two factors with less than two factor loadings above .32, supporting their

removal. EFA was run a second time with the extraction of six factors, producing a *Rotated factor matrix* with very low factor loadings on item #11 (all less than .20), which was subsequently deleted. Likewise, one factor did not maintain a minimum of three factor loadings above .32, resulting in the need to rerun EFA a third time with five factors extracted. Examination of the rotated five-factor matrix demonstrated that item #3 had very poor factor loadings, all measuring below .18, while item #16 had factor loadings all below .34, crossloadings on Factor two (.35) and Factor five (.33), a low communality score (.28), and low correlation scores (majority below .30); therefore, these two items were eliminated. Scrutiny of the rotated factor matrix after EFA was run a fourth time that resulted in item #2 with crossloadings on Factor two (.39) and Factor three (.39), which were thereby removed.

The five-factor matrix was reevaluated with promax oblique rotation, to examine if factor loading scores improved and if variables clustered on factors that were supported theoretically. While the variables clustered more readily in meaningful and sensible dimensions, item #6 demonstrated very poor factor loadings, all below .25, and item #5 demonstrated very low factor loadings, all below .28, which were both subsequently deleted. EFA was run a second time with promax rotation and the new five-factor *Pattern factor matrix* supported the deletion of items #13, 14, and 15, since all maintained poor factor loadings, the majority of correlation scores were below .30 for each variable, and all maintained low communalities. Furthermore, reexamination of #13 and 14 survey items evidenced that they were not well-supported theoretically by literature, also confirming the need for their deletion. EFA was run again with four factors and item #29 was removed because of crossloading on Factor one (.54) and Factor

four (.44). EFA was run for a final time with four, then three factors, to compare factor loadings and evaluate variable clustering for the most parsimonious, clean, and sensible structure. The four-factor model ultimately clearly explained the greatest common variance among the least number of factors and was retained as the final solution.

Nurses' duty to care, four-factor model included: (1) Factor one, *perceived risk*, with an eigenvalue of 7.97 accounting for 41.93% of the variance; (2) Factor two, *perceived obligation*, with an eigenvalue of 2.15 accounting for 11.31% of the variance; (3) Factor three, *professional preparedness*, with an eigenvalue of 1.67 accounting for 8.78% of the variance; and (4) Factor four, *confidence in employer*, with an eigenvalue of 1.01 accounting for 5.31% of the variance. Overall, 67.34% of the explained variance was accounted for by four eigenvalues greater than one in the four-factor model. Likewise, promax oblique rotation clustered or patterned individual factor loadings for each variable in the 19-item scale, which was supported by visual inspection of the four-factor model (see Table 1). The final 19-item scale maintained a *KMO* score of .923 indicating that patterns of correlations were compact, excellent sampling adequacy was maintained, and that factor analysis was an appropriate and trustworthy statistical technique (Field, 2013). A highly significant *Bartlett's Test of Sphericity*, χ^2 (372)= 3922.336, p = .000, also demonstrated patterned relationships between items. The *Determinant score* of t = 1.79E-005 was significantly different from zero and above Field's (2013) suggested score of 0.00001, indicating that multicollinearity was not a problem in this dataset. Examination of the *Factor Transformation Matrix's* off diagonal

Table 1. Pattern Matrix of Factor Loadings for the Four-Factor, 19-item Nash Duty to Care Scale (N = 409)

Variables/Factors	Perceived Risk	Perceived Obligations	Professional Preparedness	Confidence in the Employer
TRUST_Risk item #28	**.906**	.068	-.088	-.204
TRUST_Risk item #25	**.880**	-.055	.016	-.108
TRUST_Risk item #23	**.755**	-.045	.051	.022
TRUST_Risk item #27	**.678**	.058	.049	.017
TRUST_Risk item #26	**.647**	-.123	-.002	.345
TRUST_Risk item #24	**.626**	.068	.024	.118
TRUST_Risk item #19	**.546**	.084	.033	.078
ACCOUNT_Obliga Item #8	-.004	**.828**	.089	.056
ACCOUNT_Obliga Item #4	.002	**.713**	-.087	-.103
ACCOUNT_Obliga Item #17	-.041	**.712**	.029	.178
ACCOUNT_Obliga Item #10	.262	**.620**	-.024	-.143
ACCOUNT_Obliga Item #9	-.097	**.532**	-.025	.191
PREP_Pro Item #7	-.040	.038	**.868**	-.106
PREP_Pro Item #18	.055	-.025	**.797**	.061
PREP_Pro Item #1	-.002	-.058	**.790**	.009
PREP_Pro Item #12	.012	-.008	**.632**	.004
TRUST_Confid Item #20	.004	-.030	-.030	**.844**
TRUST_Confid Item #22	.147	.058	-.055	**.686**
TRUST_Confid Item #21	-.098	.134	.037	**.638**

Extraction Method: Principal Axis Factoring.
Rotation Method: Promax with Kaiser Normalization.
Rotation converged in 5 iterations.

elements also supported that oblique rotation was a suitable technique for this dataset, as symmetrical off-diagonal elements were readily observed (Yong & Pearce, 2013).

While Kaiser's criterion is reported by some authors to overestimate the number of factors that should be retained in EFA, Field (2013) confirmed that it can be accurate

when a sample size is greater than 250 participants and the average communality is greater than or equal to 0.6. In this study (N = 372) the average communality after factor extraction was 0.6. Goodness of fit was finally examined by assessing the summary of the percentage of non-redundant residuals on the *Reproduced Correlation Matrix.* According to Yong and Pearce (2013), models with a good fit will maintain less than 50% of the non-redundant residuals with absolute values greater than 0.05, which was true for this dataset that had 6.0% of non-redundant residuals with absolute values greater than 0.05, thereby supporting construct validity.

Although this new instrument provided only a sampling of possible items that can be included to measure nurses' duty to care in disaster or mass-casualty events, reliability was supported by maintaining internal consistency or homogeneity of items within each domain or subscale. Cronbach's alpha (α) was the statistical index evaluated to support reliability of the psychometric testing. Internal consistency reliability of the total Nash Duty to Care scale and each of the instrument's subscales demonstrated that all estimates were above .80, with the total for the 19-item scale at .92 (see Table 2), validating the questionnaire. The instrument is available upon request from the author.

Table 2. Internal Consistency for Factorially-Derived Subscales and the Total Nash Duty to Care Scale (N = 409)

Factor	Perceived Risk	Perceived Obligation	Professional Preparedness	Confidence in the Employer	Total
Cronbach's Alpha	.91	.83	.85	.81	.92

Discussion

Results from this study produced a reliable, 19-item duty to care scale that can be used to assess whether or not nurses are likely to respond to the workplace during disaster situations. The first factor of the four-factor structure or model, perceived risk, accounted

for the majority of the variance in the Nash Duty to Care scale (41.93%). Seven items loaded on Factor one which focused on organizational trust, particularly with regard to nurses' perception of risk at the workplace during disaster events. Risk to self, family, and significant others from exposure to pathogens or toxins; risk from inadequate PPE; and risk from abandonment or lack of professional support maintained the highest factor loading values on the first factor. The second factor, perceived obligation, identified nurses' perception of ethical accountability at the workplace. While nurses' perception of ethical guidelines was not maintained in the four-factor model, professional, legal, and moral obligations maintained five high factor loading scores and accounted for 11.31% of the variance. Factor three, professional preparedness, maintained four high factor loading scores and accounted for 8.78% of the variance. These items focused specifically on the importance of nurses' disaster experience, education, and management skills with regard to disaster response.

While items on personal preparedness did not maintain factor loading values high enough to be incorporated in the four-factor model, numerous participants in this study either strongly agreed (22.3%) or somewhat agreed (25.3%) that they had childcare, elder-care, or pet care responsibilities that they were not prepared to manage if they were asked to respond to a disaster at their workplace. Similarly, many nurses either strongly agreed (35.8%) or somewhat agreed (20.7%) that they and their family members were not ready to manage their absence from home if there was a 21-day quarantine at their place of employment. Existing challenges with personal preparedness are not only supported by this research, but also the scientific literature and, therefore, should be further tested and studied in future duty to care research.

Finally, Factor four, confidence in the employer, accounted for the least amount of variance (5.31%) on the four-factor model. Overall, three items loaded on the last factor. Like the first factor, Factor four similarly identified organizational trust as a dimension of duty to care, however, focused on nurses' confidence in their employers to maintain adequate staff, organized work environments, and sufficient procedures, plans, and policies in the workplace during disaster events.

Exploratory factor analysis using principal axis factoring and promax oblique rotation with Kaiser Normalization effectively grouped the latent variables based on variance. While some authors recommend a sample size of 300 participants, this study maintained a sample of 372 participants, supporting the potential for less error. Likewise, validity and high levels of reliability for the overall scale and subscales were demonstrated utilizing EFA and Cronbach's alpha, respectively. Feedback from participants about item-clarity were also considered and incorporated in the scale revision process, ultimately resulting in Likert-scale items ranging from 1 (strongly disagree) to 5 (strongly agree) on the 19-item scale. While the Nash Duty to Care scale is a potentially useful instrument to measure nurses' perceived duty to provide care during disaster situations at the workplace, future testing and research should be conducted using the revised 19-item instrument on a more more diverse nursing population.

Strengths and Limitations

Major strengths of this research study included open discussion about the concept of nurses' perceived duty to care for disaster response and introduction of the development, testing, and psychometric qualities of the Nash Duty to Care scale to measure this important concept. The instrument offers a cost-effective way to gather data

about nurses' perceived duty to care from a large sample and wide geographic range of participants in a very short period of time. Its online platform also supports anonymity and provides participants with the opportunity to participate when it is most convenient for them.

This study also maintained limitations. Threats to internal validity, including experimental mortality or attrition, as well as threats to external validity, including social desirability and generalizability must be considered. Attrition, or participant dropout, occurred prior to study completion. Online surveys are associated with low response rates, typically 30% to 60%, which may limit internal validity of the survey results (Portney & Watkins, 2015). However, oversampling and a small incentive for participants who completed the survey was included in this study to help control this threat and maintain the needed sample size. Likewise, control was exerted by collecting and reporting demographics (age, race/ethnicity, gender, etc.) on participants who completed the survey. Demographics could not be reported on those participants who did not complete the survey, as these queries were positioned at the end of the questionnaire.

Social desirability was a threat to external validity, since nurse participants were queried about the potentially controversial issue of putting personal and family needs above patient and community needs, which may have been construed as contradictory to ethical practice standards. Participants may have answered items with responses that reflected what they thought they should have said, rather than honest answers. To exert control over this threat participants were informed that there were no "right or wrong" answers and that honesty or truthful responses were the expectation, assuring them that anonymity would be maintained.

Generalizability was also a threat to external validity, since the sample was not representative of the general nursing population and EFA does not typically lead to generalizable results. Only three colleges of nursing were utilized from three major universities in this study, none of which were geographically located in eastern or western coastal communities in the US. Likewise, all of the interpretive statements from the ANA, *Code of Ethics*, tenets from the ICN, *Code of Ethics*, and phases from the disaster management continuum were not tested, resulting in a partially tested model. While this threat was recognized, it was still selected for the framework to support this research. Control included discussion of the demographics compared to the US population, consideration of the statistical findings with regard to the limited sample, and informing the reader that generalizability was extremely limited.

Relevance to Nursing Practice, Education, and Research

While ethical codes are in place to guide nurses' practice standards, little is known about nurses' perceived duty to care in disasters or mass-casualty situations (Johnstone & Turale, 2014). Although the general expectation is that nurses will serve as key players in health care systems' disaster management plans, it has been demonstrated that nurses maintain a variety of concerns and challenges that can potentially affect their decision to work during disaster situations. The Nash Duty to Care scale is the first instrument to statistically evaluate nurses' perceived duty to care during disaster events. Since disasters will continue to plague populations across the globe, it is paramount for nurse managers and administrators to have a method to evaluate the reliability of existing disaster management plans. Moreover, given that nurses are the world's most relied upon health care providers, it is crucial for the concept of nurses' duty to care for disaster

response to be given further consideration, as it can affect public health outcomes across the globe.

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Chapter Four

East Meets West: Cultural Values and Duty to Care for Disaster Response

Abstract

Objective: To determine if Taiwanese and American nurses demonstrate different: cultural values, perceived duty to care for disaster response, and individual empirical indicators of duty to care for disaster response.

Participants: A convenience sample of male and female registered nurse participants (n = 229) who read, write, and speak Chinese or English; are 18 years of age or older; and licensed to practice nursing in Taiwan or United States.

Methods: A nonexperimental, comparative-descriptive study was used to recruit participants from November 2016 through February 2017. Members of the Taiwan Nurses Association and the American Nurses Association were invited to participate in a Qualtrics online survey. Nurses' duty to care for disaster response, cultural values, and demographic information were compared using intependent t-tests, chi-square (χ^2) tests, content analysis, and descriptive statistics.

Results: An independent t-test demonstrated significant differences among the Taiwanese and American groups on eight of the ten Personal Cultural Orientation subscale scores ($p < .05$), but not on the Nash Duty to Care scale ($p = .749$) total score. Chi-square (χ^2) tests indicated there was a significant difference ($p < .05$) between groups on 14 of the 19 empirical indicators of duty to care. Content analysis confirmed two themes among the groups: lack of preparedness and unmet personal needs.

Conclusion: There were no significant differences among groups on overall perceived duty to care for disaster response. This study supports the relevance of this concept,

along with how difference in nurses' cultural values may affect future disaster management planning.

Keywords: nurse, duty to care, cultural values, disaster management continuum, disaster response

Historically, disasters have posed significant challenges for health care delivery systems to sustain emergency management plans that protect the well-being and safety of nurses and the populations they serve (U.S. Agency for International Development, 2016). Although there is no single accepted definition of the term *disaster*, the World Health Organization (WHO) and International Council of Nurses (ICN, 2009) define disaster as "a serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources" (p. 3). Natural or human-induced disasters, often precipitated by severe storms, climate change, loss of natural barriers, lack of warning systems, pandemics, drug-resistant diseases, urban growth and chemical, biological, radiological, nuclear, or explosive (CBRNE) events (WHO & ICN, 2009) have become more frequent in recent years. Consequences of these catastrophes have included the collapse of infrastructures and the economy, human displacement and migration, casualties, suffering, and tremendous loss of life. Moreover, the uncertain nature associated with these severe conditions and circumstances has challenged both Eastern and Western nurses' decision to respond to the workplace, or their perceived *duty to care*, during disaster events (Godderis & Rossiter, 2013).

Statistical evidence over the past 15 years clearly demonstrates the urgency and relevance of understanding nurses' challenges associated with disaster response and the professional demands that mount in their aftermath. In 2004, following the Indian Ocean tsunami in Sri Lanka, many professional health care providers, including nurses and midwives were injured, traumatized, displaced, or perished leading to health care system decay and poor population outcomes (WHO, 2007). According to the International

Federation of Red Cross and Red Crescent Societies' (IFCR, 2017) *2016 World Disasters Report*, from 2006 to 2015 there were nearly 772,000 deaths and 1.92 billion people affected by disasters with natural or technological triggers. These statistics excluded events caused by diseases or epidemics, wars, or conflict-related famines. The report also confirmed that in 2008, there were 87,476 deaths in China from the Sichuan earthquake and just two years later in 2010, approximately 222,570 deaths from the Haiti earthquake. Likewise, in 2014 more than 58 million lives were impaired by typhoons and other natural disasters in China, while 8,600 deaths resulted from Ebola outbreaks in West Africa (IFCR, 2015), many of whom were nurses (WHO, 2014). Moreover, in 2015 the number of disasters triggered by droughts and storms were the highest in a decade. More than 100 million people were affected by disasters this same year, with the majority (67%) living in Asia (IFCR, 2017).

Over the past two decades severe acute respiratory syndrome (SARS), typhoons, earthquakes, tsunamis, and flooding resulted in mass-destruction and death among Eastern societies in China and Taiwan (or the Republic of China [ROC]), while influenza pandemics, hurricanes, and terrorist attacks similarly led to mass-devastation and death among Western societies in the United States and Canada (Giarratano, Savage, Barcelona-deMendoza, & Harville, 2014). These catastrophic events exposed nurses and other health care providers to greater risks of morbidity and mortality, along with a variety of complex personal, professional, social, and ethical issues with regard to disaster response (Godderis & Rossiter, 2013). Despite the fact that populations worldwide continue to bear heightened demands from broadening, more complicated, and more sophisticated determinants of disaster or catastrophic events, experts agree that

disaster preparedness plans, disaster mitigation plans, disaster management plans, and related health care applications will be challenged at local and global levels to maintain effective caregiver response (WHO & ICN, 2009). While many health professionals assume a variety of important roles and responsibilities during disaster situations, registered nurses are the providers in highest demand worldwide (WHO & ICN, 2009).

While recent evidence supports that nurses are consistently ranked as the most relied upon, trusted (American Nurses Association [ANA], 2016), and essential caregivers (Adams & Berry, 2012; Yamamoto, 2013; Yan, Turale, Stone, & Petrini, 2015) in disaster situations, it is reported that many nurses experience distress with the decision to respond to the workplace when disaster events occur (Adams & Berry, 2012; ANA, 2010; Arbon et al., 2013; Godderis & Rossiter, 2013; Strangeland, 2010). Although nurses maintain ethical commitments to report to their work assignments during disasters as they would during every-day work situations (ANA, 2015; ICN, 2012), evidence suggests that differences among nurses at the individual level, such as perceived risks or perceived personal commitments, can impact their decision to respond to a disaster event (Arbon et al., 2013; Hammad, Arbon, Gebbie, & Hutton, 2012; Johnstone & Turale, 2014). This is especially apparent when risks to personal safety, self-sacrifice, and family demands compete with nurses' professional demands and result in social and ethical dilemmas with regard to duty to provide care (Adams & Berry, 2012; ANA, 2010; Hammad et al., 2012; Johnstone & Turale, 2014; Khan et al., 2015). Furthermore, scientific evidence demonstrates that some nurses have made the decision to leave the profession all together as a consequence of these dilemmas, thereby

increasing the vulnerability of the general public (Campbell, 2006; Johnstone & Turale, 2014; Khan et al., 2015).

Few scientific research studies have explored the concept of nurses' perceived duty to care during disasters or mass-casualty situations in the workplace (Godderis, & Rossiter, 2013; Johnstone & Turale, 2014; Nash, in press; Twedell, 2009). Since emerging and elevated threats from natural and human-induced disasters have the potential to endanger both human health and human existence, the concept of nurses' perceived duty to care is an important ethical issue in nursing practice today (ANA, 2010; Johnstone & Turale, 2014; Malm et al., 2008; Twedell, 2009). Additionally, since present-day forces of globalization require nurses from diverse cultures and populations to come together and establish professional working partnerships during major disasters relief efforts, scrutiny of the concept of duty to care across Eastern and Western societies can contribute understanding of how cultural orientations or cultural values affect perceptions and expectations of nurses' caregiving responsibilities during disaster situations (Alfred et al., 2013; Giarratano et al., 2014). Ultimately, this knowledge has the potential to provide far-reaching applications in the field of disaster nursing in communities across the globe.

Given the emergence of globalization and consideration that disasters occur more frequently in the Asia-Pacific region than any other place in the world (Centre for Research on the Epidemiology of Disasters [CRED], 2015), this study's purpose is to examine the impact of cultural values on nurses' perceived duty to care for disasters among two different populations – Taiwanese and American nurses. This study will examine how nurses from Eastern and Western cultures perceive their duty to care when

disasters situations arise, as well as explore how cultural ideologies can potentially affect ethical reasoning and motivation to respond. Likewise, common attributes among the two cultures will be explicated and analyzed, with the possibility of discerning a universal characterization of perceived duty to care that can help inform future disaster management planning efforts worldwide.

Review of Literature

According to the scientific literature, nurses have been acknowledged as essential caregivers in disaster or mass-casualty response efforts since the very beginning of the profession (Adams & Berry, 2012; Yamamoto, 2013; Yan et al., 2015). Florence Nightingale, most famous for her work during the Crimean War in the mid-1800s and revered as the founder of modern-day nursing, established nurses' valuable and challenging roles in disaster response early in her career while working in overcrowded, undersupplied, and unsanitary conditions in war-torn Turkey. Although the field of disaster nursing has made significant advances and contributions since Nightingale's time, the task of balancing professional responsibility with personal obligations and risk, amid uncompromising and unpredictable conditions remains a challenge for many nurses today (Yamamoto, 2013; Yan et al., 2015). Therefore, an overview of nurses' ethical, professional, and personal obligations with regard to duty to care during disaster or mass-casualty events is considered in this review of the literature. The review is scripted through both an Eastern and Western cultural lens, since current forces of globalization will necessitate partnerships and teamwork among nurses with different cultural values during disaster response efforts (Alfred et al., 2013; Wang & Greenwood, 2015).

Cultural Values

Culture can be defined as different "beliefs, attitudes, religious practices, language, art, music, values, morals, behavioral patterns, and food customs" that are learned or developed over time "as a result of internal and external forces on the individual" (Marzilli, 2014, p.229), whereas *values* are described as "basic convictions as to what is right, good or desirable, and motivate social and professional behavior" (Rassin, 2010, p. 458). Cultural backgrounds and values not only help shape how nurses engage in the decision-making process, but also affect their communication, interactions, professional partnerships with nurses and health care providers (Marzilli, 2014). From a global perspective, differences between Eastern and Western cultural values arise from two different philosophical and religious establishments: Confucianism and Judeo-Christian traditions (Alfred et al., 2013). Ultimately, the sociocultural, ethical, and historical context of where nurses live and work is crucial for understanding their philosophical perceptions, behavior, and the decision-making process during disaster response.

Eastern cultural values. Eastern culture is broadly referred to as the ethical values, traditions, beliefs, political systems, and customs that distinguish individuals from eastern geographic locations in the world. According to the Ministry of Foreign Affairs, Republic of China (2015), over 95% of 23.4 million people living in Taiwan maintain three primary schools of Eastern religious and philosophical thought: Buddhism, Taoism, and Confucianism. The Taiwanese culture is reported to be highly influenced by principles of Confucianism (Yang, Chen, Chao, & Lai, 2010a), which include accepting responsibility for personal actions (Lin, 2011) and maintaining social obligations, respect,

role fulfillment (Lin, 2011; Wang & Greenwood, 2015; Yang et al., 2010a), familism, virtue, face, guanxi (relationships), and mianzi (public image) as common cultural customs of Eastern society (Lin, 2011; Yang et al., 2010a).

Overall, Taiwanese individuals are reported to maintain collectivist cultural orientations or cultural values. Collectivism is commonly associated with employing high-context or non-verbal communication and highly revering social status, benevolence, tradition, relationships, cooperation, and social harmony in daily life (Alfred et al., 2013; Merkin, 2015; Sharma, 2010; Wang & Greenwood, 2015; Yang et al., 2010a). The desire for harmony is so strong that Taiwanese people often avoid taking a stand in social situations, even if it will lead to greater personal happiness and satisfaction (Sharma, 2010). Likewise, Taiwanese individuals also value empathy, conformity, and the fostering of positive social interactions to help individuals fit into groups, but fear being ostracized or shamed (Sharma, 2010; Stadler, 2013). Evidence also supports that collectivist principles maintain that the needs of society, or the common good, outweigh the needs of the individual in the decision-making process (Sharma, 2010; Wang & Greenwood, 2015).

Western cultural values. Western culture is commonly referred to as the social norms, belief systems, political systems, traditional customs, and ethical and religious values that distinguish individuals from western geographic locations in the world. The US consists of more than 308.7 million people (United States [US] Census Bureau, 2010), primarily immersed in Judeo-Christian religious tradition and individualistic cultural values (Merkin, 2015). Individualism supports values such as power, achievement, encouragement of competition, a strong appreciation for self-interests,

activism, and placement of individual needs above that of group needs in social situations (Ma, Huang & Shenkar, 2011; Sharma, 2010). Similarly, it is reported that people from individualistic societies often employ confrontational, solution-oriented strategies, act as individuals rather than members of cohesive groups, and accomplish tasks better when they work alone and are self-managed (Merkin, 2015; Sharma, 2010). Employing low-context communication, where direct statements are not only valued but a societal expectation (Alfred et al., 2013), is also typically accepted among individualistic society members. Moreover, since individualistic cultures, such as the US, provide society members with more freedom than collectivistic cultures, individuals often feel entitled to consultations, direct communication, and a personal say in decisions at the workplace (Merkin, 2015).

Duty to Care

Duty to care, or the "professional rights and responsibilities" of nurses, is identified as an urgent ethical and professional issue with regard to contemporary disaster management planning among societies across the globe (Godderis & Rossiter, 2013, p. 304). However, nurses' duty to care is an aspect of disaster preparedness that remains overlooked in the scientific nursing literature (ANA, 2010; Johnstone & Turale, 2014; Martin, Brown, & Reid, 2013), despite its relevance and potential social consequences worldwide. Evidence supporting both Eastern and Western nurses' challenges to report to the workplace during disaster or mass-casualty events is illustrated in this historical literature review.

Eastern nurses' duty to care. Chinese and Taiwanese nurses have been challenged with a wide variety of disasters and mass-casualty situations over the past

twenty years. Natural disasters, such as severe acute respiratory syndrome (SARS) and H1N1 epidemics, earthquakes, and typhoons, as well as and human-induced disasters, such as terrorist events, have necessitated nurses' timely provision of care. According to Liu and Liehr (2009), natural disasters, such as the disease outbreaks of SARS in mainland China between 2002 and 2004, resulted in the highest morbidity and mortality rates worldwide. Of the 8,000 people who contracted SARS and more than 800 deaths across the globe (World Health Organization [WHO], 2007a), it is reported that 5,327 people in mainland China acquired the highly contagious form of viral pneumonia resulting in 349 deaths, 30% of whom were health care providers (WHO, 2007b). Nurses who reported to their workplace to care for SARS patients experienced shock (Shih et al., 2009b), panic, fear, anxiety, depression (Chen et al., 2006; Hsin & Macer, 2004), uncertainty (Liu & Liehr, 2009), lack of confidence in employers (Hsu, Chen, Chang, & Chang, 2006), anger (Hsin & Macer, 2004), sleep deprivation (Chen et al., 2006), involuntary assignment demands (Chen, Wu, Yang, & Yen, 2005), and challenges with quarantine (Hsin & Macer, 2004; Liu & Liehr, 2009). However, despite personal conflicts and the collapse of health care delivery systems during the SARS epidemic, many nursing professionals did not question or criticize authority figures and sought out their own sociopolitical solutions to manage personal, professional, social, and ethical challenges (Liu & Liehr, 2009; Shih et al., 2009a).

Among recent scientific studies, Wu, Lee, and Lin's (2012) repeated measures study of nurses' willingness to report to work during the 2003 SARS outbreak found that the onset of a mass-casualty event did not have a major impact on nurses' willingness to report for duty. The majority of nurse participants in their pre-event survey (78.2%) and

post-event survey (79.7%) reported they would respond to their workplace to provide care for SARS patients and were compelled to maintain their professional responsibilities. Similarly, Loke, Fung, and Liu's (2013) exploration of willingness to respond to work during a disaster demonstrated that 83.6% of nurses were willing to report for duty, even if workplace situations threatened their family's safety. They also reported that 69.6% of nurses would report for duty during other life-threatening infectious disease outbreaks, even if they had young children and elderly dependents at home and were quarantined to their place of employment. Furthermore, Shiao, Koh, Lo, Lim, and Guo's (2007) study of SARS confirmed that only a minority of nurse participants (12.2%) reported that they would not care for patients. While many nurses asserted that reporting for duty during SARS was a professional obligation (Lim, Lim, &Vasu, 2013), Taiwanese nurses were also threatened by their employers and informed that their professional licenses would be retracted if they did not respond to work assignments (Hsin & Macer, 2004). This ultimately resulted in conflict between personal responsibilities and duty to care among nurses during the SARS outbreaks (Hsin & Macer, 2004; Nickell et al., 2004; Mok, Chung, Chung, & Wang, 2005).

Nurses' willingness to report for duty during the 2009, H1N1 influenza pandemic resulted in mixed findings among scientific studies. Wong et al. (2010) reported that 33.3% of nurses were "not willing" to care for patients, while 43.6% reported that they were "not sure." Of those nurses not willing to provide care, nurse participants stated that psychological stress (55.0%) and fear of being infected (29.2%) were primary reasons for unwillingness to respond. Contrarily, in a another scientific study among nurses and other Eastern health care professionals, 82.3% of health care providers were

willing to care for H1N1 patients (Ma et al., 2011), more closely evidencing the collectivist norm of working to support the common good of the community at large.

Collectivist ideologies were similarly apparent among nurses' duty to provide care in earthquake relief efforts during the 2008 Chinese Wenchuan and the 2010 Yushu earthquakes. The Wenchaun earthquake caused 87,476 deaths, numerous injuries, aftershocks, and geohazards (Yin, He, Arbon, & Zhu, 2011). The Yushu earthquake resulted in 2,698 deaths, over 100,000 injured, severe damage to health care infrastructures, and cultural and language barriers among international disaster response teams (Wenji, Turale, Stone, & Petrini, 2015). In both instances, nurses played key roles as first responders, despite personal danger; lack of medical supplies; lack of training and education (Wenji et al., 2015; Yang, Xiao, Cheng, Zhu, & Arbon, 2010b; Yin et al., 2011); lack of policies for disaster nursing (Usher et al., 2015); no advanced notice of their assigned roles; and no time to pack food, survival equipment, and prepare for departure before they left their families and homes (Wenji et al., 2015). Moreover, nurse participants reported to make great efforts to provide care to disaster victims, despite ongoing ethical, professional, and personal conflicts (Wenji et al., 2015; Yang et al., 2010b), severe staffing shortages (Yin et al., 2012), treacherous work conditions (Yin et al., 2011), overwhelming loss of life, and total devastation. Overall, nurses were reported to remain focused on the welfare of population they served (Wenji et al., 2015; Yang et al., 2010b; Yin et al., 2011)

Typhoons have similarly plagued the Asia-Pacific geographic region, challenging nurses' disaster response abilities, efforts, and commitments to provide care. Although typhoons are common natural disasters worldwide, the South China Sea has been struck

254 times in the past 50 years, with 35% of the incidents affecting the northeast coast of Taiwan (Jiang et al., 2015). One study by Jiang et al. (2015) queried 648 nurse participants from medical, surgical, and emergency units utilizing a researcher-developed questionnaire. It measured indices of knowledge, attitudes, and nursing practices of typhoon relief efforts, maintaining good content validity (0.87, 0.98, and 0.92) and reliability (Cronbach's α 0.73-0.74, 0.70-0.72, and 0.72-0.74, respectively). Although findings demonstrated that nurses preferred to remain with family members during typhoon disasters, most nurses reported to work duties during relief efforts, even though separation anxiety and conflict between work and family obligations often resulted (Jiang et al., 2015).

While human-induced disasters, such as terrorism, have become more complex and prevalent worldwide, there is little research regarding Eastern Chinese and Taiwanese nurses' response to terrorist events. Although Taiwan has experienced more than 20 terrorist attacks since 1979, including many hijackings and bombings, few casualties have been reported (Tsai et al., 2003). Historically, Taiwan's remote geographic location and few international enemies have shielded the country from terrorist incidents. However, the present-day effects of globalization has repositioned the Taiwanese population as a target of terrorist adversaries of the US (Tsai et al., 2003). This suggests that future terrorist threats and terrorist events may pose new challenges for nurses' duty to provide care.

Overall, Eastern nurses' perceptions of workplace commitment during disaster or mass-casualty situations is established in the scientific literature. Lim et al.'s (2013) survey among 1,534 nurses and other health care workers (HCWs) demonstrated that

74.5% of participants reported that providing care during disaster or mass-casualty incidents constituted professional competency and professional duty, despite evidence that only 36.4% reported feeling personally prepared to report for work. Moreover, although the isolated island of Taiwan is one of the most challenging and vulnerable places in the world for natural disasters, historical evidence supports that many Taiwanese nurses maintain that efficient disaster response is essential to meet population health care demands and improved outcomes for disaster victims, regardless of perceived personal risks (Tzeng et al., 2016). Ultimately, this philosophy embodies Eastern collectivist values and cultural norms among the Taiwanese nursing population.

Western nurses' duty to care. Similar to China and Taiwan, the US and Canada have also historically experienced a wide range of disasters and mass-casualty situations, including hurricanes and other weather-related events, pandemics, and terrorism, which have all required nurses' swift and committed response to meet surge capacity demands to uphold positive patient outcomes. Natural disasters, such as infectious disease outbreaks of Avian Influenza (AI), H1N1, Ebola, and SARS have challenged Western nurses' planning and decision-making to work during public health crises. For example, Bell, Dake, Price, Jordan, and Rega's (2014) study of 332 emergency nurse participants' likelihood of reporting for work during an AI outbreak demonstrated that 84% would respond, however, 20% maintained dependent caregiver responsibilities that would potentially limit their participation. In contrast, Balicer, Omer, Barnett, and Everly (2006) reported that among 308 HCWs, including nurses, only 53% stated they would "most likely" report to work during an influenza pandemic, while 66% reported to perceive themselves at risk to perform their assigned duties. These findings can

potentially impact the effectiveness of current institutional emergency or disaster response plans. They may also demonstrate how individualistic values impact Western nurses' perceived duty to provide care.

More recently, in Balicer et al.'s (2010) exploration of HCWs' attitudes and beliefs about duty to care during pandemics, 28% of participants (*n* =3,426) from Johns Hopkins Hospital in Maryland indicated that they were not willing to respond to an influenza pandemic, while 32% reported they were not willing to respond to a severe pandemic. Findings were consistent across hospital departments and suggested that participants who were married, single parents, and had children were less likely to respond. Irvin, Cindrich, Patterson, and Southhall's (2008) examination of HCWs similarly demonstrated that only 50% of participants reported they would respond to their workplace, while Gershon et al.'s (2010) study among home HCWs confirmed that 85% were unable/unwilling to care for current patients and 91% were unable/unwilling to care for new patients. These findings support the potential influence of Western individualistic cultural norms.

Western philosophical values or cultural orientations were also evident in findings from research on the 2003 SARS outbreaks in Canada. SARS not only culminated in an abrupt shutdown of many health care systems, but also resulted in ethical dilemmas that challenged nurses' decision-making to report for duty to their work assignments (Beardwood & Kainer, 2015; Bournes & Ferguson-Paré, 2005; Campbell, 2006; Nickell et al., 2004). For a period of four weeks, approximately 267 patients were admitted to 17 different Toronto, Canada hospitals with probable or suspected SARS (Bournes & Ferguson-Paré, 2005), while 375 people were reported to contract SARS in Greater

Ontario (Beardwood & Kainer, 2015). In Mount Sinai Hospital in Toronto, 11 HCWs acquired the deadly virus, while 99 staff members were quarantined, resulting in overwhelming concerns about contracting and transmitting the virus to family members (Nickell et al., 2004; Tolomiczenko et al., 2005). This was especially true among nurses who reported that they were not adequately informed about the outbreak and were not given the opportunity to make decisions regarding their roles in the workplace (Tolomiczenko et al., 2005). Feelings of despair, frustration, disappointment, loneliness (Bournes & Ferguson-Paré, 2005), anger, and exhaustion were common among nurse caregivers (Fiksenbaum, Marjanovic, Greenglass, & Coffey, 2006).

Nickell et al. (2004) reported that the psychological effects of SARS among 4,283 HCWs demonstrated that risk of death (adjusted OR 5.0, 95% CI 2.6-9.6), living with children (adjusted OR 1.8, 95% CI 1.5-2.3), and untoward effects on family (adjusted OR 3.3, 95% CI 2.5-4.3) were significant concerns associated with the decision to report for duty. Widespread health care system failure and deterioration not only resulted in spread of the infection, ineffective communication, lack of safety, shortage of PPE, and inconsistent information about proper protective protocols and viral transmission, but also government fear that nurses would not respond to the next pandemic (Summers, 2009). This event renewed the relevance of duty to care among nursing professionals. While the SARS outbreak raised genuine concerns about nurses' commitment to professional practice standards, accountability, and duty to work in high risk situations, concerns about employers' duties to protect nursing professionals were also illuminated (Beardwood & Kainer, 2015).

In 2003, a landmark study by the Ontario Nurses' Association distributed surveys to 52,500 registered nurses and allied health professionals following the SARS outbreak (Campbell, 2006). The 1,536 completed questionnaires were shared with the SARS Commission established by the Ontario government to investigate the spread of the virus. Survey responses demonstrated that two-thirds of nurse participants reported the SARS outbreak changed their attitude about the nursing profession and caused fear, isolation, and anxiety among their family members. Likewise, more than one-half of participants reported that SARS compromised their health and safety. When asked about their concerns in open-ended survey questions, nurses' comments included, "Fear … job not worth risk of dying," "Lack of trust that nursing was being protected," and "Totally devastating on family life" (Campbell, 2006, p. 968). Nurses also stated that, "I realistically think that you will see significant numbers of RN's [SIC] leaving the profession within the next 5 years,"… "SARS has changed everything. I no longer feel safe at work….," and "…I feel there will be a large exit from nursing if SARS happens again" (Campbell, 2006, p. 1015).

The questionnaires also confirmed that many nurses were threatened and told if they did not report to work, they would lose their jobs. Overall, 15% of nurse participants did not report for duty during the Canadian SARS outbreak. Ultimately, outcry from the death of two nurses from SARS in 2003 (Beardwood & Kainer, 2015; Summers, 2009), as well as transmission of the lethal Ebola virus to two Texas nurses in the U.S. in 2014 (Hollis, 2014; Sagar, 2015) revived discussions about nurses' obligations and perceived duty in the workplace.

Major U.S. hurricanes have also resulted in mass-casualty situations in health care facilities in recent years. In 2005, Hurricane Katrina and Hurricane Rita ravaged the coasts of Louisiana, Florida, Alabama, Mississippi, and Texas killing more than 1,300 people (Rogers & Lawhorn, 2007). Superstorm Sandy in 2012, the largest Atlantic hurricane on record, established how the unpredictability of natural disasters can limit the utility of disaster management plans. Qualitative interviews and surveys from 528 nurses in Van Devanter's (2014) mixed-method study demonstrated that participants from New York University's Langone Medical Center (NYULMC) faced a plethora of challenges with regard to post-evacuation deployment to community hospitals. Fifty-four percent of the nurses reported being very stressed, with the majority remaining on new assignments for up to two months. Balancing personal and professional obligations during the storm resulted in a high prevalence of psychological sequela, with more than 50% reporting excessive stress and abundant psycho-social challenges (Van Devanter, Kovner, Raveis, McCollum, & Keller, 2014).

Since many nurse responders were also disaster victims during Hurricane Sandy, nurses' decisions to report for duty were far less than anticipated by employers (Morris, Ricci, Griffin, Heslin, & Dobalian, 2016). This strained adequate response and minimized employers' ability to provide appropriate care to the public. Morris et al.'s (2016) examination of nurses' personal and professional challenges to report for duty during Sandy demonstrated that personal property damage, transportation problems (no public transportation), communication issues (widespread power outages), concerns about safety, and concerns about leaving family were primary barriers to disaster response.

Finally, nurses' perceived duty to provide care during terrorist events were more frequently cited in the scientific literature following the attacks in the US on September 11, 2001, claiming a total of 2,996 lives. Grimes and Medias' (2010) descriptive study among 292 licensed registered nurse (98%) and vocational nurse (2%) participants in Texas, US, examined intention to respond to bioterrorism and other infectious disease emergencies. Their results demonstrated that only 25% of the nurses who perceived they had a duty to provide care also reported a high intent-to-respond, raising concerns about absenteeism and maintaining adequate staffing. Similarly, Crane, McCluskey, Johnson, and Harbison's (2010) evaluation of bioterrorism response among 2,279 physician, nurse, and pharmacist participants concluded that few health care providers (32%) were competent and willing to respond to a bioterrorism attack. Additionally, Katz, Staiti, and McKenzie (2006) also demonstrated that less than 15% of physician and nurse participants reported ability to respond effectively, while Cone and Cummings' (2006) research among HCWs claimed that only a little more than half of employees would respond to biological (58%), chemical (58%), or radiation events (57%). This evidence further supports individualistic cultural values among Western health care providers.

Conceptual Framework

Research studies in the literature review focused on elements of nurses' perceived duty to provide care during different types of disaster events. Nurses' duty to meet the health and social needs of the public is clearly articulated and supported in the four tenets of the ICN (2012) *Code of Ethics for Nurses*, which maintains that regardless of personal circumstances, professional practice settings, or the onset of risks that can occur during disaster or catastrophic situations, the general expectation is that nurses will respond to

their professional work obligations (see Appendix A). Likewise, when disaster or mass-casualty events arise, the disaster management continuum (WHO & ICN, 2009) provides globally accepted, expert guidelines and a professional framework to help nurses manage and mitigate disaster situations and their untoward effects that can impact patient and community outcomes (see Appendix B). The continuum incorporates the ideas from two world-renowned nurse theorists' models: Jennings—Saunders' Disaster Nursing Management Model (2004) and Veenema's Disaster Nursing Timeline (2007). The disaster management continuum also incorporates the contemporary forces of globalization within its continuous process, requiring the integration and partnerships of individuals, groups, organizations, businesses, industries, and government (WHO & ICN, 2009). Moreover, the continuum is the culmination of decisions from world leaders in public health, addressing common health care challenges in three overlapping phases of disaster events – pre-incident, incident, and post-incident phases (WHO & ICN, 2009).

The pre-incident phase is described as the activities that are arranged to prevent, mitigate, and prepare the public for disaster or emergency situations. According to the WHO and ICN (2009), nurses have roles in identifying, preventing, and minimizing risks associated with disasters at both the individual and community level. Consideration of the effects of Taiwanese collectivist cultural values and American individualist cultural values are recognized as an important step in the evaluation of the pre-incident phase. Cultural values require careful consideration and should be incorporated into the early stages of disaster management planning, as nurses' personal beliefs and personal needs can potentially affect staffing shortages and lead to poor patient outcomes and greater suffering and loss of life (WHO & ICN, 2009). The concept of the pre-incident phase of

the disaster management continuum is scrutinized by evaluation of the *cultural values* variable.

Nurses' responsibilities are most visible during the incident phase of the disaster management continuum. The incident phase is characterized as the immediate actions and activities involved in disaster or emergency response to save lives, meet the needs of survivors, and reduce long-term impact of disaster events when preservation of life and maintenance of public health demands are priorities and primary concerns (WHO & ICN, 2009). Nurses' primary roles in the incident response phase include reporting to the workplace, serving as patient advocates and key members of health care teams, collaborating with other responders to provide care, and maintaining management and leadership roles, often amid changing environmental conditions, scarce resources, and disorganized work environments (WHO & ICN, 2009). This study focuses primarily on the incident response phase, when conflict among nurses' personal and professional obligations and work expectations require contemplation, discussion, and resolution in order for employers to maintain effective and trustworthy disaster management plans that meet surge demands during disasters. The concept of the incident phase of the disaster management continuum is evaluated by the *duty to care* variable.

The post-incident phase of the disaster management continuum incorporates significant recovery and rehabilitation activities. During this time, rebuilding takes place while communities slowly recover from the impact of the disaster (WHO & ICN, 2009). While the third phase is not directly tested in this scientific study, the data collected does provide valuable information about the recovery and rehabilitation phase of the disaster management continuum, which can champion changes to improve current disaster

management plans that can impact future health outcomes (WHO & ICN, 2009). The post-incident phase is briefly addressed in the discussion and summary sections of this manuscript.

Ultimately, the disaster management continuum (WHO & ICN, 2009) functions as the blueprint for the evaluation of Taiwanese and American nurses' perceived duty to care and, therefore, serves as the conceptual framework of this study. Since many organizational and institutional emergency and disaster response plans are based on the assumption that nurses will report to their given roles and participate in response efforts (Adams & Berry, 2012; Yamamoto, 2013; Yan et al., 2015), understanding how nurses perceive their moral obligations to respond to essential work duties is important to inform the practicality of these plans.

Conceptual and Operational Definitions

Variables that test the pre-incident and incident phases of the disaster management continuum are explicated for the readers' consideration and discernment. While only two of the three phases of the conceptual framework are tested with study variables, resulting in a partially tested model, insights for the third concept (post-incident) will be given brief consideration and discussion. Since the disaster management continuum was selected by disaster nurse experts and the WHO and ICN (2009) as the "impetus for the development of the framework of disaster nursing competencies" (p. 10) it serves as the most appropriate conceptual framework for this proposed research study.

Cultural Values

Cultural values are broadly defined as the attitudes, traditions, beliefs, ethical values, and customs that may distinguish individuals from different geographic locations around the world (Hong, Morris, Chiu, & Benet-Martinez, 2000). This variable is measured by participants' responses to a 58-item, Personal Cultural Orientation (PCO) scale (Sharma, 2010; see Appendix C). The scale measures ten cultural dimensions: independence (IND), interdependence (INT), power (POW), social inequality (IEQ), risk aversion (RSK), ambiguity intolerance (AMB)**,** masculinity (MAS), gender equality (GEQ), tradition (TRD), and prudence (PRU).

Duty to Care

Duty to care is defined by Godderis and Rossiter (2013) as the professional rights, commitments, and responsibilities of health care providers. Duty to care is measured by the Nash Duty to Care scale (Nash, in press; see Appendix D), an instrument that was pilot tested on licensed RN to BS/BSN, MS/MSN, DNP, and PhD American nursing students and nurse faculty members from three universities in the United States. The four-factor scale focuses on four primary, global dimensions of nurses' duty to care in disaster situations: professional preparedness, perceived risk, confidence in the employer, and perceived obligation.

Research Hypotheses

The research hypotheses were based upon evidence from research studies described in the literature review as they relate to the first two phases of the disaster management continuum. While some studies have examined nurses' willingness or ability to respond to disaster situations, little research has focused on nurses' duty to care.

Cultural values and traditions are demonstrated by the literature review to influence nurses' perceptions about professional commitments, and nurses' commitments to respond to disasters affect the success of disaster management plans (WHO & ICN, 2009). Therefore, this research reflects differences and similarities of Eastern (Taiwanese) and Western (American) nurses' perceived duty to care during disasters. Additionally, cultural traditions of each group were explicated to further enlighten the understanding of cultural influences and duty to care. Hypotheses for the proposed study include:

Ha1: Among Taiwanese and American licensed nurses, Eastern nurse participants will demonstrate different cultural values compared to Western nurse participants.

Ha2**:** Among Taiwanese and American licensed nurses, Eastern nurse participants will perceive duty to care for disaster response differently than Western nurse participants.

Ha3: Among Taiwanese and American licensed nurses, Eastern nurse participants will be motivated by different individual empirical indicators of duty to care for disaster response compared to Western nurse participants.

Design

A nonexperimental, comparative-descriptive research design was used to compare the effects of cultural values on Taiwanese nurses' duty to care to American nurses' duty to care. The design is appropriate since the study aims to make comparisons across two different groups and there is no planned treatment or intervention. Both descriptive and inferential statistical analyses were used to describe and summarize data, support examination of the differences between the groups, and make generalizations about the populations from which the sample was drawn.

Methods

A convenience sample was used to recruit licensed registered nurses in this research study. The target population was nurses who read, write, and speak Chinese or English and who live, work, and are licensed to practice nursing in Taiwan or United States. The accessible population included licensed registered nurses who were members of the Taiwan Nurses Association (TWNA) and ANA members, ANA Organizational Affiliate (OA) members, and ANA community discussion board members. Permission to access TWNA members (see Appendix E) and ANA members (see Appendix F) was sought from both professional nursing organizations prior to study initiation.

A priori power analysis using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) was calculated for 2-tailed, independent *t*-tests to estimate the sample size. A power of .80 was selected to provide protection from making a Type II error, while an alpha of 0.05 was chosen to provide protection from making a Type I error. With a medium effect size ($d = 0.5$) a total sample of 128 was calculated; 64 nurse participants from the Taiwan group and 64 nurse participants from the U.S. group to maintain confidence in the sample size.

The TWNA website (Taiwan Nurses Association, 2012) reports that they maintain > 69,000 members, while the ANA website (American Nurses Association, 2015) indicates that they have approximately 10,000 members. While all Taiwanese members had access to the survey link posted to the TWNA website, the survey link in the US was pushed by ANA executives to its organizational affiliate members (listservs) and posted by the principal investigator to approximately 6,172 members across 10 community discussion boards. A total of 658 participants (521 in the Taiwanese group

and 137 in the American group) were recruited, since larger samples foster statistical conclusion validity. A subset of the Taiwanese sample was selected during the analysis stage of this study for hypothesis testing. The sample represents approximately 0.76% of the total number of TWNA members and 1.06% of the total number of ANA members. Since scientific evidence supports that online surveys are associated with low response rates, typically 30% to 60%, oversampling was included in this study plan to help maintain the needed sample size (Portney & Watkins, 2015).

The recruitment plan was that all nurse participants would be recruited by the researcher, or Principal Investigator (PI), through an invitation written in Chinese (Traditional) for Taiwanese participants (see Appendix G) and English for U.S. participants (see Appendix H) via the TWNA website, emails to TWNA members, ANA listservs, and ANA community discussion boards. Prior to study recruitment, all written documents (Introductory letter/informed consent, surveys, survey instructions, etc.) deployed to Taiwanese participants were translated from English to Chinese (Traditional). Taiwanese and American participants all received an introductory letter that explained the purpose of the study, estimated time requirements, potential risks and benefits, personal rights, confidentiality, institutional review board (IRB) approval, and the right to withdraw from participation. The study survey was available for the months of January, 2017 through February 28, 2017 for Taiwanese nurse participants and November, 2016 through December 31, 2016 for American nurse participants. Reminders were posted via the TWNA emails and the ANA discussion boards. A study incentive was provided for all participants, which included the opportunity to be randomly chosen to receive one of ten online gift cards in each group. Participants were

entered into the random drawing if they provided their email address at the end of the survey. Entering an email addresses was not mandatory and the addresses were not linked to survey results in any way. Thank you messages were also posted via online access points. A timeline of the research is described in detail in Appendix I.

Sample eligibility, or inclusion and exclusion criteria, for this study was given careful consideration. Registered nurses who were: (a) male and female; (b) 18 years of age or older; (c) licensed to practice nursing as a registered nurse in Taiwan and the US; (d) able to read, write, and speak Chinese or English; (e) and had access to a computer to complete the online survey met the inclusion criteria. Licensed practical nurses (LPNs) in the US were excluded from the study, since they have a more limited scope of practice and work under the supervision of the RN. Eligibility criteria were carefully delineated in the Chinese (see Appendix J) and English (see Appendix K) online introductory letters presented to nurse participants prior to taking the survey. Nurses were invited to participate only if they met eligibility requirements. Likewise, nurse participants were informed that taking the survey implied informed consent. Both the introductory letter and study invitation were translated from English to Chinese (Traditional).

Protection of Human Subjects/Informed Consent

Ethical approval was sought from The University of Texas at Tyler, Institutional Review Board (IRB) prior to any study related activities (see Appendix L). The proposed study was based on the principles of autonomy, beneficence, and justice (Portney & Watkins, 2015) and protected research participants' rights to anonymity, confidentiality, privacy, fair treatment, and protection from harm (ANA, 2015). A waiver of written and signed prospective informed consent was sought and acquired, since participation in this

study posed no foreseeable or known serious risks to study participants. The waiver was appropriate since the research did not adversely affect the rights and welfare of the participants, involved minimal risks, and the study could not have been practically carried out otherwise.

A detailed description of the study's purpose, potential risks and benefits, participant's rights, and protection of the participants' personal information was embedded in the introduction at the beginning of the online Qualtrics survey in both Chinese (Traditional) and English. The introduction clearly informed participants that nonparticipation would not affect standing in organizational memberships or employment, participation was completely voluntary, they were free to discontinue participation at any time without prejudice, and that completion of the survey implied their informed consent. Contact information for the PI, supporting faculty dissertation Chair (Danita Alfred, PhD, RN), and UT Tyler IRB Chair (Dr. Gloria Duke), including current email addresses and phone numbers, were provided in the introduction. Contact information for the external dissertation committee member who lives and works in Taiwan (Yu-Yun Alice Hsu, PhD, RN) was also provided in the introduction of the Chinese survey for Taiwanese participants. All data were maintained on a password-encrypted database where only the PI and faculty Chair had access to the raw study data and subsequent study results.

Instruments

Three instruments were used to measure the study variables: the Nash Duty to Care scale (Nash, in press), the Personal Cultural Orientation (PCO) scale (Sharma, 2010), and a researcher-generated demographic survey. Since all scales/surveys used in

this study were developed in English, a nurse faculty member native to Taiwan (see Appendix M) and a professional translation service (see Appendix N) were recruited to translate study instruments using a translation, back-translation technique to create Chinese (Traditional) versions of the questionnaires. The translators working for the professional translation company were also native to the Chinese language. This step in the research plan was crucial, to ensure all concepts in English had the same meaning in Chinese.

The translation process required several steps. To begin, the surveys were translated from English to Chinese (Traditional). After translation was complete, the final documents were proofread and compared for accuracy, consistency, and equivalence. Next, different translators were asked to take the Chinese (Traditional) versions of the questionnaires and translate them back into English. Again, the final documents were compared for accuracy, consistency, and equivalence. If words did not back translate with similar meanings, they were sent back to the translator and the entire process was repeated a second time to ensure accuracy. The translation process was important to offer Taiwanese participants surveys in their official language. These steps in the research process promoted social value, scientific validity, and respect for recruited participants and their cultural differences, which ultimately supported culturally competent scientific research (Lavery, Grady, Wahl, & Emanuel, 2007).

Items in all surveys were assessed for readability with two evaluation techniques: the Flesch-Kincaid grade level and the SMOG readability formulas. All surveys maintained grade levels at 10th grade or lower, appropriate for nursing professionals who

completed secondary education and had some level of college education. This assessment was completed on all English versions of the surveys, prior to any translation.

Nash Duty to Care Scale. The Nash Duty to Care scale (Nash, in press) is a three-section, 19-item, survey instrument that required participants to rate their agreement to work in different disaster situations or conditions. The survey featured self-reported, ordinal level, Likert-scale items ranging from 1 (strongly disagree) to 5 (strongly agree) that when added together created a sum score and supported continuous level data and the use of parametric statistical analyses. The instrument has a potential data yield of 1 to 5 per item and a potential total instrument data yield of 19 to 95. The survey is delivered in an online environment and takes approximately 5 to 10 minutes to complete.

The Likert-scale items in the instrument provided short descriptive phrases reflecting the empirical indicators with regard to the provisions of ANA (2015) and ICN (2012) *Codes of Ethics for Nurses.* It also related items to the three phases of disaster described by the disaster management continuum, with a primary focus on disaster response. Reliability of retained items on the scale were supported by a Cronbach's alpha (α) $\geq .81$ for each subscale (perceived risk, α =.91; perceived obligation, α =.83; professional preparedness, α =.85; and confidence in the employer, α =.81), while overall reliability of the instrument was supported by a Cronbach's alpha (α) of .92. The instrument similarly demonstrated adequate content validity, as it was evaluated by doctorally prepared registered nurses with expertise in the ANA (2015) and ICN (2012) *Codes of Ethics* and in the field of disaster nursing. Nurse experts also taught and published in peer-reviewed journals in their areas of expertise, were knowledgeable about the target population, and reviewed the instrument for relevance and clarity. Exploratory

factor analysis (EFA) supported construct validity, by reducing the set of factors and unifying items associated with the variable of duty to care, which ultimately resulted in four subscales. Higher numerical values across all subscales and the total score reflect a greater perceived, self-reported duty to care for disaster response.

Personal Cultural Orientation (PCO) Scale. While many self-report, cultural values scales have been developed in the past 25 years since Hofstede's (1980) renowned 32-item scale, upon a review of the literature it was determined that many of the scales lacked construct validity, reliability, dimensionality, and resulted in poor factor loadings from factor analysis. Recently, Sharma (2010) developed a new multi-dimensional, 58-item scale by re-conceptualizing Hofstede's five national-level cultural dimensions as ten individual-level personal cultural orientations or sub-scales: independence (IND), interdependence (INT), power (POW), social inequality (IEQ), risk aversion (RSK), ambiguity intolerance (AMB), masculinity (MAS), gender equality (GEQ), tradition (TRD), and prudence (PRU) in the Personal Cultural Orientation (PCO) scale (see Appendix O). The survey instrument required participants to rate their agreement with brief statements regarding these ten subscales of cultural orientation. The survey featured self-reported, ordinal level, Likert-scale items ranging from 1 (strongly disagree) to 7 (strongly agree), which when added together created a sum score that supported continuous level data and parametric statistical analyses. The instrument has a potential data yield of 1 to 7 per item and a potential total instrument data yield of 58 to 406 points. The survey is delivered in an online environment and takes approximately 10 minutes to complete.

The PCO scale is well-supported theoretically and was rigorously developed and tested in a three-study, three-step process: (1) Study 1 supported scale refinement and purification; (2) Study 2 confirmed scale validation; and (3) Study 3 addressed replication and generalization. Each study utilized a unique study sample including Chinese and English speaking participants. In Study 1 (N =588), principal components analysis with promax rotation yielded 10 factors that explained 63.5% variance in the data with Cronbach's alpha (α) values ranging from .72 to .85 for each of the subscales (total α score was not reported). In Study 2 (N =1,744), the ten-dimensional structure was confirmed and convergent, discriminant, and predictive validity was supported and documented. Likewise, cross-cultural measurement equivalence was demonstrated. In Study 3 (N =1,568), support for reliability of each subscale was reaffirmed with Cronbach's alpha (α), ranging from .70 to .85 for the 10 sub-scales (total α score was not reported). All factor loadings were significant and >.60 for the PCO scale. Likewise, the final 58-item scale supported multi-dimensionality, cross-cultural measurement equivalence, and convergent, discriminant, and predictive validity.

In all three steps of the instrument development, four judges with different cultural backgrounds (Asian Indian, ethnic Chinese, African American, and Caucasian European) examined scale dimensions and items to verify content validity. While the scale was developed in English, it was translated and back-translated in Chinese. The researcher obtained formal written permission to use the PCO scale in its entirety, or selected subscales, from its author (see Appendix P).

Overall, scores on each of the ten PCO sub-scales reflect the extent or expression of the value being measured. For example, the IND subscale measures the extent to which individuals work independently and maintain a strong self-concept, while the INT subscale measures the extent to which individuals act as part of one or more in-groups and give priority to group needs instead of self-interests. High scores on some of the subscales can be associated with collectivist norms, while others can be associated with individualistic norms. For example, a high score on the IND subscale is often observed in individualistic societies, such as the United States where working independently is revered. In contrast, a high score on the INT subscale is often observed in collectivist societies, such as the Taiwan, where reliance on others is the societal norm.

Demographic Surveys. There were a total of 17 items on the Taiwanese demographic survey (see Appendix Q) and 19 items on the American demographic survey (see Appendix R). Two demographic surveys were constructed to reflect culturally sensitive demographic questions for Taiwanese and American participants. Information collected and reported included items such as age, gender, race, marital status, educational level, and professional practice settings to avoid sampling bias and support generalizability of the outcomes. Construction of the questionnaire was guided by verbiage from statistical databases in government websites (Ministry of Health and Welfare, 2013, 2016; U. S. Department of Health and Human Services, 2013) and scientific research (Chiang-Hanisko, Ross, Boonyanurak, Ozawa, & Chiang, 2008), so comparisons would be easily facilitated to support generalizability in the analysis and discussion sections of the manuscript. Two nursing faculty members who were familiar with the Taiwanese culture were also consulted during survey construction to ensure the

content was culturally appropriate. Both demographic surveys included items that potentially underpinned nurses' cultural ideologies, such as religious or philosophical beliefs, current geographic residence or location, and birthplace. Finally, questions about personal preparedness for disaster events were also included. While scientific research has supported that nurses lack personal preparedness for disaster response, statistical analyses did not support the inclusion of personal preparedness in the Nash Duty to Care scale (Nash, in press).

Data Collection

Data collection began following IRB approval from the University of Texas at Tyler, and approval from the TWNA and the ANA. A study recruitment invitation written in Chinese (Traditional) and English was distributed to Taiwanese and American nurses, respectively. In Taiwan, communication barriers initially slowed the study invition deployment. In some instances, it took up to two weeks to receive reponses to questions and concerns posed to the Taiwan Nurses Association.

The written invitation with online survey link was emailed to TWNA members and maintained a very poor response rate during the first two weeks (n = 10). Followup communication via email was sent twice, stating the researcher's concerns about the study recruitment rate. It took several weeks to receive a response since a Chinese holiday was being observed. After contact was made with the TWNA, the study recruitment invitation was posted on the TWNA website and the researcher was informed that follow-up study reminders would be sent via email on February 8, 2017 and February 18, 2017 to TWNA members. Permission during this time was also sought from the IRB to use snowball sampling to aid in the recruitment process and potentially

expand the sample size. Three nurse colleagues with professional connections in Taiwan were contacted and requested to share the study recruitment invitation and online link with fellow TWNA members. An increase in participation was evident, following these combined recruitment strategies (n = 79).

During the sixth week of study recruitment (n = 103), a sudden elevated surge in participation was observed (n = 418) over a three day period: February 17, 2017 to February 20, 2017. Suspicion about this sudden rise in the participation rate prompted further inquiry. The researcher downloaded the current data into a CSV file and opened it in Excel. Latitude and longitude values were scrutinized and it was verified that all responses originated in Taiwan. Then, I.P. addresses were assessed. It was confirmed that there were not any I.P. addresses with multiple entries. Next, emails retrieved under a separate survey were exported to an Excel file and examined for duplicates. Out of n = 320 emails, only one duplicate was found. These assessments supported legitimacy of the data collection during the surge period. Finally, the TWNA was contacted and asked if there were any actions on their end that could explain a rise in the participation. The TWNA replied, stating that email reminders were sent to members on February 10, 2017 and February 18, 2017 and that an icon link was created on their website. While email reminder dates differed from the original agreed upon schedule, these actions gave reason for the elevated participation rate. Data collected until February 20, 2017 was given consideration for statistical analyses.

In the US the written invitation was posted on ANA's listservs and community discussion boards. Both written invitations provided one link to an online survey. One reminder was posted on the community discussion board approximtely 3 weeks after

initial study invitation deployment. Participation was steady throughout the recruitment period. Data collection ceased at the end of the seven-week study period.

Data collection in Taiwan and the US was conducted through Qualtrics, an online data software package. The Qualtrics survey was prepared by the PI; only the PI and faculty Chair had access to the online survey and subsequent raw study data. Data collection took place from January 10, 2017 to February 20, 2017 in Taiwan and November 18, 2016 through December 30, 2016 in the United States. The surveys in Taiwan and the US each remained open for a seven week period. A total of 521 responses were received from TWNA members and 137 responses from ANA members.

Analysis

All data from the Qualtrics online survey were downloaded into an SPSS 20 file for quantitative and qualitative statistical analyses. Initial assessment of the TWNA dataset demonstrated that the sample size (n = 521) was 3.8 times greater than that of the ANAs sample size (n = 137). The Taiwanese dataset was carefully scrutinized to consider a representative sample for hypothesis testing. First, three sample (sub-set) groups were selected from the entire dataset: 1.) all cases (n = 103) before the surge of participants; 2.) a random sample from the surge cases (n = 130); and 3.) a random sample from the entire data set (n = 137). The fourth group considered for evaluation was the TWNA total 521 case dataset (see Table 1). Next, demographic variables such as nurses' age, licensure level, education level, gender, years of experience, etc., were derived for the four groups and many comparisons of the demographic variables were considered in general. Then, demographic characteristics of the 103 cases prior to the participant surge were examined and compared to a random sample of cases (n =130)

during the participant surge. Finally, a random sample equal in size to the ANA sample (n = 137) was compared to the final (n = 521) dataset.

Table 1. Comparison of Four Sample Groups to Support the Selection of a Random Sample (n = 137) for Hypothesis Testing

Comparison of Selected Descriptive Statistics Across Samples Among the Taiwanese Group (n = 521)			
Cases (n = 103) before Surge of TWNA Participants (Jan 10th-February 16th)	Random Sample (Sub-Set) of n = 130 from the 418 Cases during the Surge (February 17th-20th)	Random Sample (Sub-Set) of n = 137 Cases Across the Total Sample (n = 521) (Jan 10th-February 20th)	Total Sample (n = 521) (Jan 10th-February 20th)
Licensure: RN: 70.4%; Advanced NP: 29.6% **Education:** Diploma: 2.7%; Associate: 4.1%; BSN: 47.9%; Masters: 32.9%; PhD: 11.0%; Other doctorate: 1.4% **Specialty area:** Med Surg: 24.7%; ER: 13.7%; ICU: 21.9%; Peds: 2.7%; OB/GYN: 6.8%; Psychiatric Nursing: 5.4%;Other: 12.2% **Setting:** Hospital: 63.5%; College /University: 24.3% **Religion:** Buddhism: 24.3%' Taoism: 25.7%; Christianity: 14.9%; Kuan Tao: 0%; None: 28.4% **Marital Status:** Single: 39.2%; Married/ Committed Relationship: 55.4%; Divorced: 5.4%; Widowed: 0% **Gender:** Male: 6.8%; Female: 93.2% **Birth Place:** Taiwan: 93.1% **Age Range:** 22-66 **People in Household:** 1-12 **Years Licensed as a Nurse:** <1-48 years	**Licensure:** RN: 66.4%; Advanced NP: 33.6% **Education:** Diploma: 3.2%; Associate: 7.2%; BSN: 67.2%; Masters: 20.0%; PhD: 1.6%; Other doctorate: 0.8% **Specialty Area:** Med Surg: 40.8%; ER: 8.0%; ICU: 17.6%; Peds: 8.8%; OB/GYN: 3.2%; Psychiatric nursing: 4.8%; other: 11.2% **Setting:** Hospital: 92.8%; College /university: 4.8% **Religion:** Buddhism: 16.8%; Taoism: 36.0%; Christianity: 6.4%; Kuan Tao: 2.4%; None: 37.6% **Marital Status:** Single: 50.4%; Married/ Committed Relationship: 48.0%; divorced: 5.4% Widowed: 0% **Gender:** Male: 2.4%; Female: 97.6% **Birth Place:** Taiwan: 92.0% **Age Range:** 21-67 **People in Household:** 1-12 **Years Licensed as a Nurse:** 1-45 years	**Licensure:** RN: 65.6%; Advanced NP: 34.4% **Education:** Diploma: 5.7%; Associate: 8.1%; BSN: 64.2%; Masters: 19.5%; PhD: 1.6%; Other doctorate: 0.8% **Specialty Area:** Med Surg: 40.7%; ER: 6.5%; ICU: 20.3%; Peds: 1.6%; OB/GYN: 5.7%; Psychiatric Nursing: 5.7%; Other: 8.1% **Setting:** Hospital: 88.6%; College /university: 5.7% **Religion:** Buddhism: 14.6%; Taoism: 33.3%; Christianity: 8.9%; Kuan Tao: 1.6%; None: 35.8% **Marital Status:** Single: 52.8%; Married/ Committed Relationship: 45.5%; Divorced: 1.6%; Widowed: 0% **Gender:** Male: 4.1%; Female: 95.9% **Birth Place:** Taiwan: 91.0% **Age Range:** 22-63 **People in Household:** 1-12 **Years Licensed as a Nurse:** <1-43 years	**Licensure:** RN: 66.8%; Advanced NP: 33.2% **Education:** Diploma: 4.8%; Associate: 12.4%; BSN: 58.7%; Masters: 19.6%; PhD: 3.7%; Other doctorate: 0.8% **Specialty Area:** Med Surg: 37.0%; ER: 9.3%; ICU: 17.9%; Peds: 6.4%; OB/GYN: 4.5%; Psychiatric Nursing: 5.1%; Other: 12.8% **Setting:** Hospital: 87.9%; College/ university: 7.4% **Religion:** Buddhism: 17.5%; Taoism: 35.1%; Christianity: 10.5%; Kuan Tao: 1.6%; None: 33.5% **Marital Status:** Single: 47.2%; Married/ Committed Relationship: 50.5%; Divorced: 1.8%; Widowed: .4% **Gender:** Male: 3.7%; Female: 96.3% **Birth Place:** Taiwan: 91.1% **Age Range:** 20-67 **People in household:** 1-12 **Years Licensed as a Nurse:** <1-48 years

More specifically, it was recognized that among the sample of cases (n = 103) taken prior to the participant surge, the percentage of male participants was nearly double

that of the entire sample (*n* = 521). Likewise, the number of participants with doctorate degrees and working in a college or university setting was more than triple that of the total TWNA sample (*n* = 521). It was discerned that this was likely do to the push of study invitations among professional nurse colleagues in Taiwan after snowball sampling began. Since the 103 case sample was different demographically from the TWNA total sample (*n* = 521), as well as the random participant surge sample (*n* = 130), it was eliminated as a viable consideration for hypothesis testing.

A random sample taken from the entire dataset (*n* = 137) was also compared to the TWNA total sample (*n* = 521). In contrast, these two samples maintained very similar demographic characteristics, including (but not limited to) level of licensure (± 1.2%), gender (± 0.4%), proximity in age range (± 2-4 years), employment in a hospital setting (± 1.3%), birth place (± 0.1%), and religion (Buddhism, ± 2.9%; Taoism, ± 1.8%; Christianity ± 1.6%; Kuan Tao, ± 0.0%; None, ± 2.3%). Ultimately, these similarities supported using the *random sample (sub-set) of 137 cases* from the *n* = 521 dataset for hypothesis testing in this scientific study.

After the decision was made to use the 137 case random sample drawn from the Taiwanese dataset (*n* = 521), all cases were carefully scrutinized for missing values, repetition of the same numerical values, and accuracy of data entry prior to statistical analyses. Missing values were coded and items that required reverse scoring were recoded in SPSS. Of the TWNA 137 member random sample, six participants opened the survey and immediately exited, without answering any items. These cases were deleted. All 131 remaining participants answered items on the Nash Duty to Care scale (Nash, in press) and the PCO scale (Sharma, 2010). Further examination demonstrated

that eight cases had missing data points on both scales (> 70% incomplete). Each incomplete case was carefully assessed across the two study instruments' subscales. After identifying that the majority of both instruments' subscales had missing data points, all eight cases were deleted. The result was a 123 member TWNA group sample.

Of the ANA 137 member sample, ten participants opened the survey and immediately exited, without answering any items. These cases were deleted. The remaining 127 participants answered items on the Nash Duty to Care scale (Nash, in press), however, 14 participants dropped out at various points while answering items. Of the 14 incomplete cases, ten were < 50% complete, with missing data points on three of the four subscales. These cases were subsequently deleted. The four additional incomplete cases had only a few missing data points, which were managed using mean substitution. The 117 remaining participants answered items on the PCO scale (Sharma, 2010). Of these cases, 8 were < 20% complete and subsequently deleted, while 3 cases were approximately 50% complete. Careful scrutiny of the three cases across all subscales demonstrated that subscales were either incomplete, or completely empty. These three cases were also deleted, resulting in a 106 member ANA group sample. Overall, 14 cases (including 6 cases with no data) were deleted from the TWNA group and 31 cases (including 10 cases with no data) were deleted from the ANA group, resulting in a 229 member sample for the research study.

Next, the study variables were tested in both groups to ensure all assumptions were met prior to statistical analyses. Frequency distributions were assessed for normality by visual inspection of the stem and leaf plots, Q-Q plots, boxplots, and histograms for skewness, kurtosis, and outliers. A total of 7 outliers in the Taiwanese

group and 11 outliers in the American group were winsorized and replaced with the next highest or lowest value that was not an outlier (Field, 2009). Normality was similarly scrutinized by assessment of the Kolmogorov–Smirnov (KS) test and Shapiro–Wilk (SW) test values. Finally, homogeneity of variance (HOV) was examined while running the parametric independent *t*-test to support assumption testing.

Assumption testing for the TWNA sample demonstrated that the Duty to Care total score and PCO total score were normally distributed. The stem and leaf plot and histogram for the Duty to Care total score were somewhat concentrated about the mean, resulting in a slightly leptokurtic distribution. However, data points on the Q-Q plot hugged the line tightly and the boxplot appeared normally distributed. The KS test and SW test were both non-significant ($p > 0.05$), further supporting a normal distribution. Similarly, visual inspection of the stem and leaf plot, histogram, Q-Q plot, and boxplot of the PCO total score also supported normality. The KS test and SW test were non-significant ($p > 0.05$), further demonstrating evidence that the assumption tests were met.

Assumption testing for the ANA sample demonstrated the Duty to Care total score and PCO total score were normally distributed. The Duty to Care total score's stem and leaf plot and histogram appeared to have a slight negative skew and was slightly leptokurtic, yet the Q-Q plot and boxplot appeared normally distributed. The KS test and SW test were significant ($p < 0.05$), so normality tests were run a second time with bootstrapping. While the KS test ($p = 0.001$) and SW test ($p = .003$) remained significant, these tests can be unreliable for mid-size and large-size samples or when deviations from normality are very small (Field, 2009). Therefore, it is important to consider the potential lack of sensitivity with this test and the fact that significant results

are not uncommon (Field, 2009). Similarly, the PCO total scores maintained a slightly leptokurtic stem and leaf plot and histogram and a normal Q-Q plot and boxplot. However, the KS test and SW test scores were both non-significant ($p > 0.05$), lending support to a normal distribution. Ultimately, the assumption for homogeneity of variance (HOV) was finally examined with both the TWNA group sample and the ANA group sample while running independent *t*-tests. Results confirmed a non-significant Levene's test ($p > 0.05$) for both the Duty to Care total score and the PCO total score, supporting that the assumption was met.

Descriptive statistics were used to analyze the sample demographics, while the independent *t*-tests, chi-square (χ^2) tests, and content analyses were used to support the three research hypotheses. Quantitative methods included a parametric independent *t*-test used to examine the means between two unrelated groups (TWNA and ANA) on the same continuous variable, personal cultural orientation, in hypothesis one and duty to care on hypothesis two. Chi-square (χ^2) tests were the non-parametric tests utilized to determine if the Taiwanese and American groups differed with regard to each empirical indicator of duty to care in the third hypothesis.

Content analysis, a research technique that integrates, organizes, and uses coding of participants' written words according to key concepts (Portney & Watkins, 2015) was also used to interpret results from one open-ended question on the Nash Duty to Care scale (Nash, in press) in both groups. Unlike quantitative methodology, where deductive reasoning is used to tests hypotheses, qualitative methodology relies on inductive reasoning (Burns & Grove, 2011). Broad inferences or major themes were drawn from nurse participants' specific responses, to derive general conclusions about the item in

question (Polit & Beck, 2010). In this study, nurses were asked to describe their disaster response experiences, if they felt comfortable sharing their personal stories. All responses were thematically coded by the principal investigator. For example, types of disasters, conditions, actions, attitudes, preparedness levels, perceived risk, settings, and consequences were some of the categories identified. Similar codes were then grouped or combined and interconnections within-cases and across-cases were identified.

Results

Sample. While a total of 274 Taiwanese and American nurse participants opened the online survey, 229 participants were retained as the final study sample. Unanswered and incomplete items resulted in an overall attrition rate of 16.42% (TWNA, 10.22%; ANA 22.63%). A selection of non-parametric, descriptive statistics of the study sample are presented in Table 2 for consideration. Of the 123 nurse participants in the TWNA group (n = 123), five (4.1%) were male and 118 (95.9%) were female, with a mean and median age of 36.58 years and 36.00 years (SD = 9.98), respectively. Ages also ranged from 22 to 63 years old (see Table 3). In contrast, the ANA group (n = 106) consisted of three (2.8%) male nurses and 102 (96.2%) female nurses, with a mean and median age of 55.22 years and 58.00 years (SD = 11.25), respectively. There was a wider range of ages in the ANA group, (26 to 75 years), which represented a significantly older and more experienced workforce. Nurse participants in the ANA group were on average 20 years older and licensed twice as long as participants in the TWNA group.

Table 2. Descriptive Statistics: Demographic Categorical Variables (N = 229)

	Taiwanese Nurses (*n* = 123)		American Nurses (*n* = 106)	
Demographic Variable	Frequency	Percent	Frequency	Percent
Gender				
Male	5	4.1	3	2.8
Female	118	95.9	102	96.2
Marital Status				
Single	65	52.8	13	12.4
Married/Committed Relationship	56	45.5	76	72.4
Divorced	2	1.6	13	12.4
Widowed	0	0.0	3	2.9
Religious Beliefs				
Kuan Tao	2	1.6		
Buddhism	18	14.6		
Taoism/Folk beliefs	41	33.3		
Catholicism/Christianity	11	8.9		
Protestantism			39	36.8
Catholicism			34	32.1
Mormonism			2	1.9
Judaism			1	.9
Atheism/Agnosticism			5	4.7
None	44	36.8		
Other	7	5.7	24	22.6
Level of Nursing Licensure				
Registered Nurse (RN)	80	65.6	81	76.4
Advanced Nurse Practitioner	42	34.4		
Advanced Practice Registered Nurse (APRN)			25	23.6
Level of Education				
Diploma in Nursing	7	5.7		
Associate Degree in Nursing (ADN)/ Associate Degree (AD)	10	8.1	4	3.8
Bachelor of Science in Nursing (BSN)/ Bachelor of Science (BS)	79	64.2	28	26.4
Master of Science in Nursing (MSN)/ Master of Science (MS)	23	18.7	46	43.4
Doctor of Nursing Practice (DNP)			6	5.7
Doctor of Philosophy (PhD) in Nursing	3	2.4	15	14.2
Doctor of Philosophy (PhD) – Other Field/Other Doctorate Degree	1	.8	7	6.6
Work Setting				
Hospital	109	88.6	40	37.7
Nursing Care Facility/Long-term Care/ Nursing Home			1	.9
Psychiatric Center				
College/University	7	5.7	30	28.3
Physician's Office/Private Doctor's Clinic	2	1.6	2	1.9
Community Health/Public Health			2	1.9
Social Welfare and Services Institution	1	.8		
Home Health Care			1	.9
Outpatient Services			5	4.7

Table 2 Continued			1	.9
Insurance Carrier			1	.9
Office/Clinic of Other Practitioners			2	1.9
Administration			4	3.8
Unemployed	4	3.3	17	16.0
Other				
Assigned Role in your Employer's Emergency/Disaster Response Plans				
No	11	8.9	58	54.7
Unsure	32	26.0	12	11.3
Yes	79	64.2	30	28.3
Unemployed	1	.8	6	5.7

Table 3. Descriptive Statistics: Demographic Continuous Variables (N = 229)

	Taiwanese Nurses (*n* = 123)			American Nurses (*n* = 106)		
Demographic Variable	M/MDN (SD)	Range	Frequency	M/MDN (SD)	Range	Frequency
Age (years)	36.58/36.00 (9.98)	22 – 63	120	55.22/58.00 (11.25)	26 – 75	102
Years Licensed as a Registered Nurse	15.75/16.00 (10.22)	0 – 43	111	29.32/32.00 (13.49)	1 – 53	95
Number of People Living in Household (including self)	4.77/4.00 (2.21)	1 – 12	118	2.63/2.00 (1.20)	1 – 6	104
Number of Disaster Events Responded to	1.50/1.00 (0.830)	0 – 4	38	4.30/2.50 (7.78)	1 – 50+	44

In general, the Taiwanese group findings demonstrated a greater than average representation of male nurses working in the East, as the number of male professionals in this geographic location remains quite low. For example, in Taiwan, China, and Japan only 2.06%, less than 1% (Feng, Zhao, Shen, Chen, & Li, 2016), and 4.9% (Asakura & Watanabe, 2011), respectively, of the nursing workforce is comprised of men. In contrast, the American group findings did not adequately represent male nurses working in the West, as the nursing workforce in the US and Canada is comprised of 9.6% (United States Census Bureau, 2013) and 7% (Twomey & Meadus, 2016) men, respectively. However, the majority of nurse participants in both groups were RNs (TWNA, 65.6%; ANA, 76.4%), and not advanced practice nurses, which is similar to the general nursing population reported by Taiwanese and American government websites.

It is important to point out that among the Taiwanese nursing group, the majority self-reported having a Bachelor of Science in Nursing (BSN)/Bachelor of Science (BS) degree (64.2%) followed by a Master of Science in Nursing (MSN)/Master of Science (MS) degree (18.7%). In contrast, among the American nursing group, the majority self-reported having a Master of Science in Nursing (MSN)/Master of Science (MS) degree (43.4%), followed by a Bachelor of Science in Nursing (BSN)/Bachelor of Science (BS) degree (26.4%). The sample of American nurses in this study is more educated than the general nursing population in the United States. Likewise, it can be discerned that membership in the ANA appealed to well-educated nurses, many of whom focused their careers in academia or teaching (23.6%), working in a college or university setting (28.3%).

With regard to nurses' personal preparedness for disaster response, the majority of Taiwanese nurses reported they and their family were "definitely not (6.6%)," "probably not (18.9%)," or "might not (41.8%)" be prepared to manage their absence from home if there were a quarantine at their workplace. Overall, 50.8% of TWNA participants also reported that they were not prepared to manage childcare, eldercare, or pet care responsibilities, while 69.1% reported that they did not have water, food, and emergencies at home for the first 72 hours following a disaster event. Moreover, 94.3% did not have a written preparedness plan in place for disaster situations.

In contrast, more than double the number of ANA participants reported that they and their family were "definitely not (15.0%)" prepared to manage their absence from home if there were a quarantine at their workplace. Also 16.0% reported that they "probably not" and "might not" be prepared, which was significantly less than TWNA

members. The majority of American nurse participants were also not prepared to manage childcare, eldercare, or pet care responsibilities (64.0%); did not have water, food, and emergencies at home (54.7%); and did not have a written preparedness plan (92.5%) in place for disaster events.

Hypothesis tests. In this study, hypothesis tests focused on examination of the differences between the Taiwanese and American nursing groups on two different continuous level variables – cultural values and duty to care. Individual indicators of duty to care on the Nash Duty to Care scale (Nash, in press) were also examined between the two nursing groups. Statistical tests results are summarized below.

Hypothesis one (Ha1). A two-tailed, independent *t*-test ($p < 0.05$) was used to examine the PCO scale's (Sharma, 2010) ten subscale scores for differences between the Taiwanese group and the American group. The subscale score was the continuous, dependent variable and the country of licensure was the independent (grouping) variable. Results are summarized in Table 4. Eight of the PCO subscales maintained significant differences and two maintained non-significant differences. Description of each subscale is delineated in Appendix O.

Table 4. Comparison of the PCO (Sharma, 2010) Subscale Mean Scores between the Taiwanese and American Groups

	Taiwanese Group (n = 123)		American Group (n = 106)	
Variables	M	SD	M	SD
Independence (IND)	31.58*	5.68	29.92	6.24
Interdependence (INT)	36.34	4.02	36.42	4.28
Power (POW)	23.17***	4.80	19.64	5.34
Social Inequality (IEQ)	26.12***	3.93	17.40	5.27
Risk Aversion (RSK)	23.53*	6.97	21.28	6.19
Ambiguity Intolerance (AMB)	31.90***	5.88	19.97	6.53
Masculinity (MAS)	28.12***	5.90	21.32	6.08
Gender Equality (GEQ)	37.89	3.96	40.02***	2.70
Tradition (TRD)	29.27	7.53	31.01	7.08
Prudence (PRU)	32.50	5.40	34.67***	4.65

Note. *p<.05, **p<.01, ***$p\leq$.001, all two-tailed

Among the findings, there was a highly significant difference between the TWNA group (M = 23.17, SD = 4.80) and the ANA group (M = 19.64, SD = 5.34) on the POW subscale score. Since the ANA group maintained a lower mean score than the TWNA group, one can discern the extent to which American nurses accept power or authority figures in the work environment is less than Taiwanese nurses. Another example was the highly significant difference between the TWNA group (M = 31.90, SD = 5.88) and the ANA group (M = 19.97, SD = 6.53) on the AMB subscale. The higher TWNA's mean score was nearly double that of the ANA's mean score. This suggests that Taiwanese nurses tolerate ambiguity or accept uncertain situations in the workplace more readily than American nurses. Finally, there was a highly significant difference between the TWNA group (M = 37.89, SD = 3.96) and the ANA group (M = 40.02, SD = 2.70) on the GEQ subscale. GEQ was the highest mean score among all subscales in both groups. It is described as the extent to which individuals perceive genders as equal, especially with regard to roles and responsibilities in society (Sharma, 2010).

Hypothesis two (Ha2). A two-tailed, independent *t*-test ($p < 0.05$) with bootstrap was used to examine the Duty to Care scale's (Nash, in press) total score for differences between the Taiwanese group and the American group. The robust bootstrap technique was used since the KS test and SW test for Duty to Care were significant during the initial assumption testing. The Duty to Care scale's (Nash, in press) total score between both groups was the continuous, dependent variable and the country of licensure was the independent (grouping) variable. Conversion of the *t*-value to an *r*-value was used to report the effect size. Overall, the difference between the TWNA group (M = 66.87.12,

SE = 0.83) and the ANA group (M = 66.43, SE = 1.11) on the Duty to Care total score, .436, BCa 95% CI [-1.995, 3.276], was not significant $t(227) = .32$, $p = .749$, $r = .02$.

The four Nash Duty to Care (Nash, in press) subscales were similarly examined for significant differences using a two-tailed, independent *t*-test ($p < .05$). Findings supported that two of the duty to care subscales maintained significant differences, while two maintained non-significant differences. Results are summarized in Table 5.

Table 5. Comparison of the Nash Duty to Care Scale (Nash, in press) Subscale Mean Scores between Taiwanese and American Groups

	Taiwanese Group		American Group	
Variables	M	SD	M	SD
Perceived Risk (PR)	24.11	4.66	24.09	4.79
Perceived Obligation (PO)	21.13***	3.78	19.17	3.35
Professional Preparedness (PP)	12.64	2.66	14.22**	4.06
Confidence in Employer (CE)	8.98	2.04	9.10	3.35

Note. **p<.01, **p<.002, ***$p\leq$.001, all two-tailed

An examination of Table 5 reveals there was a highly significant difference between the TWNA group (M = 21.13, SD = 3.78) and the ANA group (M = 19.17, SD = 3.35) on the PO subscale score. Since the TWNA group maintained a higher mean score than the ANA group, it can be determined that Taiwanese nurses' perceived obligation to respond was greater than American nurses. Another significant difference between TWNA group (M = 12.64, SD = 2.66) and the ANA group (M = 14.22, SD = 4.06) was on the PP subscale score. Since the ANA group maintained a higher mean score than the TWNA group, one can also discern that American nurses' professional preparedness is greater than Taiwanese nurses. One final example is results from the independent *t*-test that examined the confidence in the employer (CE) subscale. While there was not a significant difference between the TWNA sample group (M = 8.98, SD = 2.04) and the ANA sample group (M = 9.10, SD = 3.35), both mean scores were very low, hovering

about the midpoint of the mean. From this result it can be discerned that both the TWNA group and ANA group have little confidence in the employer.

Hypothesis three (Ha3). A series of chi-square (χ^2) tests of independence were conducted to determine if the Taiwanese and American groups differed with regard to each empirical indicator of duty to care. Since individual items on the Nash Duty to Care scale (Nash, in press) were ordinal, the non-parametric chi-square (χ^2) test was chosen to examine differences between the two groups on each item. A summary of test results for each item is provided in Table 3. While reported significance on the table is reflective of Pearson chi-square values, mean scores were reported for comparison. This value was selected since it is easy to discern and meaningful to most nurses.

Table 6. Comparison of Individual Empirical Indicators of Duty to Care for Taiwanese and American Groups

Individual Empirical Indicators of Duty to Care	SS	Taiwanese Group Mean (M) (range: 1-5)	American Group Mean (M) (range 1-5)
I have sufficient professional experiences to practice nursing safely in a wide range of disaster settings. 我有足夠專業經驗在大範圍的災難場所中安全地執行照護工作。	PP	3.14	3.70***
I ***do not*** have the ability to manage different types of disaster situations in a variety of disaster settings. 我沒有能力去管理各種災難場所中的不同型態的災難情境。	PP	3.22	3.58***
I have sufficient disaster nursing education to practice nursing safely in response to a wide range of disaster events. 我接受了足夠的災難護理教育，能夠應對眾多型態的災難事件，安全地執行照護工作。	PP	2.84	3.44***
I maintain current disaster knowledge and awareness at all times in preparation for disaster situations. 我堅持學習最新的災難知識並且保持應災意識，為應對災難情境做好準備。	PP	3.45	3.50***
My work environment will likely become chaotic during a disaster or mass-casualty event. 我的工作環境在遇到災難或大量傷患事件時，可能會陷入混亂。	CE	2.29	2.26

Table 6 Continued

My employer has sufficient written procedures, policies, and plans in place to handle all types of disaster situations. 我的雇主有齊全的書面流程、政策和計劃以應對各種型態的災難情境。	CE	3.91	3.49
My workplace ***will not*** maintain adequate staffing during a disaster or mass-casualty event. 我的工作場所沒有充足的人手以應付災難或大量傷患事件。	CE	2.78	3.35***
I will report to work because of my obligation to my profession, colleagues, and employer. 基於對職業、同事和雇主的義務，我會到工作單位報到崗。	PO	4.85	4.49
I will report to my workplace because I am legally obligated to respond. 基於法定義務，我會前往工作場所報到。	PO	4.81***	3.22
I ***will not*** respond if I have existing family responsibilities or obligations that require my attention. 如果當前存在需要我關注的家庭責任或義務，我不會響應。	PO	3.54***	3.13
I will report to work because the *Nursing Code of Ethics* states it is my professional responsibility to respond. 我會到工作單位報到，因為護理道德規範規定我的職業要求我履行此等責任。	PO	3.93	3.84
I will report to work because it is morally the 'right thing to do.' 我會工作單位報到，因為這樣做在道德上屬於「正確的事」。	PO	4.01	4.41*
I will report to work, even of conditions begin to deteriorate quickly. 即使險情迅速惡化，我也會到工作單位報到。	PR	4.72	4.38
I will report to work if my employer *lacks* sufficient personal protective equipment to maintain my safety. 即使我的雇主沒有提供*足夠*的個人防護設備來維護我的安全，我也會到工作單位報到。	PR	2.96*	2.92
I will report to my workplace if I am at *high risk* for exposure to pathogens and/or toxins. 即使存在與病原體和/或毒素接觸的高風險，我也會前往工作場所報到。	PR	3.48***	3.15
I ***will not*** respond if my family or significant others are at *high risk* for exposure to pathogens and/or toxins. 如果我的家人或其他重要之人存在與於病原體和/或毒素接觸的高風險，我不會響應。	PR	2.86*	2.75
I will report to work, even if I fear I will be abandoned by my co-workers. 我會工作單位報到，即使我害怕自己會被同事們拋棄。	PR	3.59	3.98*

Table 6 Continued

I will report to work if I maintain the freedom to leave at the end of my assigned shift. 如果我能在分配給我的班次結束時自由離開，我會工作單位報到。	PR	4.07***	3.42

Note. Pearson Chi-Square significance values: *p<.05, **p<.01, ***p≤.001; Nash Duty to Care instrument subscales, are professional preparedness, PP; confidence in the employer, CE; perceived obligation, PO; and perceived risk, PR

While results from the independent t-test supported that country of licensure did not affect participants' overall duty to care, findings from the chi-square tests demonstrated that Taiwanese and American groups had some significant differences on the individual empirical indicator level of duty to care. For example, while there was not a significant difference (p = .242) between the TWNA group (M = 4.85) and ANA group (M = 4.49) on the item of perceived obligation to profession, colleagues, and employer, there were significant differences between the two groups on all four individual items of the professional preparedness (PP) subscale. While 29 nurse participants (27.36%) from the ANA group (M = 3.44) reported that they "strongly agreed" with having sufficient professional experiences to practice nursing safely in a wide range of disaster events, only 11 nurse participants (8.9%) from the TWNA group reported that they strongly agreed with this item (p = .000). In contrast, 14 nurse participants (11.38%) from the TWNA group (M = 2.84) reported that they "strongly disagreed" with having sufficient disaster nursing education to practice nursing safely in a wide range of disaster events, while only 10 nurse participants (9.43%) from the ANA group (M = 3.44) strongly disagreed with this item (p = .000). Overall, however, the ANA group maintained higher mean scores on each self-reported professional preparedness item, which implied they were more professionally prepared than the TWNA group.

In contrast, evaluation of the perceived obligation (PO) subscale demonstrated findings which suggested the TWNA sample group maintained a higher perceived obligation to their profession compared to the ANA group. While no nurse participants (0.0%) from the TWNA group (M = 3.54) reported they "strongly agreed" with not responding to the workplace due to existing family responsibilities or obligations, 15 nurse participants (14.15%) from the ANA group (M = 3.13) responded that they "strongly agreed." Likewise, there were 58 TWNA nurse participants (47.15%) who responded "strongly agree" to the item that stated they would report to their workplace because they were legally obligated to respond, and 50 nurses (40.65%) who responded "somewhat agree." In contrast, there were 21 nurse participants (19.81%) from the ANA group who responded "strongly agree" to this item about legal obligation and 22 nurse participants (20.75%) who responded "somewhat agree." Overall, the TWNA group maintained higher mean scores on both of the significant perceived obligation items, which implied they maintained a greater perceived obligation to report to the employer during a disaster than the ANA group.

Likewise, on the subscale of perceived risk (PR), the TWNA group also maintained higher scores on four of the five significant items. This similarly supports that despite potential risks at the workplace during disaster response efforts, the TWNA group was more likely to report compared to the ANA group. This result was not surprising, given that Eastern societies value collectivist ideologies and often work to support the common good (Ma et al., 2011; Merkin, 2015; Sharma, 2010).

The item on the duty to care scale that maintained the lowest mean, non-significant (p = .069) score among both the TWNA group (M = 2.29) and the ANA group

(M = 2.26) was related to confidence in the employer. This item stated that the participant's work environment would likely become chaotic during a disaster or mass-casualty event. Forty-two nurse participants (34.15%) from the TWNA group replied "strongly agree," compared to 41 participants (38.68%) from the ANA group. Similarly, 33 nurse participants (26.83%) from the TWNA group replied "somewhat agree" to this item compared to 31 participants (29.25%) from the ANA group. Only 3 (2.44%) participants in the TWNA group responded with "strongly disagree," compared to 8 (7.55%) participants in the American group. As reported in the findings from the independent *t*-test, this item implies that during disaster or mass-casualty events, nurses from both countries would have little confidence in their employers to maintain an organized work environment.

Finally, content analysis of the 23 responses received from Taiwanese participants supported that the majority of participants responded to one type of disaster, either a natural (65.22%) or a human-induced (47.83%) disaster, while fewer participants (26.09%) had experience participating in both. Of those nurses who responded to natural disasters, most provided care during earthquakes, followed by SARS epidemics. Of those nurses who responded to human-induced disasters, the majority of nurses provided nursing care during explosions, followed by airplane crashes.

Similarly, content analysis of the 43 responses received from American nurse participants supported that the majority of participants responded to one type of disaster, either a natural (67.44%) or a human-induced (58.14%) disaster, while fewer participants (39.53%) had experience participating in both. Of the nurses in the ANA group who responded to natural disasters, most provided care during hurricanes, followed by

blizzard related events and tornados. Of the nurses who responded to human-induced disasters, the majority of nurses provided care during multi-vehicle crashes or airplane and train crashes, followed by bombings.

Responses were selected to support two general themes derived from content analysis of the Taiwanese group: lack of preparedness and unmet personal needs. One participant stated that, "…after the small night shift ended (921) an earthquake occurred. Four hours later, I returned to the working site and started my 24-hour marathon style shift that lasted for 3 days, until my position was taken over by the support from other places." Another nurse participant commented that "An incident of alimentary toxicosis caused a lot of injured patients and on-site support was necessary. However, equipment was limited…human resources were not enough. Also, in a ship wreck incident after a typhoon, helicopters were required to provide support, but there weren't enough. While staff arrived at the site for support, there were not enough staff…" From the rich context provided by participants' personal stories, it was apparent that nurses' struggled with staffing shortages and providing care with limited resources.

Similarly, a selection of responses chosen from the American group supported the same two general themes: lack of preparedness and unmet self-interests or personal needs. One participant stated, "Snow emergencies…required a 24 hour shift one day and three 12 hours shifts to staff the emergency department…we would be terminated if we left to go home. We had to sleep on the cement floor with only a sheet for a cover. Food supply was limited…," while another nurse reported that "as a U.S. Army Reserves Nurse Corps officer I recognized the LACK of training to the civilian nursing providers." Still another participant mentioned that "staff nurses were missing for work" and there were

"hospitalized patients who needed care." It is also important to note that the majority of responses suggested poor or challenging work conditions; participants shared personal stories that suggested they lacked professional resources needed to do their job.

Cronbach's alpha (α) was the statistical index evaluated to support reliability of the statistical testing. Internal consistency reliability of the Nash Duty to Care scale (Nash, in press) total score and each of the instrument's subscales was first analyzed for the Taiwanese group. Alpha scores calculated in SPSS for the subscales were PR, α =.69; PO, α =.72; PP, α =.39; and CE, α = -.14. The overall total for the 19-item scale, however, was α = .74. Internal consistency reliability of the PCO intrument's (Sharma, 2010) subscales was also calculated in SPSS, which included IND, α = .81; INT, α =.83; POW, α =.76; IEQ, α =.71; RSK, α =.79; AMB, α =.84; MAS, α =.82; GEQ, α =.87; TRD, α =.92; and PRU, α =.84.

Internal consistency reliability of the Nash Duty to Care scale (Nash, in press) total score and each of the instrument's subscales was then analyzed for the American group. Cronbach's alpha was calculated in SPSS for the subscales, which included PR, α =.62; PO, α =.69; PP, α =.82; and CE, α =.75. The overall total for the 19-item scale was α= .82. Internal consistency reliability of the PCO scale (Sharma, 2010) subscales was then calculated for the ANA group which included IND, α = .78; INT, α =.77; POW, α =.78; IEQ, α =.61; RSK, α =.71; AMB, α =.84; MAS, α =.73; GEQ, α =.88; TRD, α =.87; and PRU, α =.81.

Finally, Cronbach's alpha (α) was calculated for the merged SPSS file that contained the combined American and Taiwanese datasets. Alpha scores for the Nash Duty to Care (Nash, in press) subscales were PR, α =.63; PO, α =.68; PP, α =.69; and CE,

α =.46. The overall total for the 19-item scale was α = .78. Internal consistency reliability of the PCO scale (Sharma, 2010) subscales was then calculated. Cronbach's alpha for the ten subscales was IND, α = .78; INT, α =.78; POW, α =.73; IEQ, α =.75; RSK, α =.76; AMB, α =.91; MAS, α =.82; GEQ, α =.88; TRD, α =.89; and PRU, α =.83.

All datasets were assessed carefully for systematic error. Low internal consistency reliability scores among the Taiwanese dataset for duty to care prompted the researcher to recheck coding and run the alpha again to ensure accurate results. However, even after carefully reassessing the dataset, the PP (α =.39) and CE (α = -.14) subscales remained unacceptable. The negative CE score suggests there was a coding error, computer error, or perhaps poorly worded items on this subscale. According to Field (2009), reverse-phrased items can also affect the alpha. The item-total statistics were then assessed in SPSS to determine Cronbach's alpha scores if individual items were deleted from each subscale. It was determined that the alpha score of the PP subscale would increase to α =.67 if the item, "I maintain current knowledge and awareness at all times in preparation for disaster situations," was deleted. Similarly, it was found that the alpha score of the CE subscale would increase to α =.34 if the item, "My employer has sufficient written procedures, policies, and plans in place to handle all types of disaster situations," was removed. While future research focused on instrument revision and refinement will carefully reassess the scale in Chinese (Traditional) and English, these two items in particular must be carefully scrutinized.

***Additional findings*.** The top five Nash Duty to Care (Nash, in press) scores were ranked across the two groups by evaluation of the mean scores. The top highest values (from highest to lowest) among the Taiwanese group on individual items (range 1 to 5)

were first considered: obligation to profession, colleagues, and employer (M = 4.88, SD = 1.23); legal obligation to respond (M = 4.81, SD = 1.77); willingness to report during deteriorating work conditions (M = 4.72, SD = 1.31); willingness to report as long as there was freedom to leave at end of the shift (M = 4.07, SD = 0.80); and morally the right thing to do (M = 4.01; SD = 0.84). All mean scores were well above the midpoint. Subscales were also ranked from highest to lowest according to mean scores: perceived risk (M = 24.11, SD = 4.66), perceived obligation (M = 21.13, SD = 3.77), professional preparedness (M = 12.62, SD = 2.66), and confidence in the employer (M = 8.98, SD = 2.04).

Next, the five highest values among the American group on individual items were considered: obligation to profession, colleagues, and employer (M = 4.49, SD = 0.73); morally the right thing to do (M = 4.41, SD = 0.75); willingness to report during deteriorating work conditions (M = 4.38, SD = 0.86); willingness to respond, even if abandoned by co-workers (M = 3.98, SD = 1.13); and willingness to respond because the *Nursing Code of Ethics* states it is a professional responsibility (M = 3.84, SD = 1.04). All mean scores were again well above the midpoint. Subscales were finally ranked from highest to lowest according to mean scores: perceived risk (M = 24.09, SD = 4.78), perceived obligation (M = 19.17, SD = 3.35), professional preparedness (M = 14.22, SD = 4.06), and confidence in the employer (M = 9.10, SD = 3.35).

It is particularly interesting to note that mean subscale scores for both groups were ranked in the exact same order. The TWNA group had slightly higher mean values on perceived risk and perceived obligation. These results are not surprising, considering that Eastern culture is underpinned by collectivist ideologies, where focus is on the

common good of the group, community, or society at large. In contrast, the American group had slightly higher mean values on professional preparedness. Since Western culture maintains individualist norms, with a focus on activism, power, and self-interests, this finding was also an expectation. Both groups scored within approximately one-tenth of a point on mean values (M = ±0.12) for confidence in the employer, which has a low score and has already been identified as an issue that warrants further inquiry.

The top five ranked PCO (Sharma, 2010) subscale scores across the two groups were also evaluated by scrutiny of the mean scores. The highest values among the Taiwanese group on individual items (range 1 to 7) were first considered: "both men and women can be high achievers" (M = 6.52, SD = 0.79); "men and women can both be the bread winner in the family" (M = 6.49, SD = 0.76); "it is my duty to take care of my family members, whatever it takes" (M = 6.44, SD = 0.84); "men and women can be equally aggressive" (M = 6.38, SD = 0.77); and "family members should stick together, even if they do not agree" (M = 6.33, SD = 0.90). All mean scores were well above the midpoint. The top five subscales were also ranked from highest to lowest according to mean scores: gender equality (GEQ; M = 37.89, SD = 3.96), interdependence (INT; M = 36.34, SD = 4.02), prudence (PRU; M = 32.50, SD = 5.40), ambiguity intolerance (AMB; M = 31.90, SD = 5.88), and independence (IND; M = 31.58, SD = 4.02).

Next, the five highest values among the American group's PCO scale (Sharma, 2010) on individual items were considered: "both men and women can be high achievers" (M = 6.78, SD = 0.48); "women can be as ambitious as men" (M = 6.75, SD = 0.49); "men and women can both be the bread winner in the family' (M = 6.68, SD = 0.80); "men can be as caring as women" (M = 6.60, SD = 0.69); and "men and women

can be equally aggressive" (M = 6.58, SD = 0.72). All mean scores were well above the midpoint. The top five subscales were again ranked from highest to lowest according to mean scores: gender equality (GEQ; M = 40.02, SD = 2.70), interdependence (INT; M = 36.42, SD = 4.28), prudence (PRU; M = 34.67, SD = 4.65), tradition (TRD; M = 31.01, SD = 7.08), and independence (IND; M = 29.92, SD = 6.24).

With regard to ranking of the individual items on the PCO instrument (Sharma, 2010), several interesting findings were observed. "Duty to family" was among the top five items among the Taiwanese group. This finding was parallel with evidence from the scientific literature, which demonstrates that collectivist cultures focus on in-group relationships and not on self-interests (Sharma, 2010). Results from ranking of the individual items on the PCO instrument (Sharma, 2010) among American participants, demonstrated that the lowest mean scores were reported for "getting confused easily when dealing with complex problems" (M = 2.19, SD = 1.19) and "I tend to follow orders without asking any questions" (M = 2.61, SD = 1.41).

The Nash Duty to Care scale total score was calculated for each group. Nurse participants from both the Taiwanese group (M = 66.87, SD = 9.21) and American group (M = 66.43, SE = 11.41) scores were compared. Higher scores on this scale reflects a stronger perceived duty to care in disaster events. Since scores among the two groups were nearly the same, it can be inferred both groups maintain similarities with regard to their perceived duty to care.

Finally, correlations were examined between the total scores and subscale scores of the Nash Duty to Care scale (Nash, in press) and the PCO scale (Sharma, 2010). The Pearson product-moment correlation was examined, which is defined as the measure of

the strength and association that exists between two variables (Field, 2009). Many interesting correlations were found in this research study between the two instruments' scores and demographic variables.

Correlations were first examined between the two instruments. The Nash Duty to Care scale's (Nash, in press) total score maintained a significant, small, positive correlation with the interdependence (r = .20, p = .003) and power (r = .24, p = .000) subscales on the PCO (Sharma, 2010) instrument. Power on the PCO scale (Sharma, 2010) also maintained a significant, small, positive correlation with confidence in the employer (r = .14, p = .039), perceived risk (r = .187, p = .005), and perceived obligation (r = .31, p = .000), three of the four subscales on the Nash Duty to Care scale (Nash, in press). Finally, the perceived obligation subscale on the duty to care instrument maintained a significant, small, positive correlation with power (r = .31, p = .000), ambiguity intolerance (r = .24, p = .000), and masculinity (r = .16, p = .014) on the PCO scale.

Correlations were also observed between demographic variables and the duty to care total score and subscales. For example, there was a significant small to medium, positive correlation between age in years and the number of disaster events nurses had responded to (r = .30, p = .008), professional preparedness (r = .31, p = .000), confidence in the employer (r = .20, p = .003), perceived risk (r = .14, p = .040), and the overall duty to care total score (r = .20, p = .002). Likewise, there was a small, positive correlation between number of people living in the household and perceived obligation to respond (r = .17, p = .05) and the number of disaster events responded to and professional preparedness (r = .33, p = .01).

Discussion

The purpose of this study was to examine duty to care among nurses from two geographic locations where different cultural values are the societal norm: Taiwan and the United States. The study examined different cultural values accepted by Taiwanese and American nurse participants, as well as their perceived duty to report to disaster events at the workplace. Knowledge about these two variables and consideration of the relationship between the two, could possibly bring greater understanding to ethical reasoning and motivation to respond. The first and second phase of the disaster management continuum tested the research hypotheses in this study, while the third phase was considered in light of these findings.

Pre-Incident Phase of the Disaster Management Continuum

The first phase or the pre-incident phase, considered nurses' personal beliefs or personal cultural orientations as an initial step for disaster management planning. Since the WHO and ICN (2009) acknowledge that nurses should identify and minimize risks at the individual level, this step was particularly relevant. The pre-incident phase in this study was tested by evaluation of the cultural values variable. In the first hypothesis, the PCO scale's (Sharma, 2010) subscale scores were examined for differences between the Taiwanese group and the American group using an independent *t*-test ($p<.05$). As hypothesized, Eastern nurse participants demonstrated different cultural values compared to Western nurse participants.

Results from the independent *t*-test paralleled evidence in the scientific literature. Individualistic cultural values prominent among the Western (American) population included desire to work independently; resistance to readily conform to authority figures'

demands (Sharma, 2010); a strong appreciation for self-interests; confrontational, solution-oriented strategies; and placement of individual needs above that of group needs (Ma et al., 2011; Merkin, 2015; Sharma, 2010). In contrast, collectivist values prominent among Eastern (Taiwanese) populations included desire to give priority to in-group demands; willingness to conform to the wishes of authority figures; ability to tolerate ambiguity in the work place (Sharma, 2010); and desire to maintain social obligations, without question (Lin, 2011; Wang & Greenwood, 2015; Yang et al., 2010a). This was particularly evident during the SARS epidemic when despite personal conflicts and the collapse of health care delivery systems (Liu & Liehr, 2009; Shih et al., 2009a), nursing professionals focused on the need of the common good and reported for duty (Liu & Liehr, 2009; Shih et al., 2009a).

Incident Response Phase of the Disaster Management Continuum

The second phase of the disaster management continuum, the incident response phase, considers nurses' immediate actions following requests to report to the workplace. Responding to assigned work roles, amid potentially dangerous and unsafe environmental conditions, is a key consideration in this phase when immediate actions are required to safeguard the public's well-being (WHO & ICN, 2009). The incident phase of the disaster management continuum was tested in this study by the duty to care variable. The second hypothesis explored the Nash Duty to Care scale's (Nash, in press) total score for differences between the Taiwanese group and the American group using an independent *t*-test ($p<.05$). While Eastern nurses' total duty to care score was not significantly different than Western nurses' score, there were some differences among the instrument's subscales.

Results from the independent *t*-test paralleled evidence in the scientific literature. For example, Eastern (Taiwanese) nurses scored higher on the perceived obligation subscale in this study. During the SARS epidemic, perceived obligation among Taiwanese nurses was evident. A repeated measures study of nurses' willingness to report to work by Wu, Lee, and Lin (2012) demonstrated that the onset of a mass-casualty event did not have a major impact on nurses' willingness to report for duty. The majority of nurses who reported they would respond were compelled to maintain their professional obligations. Also, Western nurses (American) scored higher on the professional preparedness subscale in this study. While research was not found that compared professional preparedness across cultures, it was demonstrated that the majority of today's nurses lack professional preparedness competencies to adequately participate in disaster response efforts (Alfred et al., 2015; Evans & Baumberger-Henry, 2014; Twedell, 2009; Wenji et al., 2015).

Finally, one non-significant subscale difference was observed with confidence in the employer (CE). Very low scores suggest that nurse participants from both groups maintained little confidence in their employers. The potential negative repercussions from these poor scores cannot be overstated. During disaster response efforts there is heightened demands for nursing professionals to effectively maintain surge capacity. Nurses' lack of confidence in employers, especially amid hazardous and unsafe work conditions, may result in poor response rates. Therefore, the need for future research on this concept is imperative to support positive public health outcomes.

Post-Incident Phase of the Disaster Management Continuum

While the third phase of the disaster management continuum, the post-incident phase, was not directly tested in this study, it was addressed by examining data collected in the demographic surveys and the Nash Duty to Care Scale (Nash, in press). For example, data from the sample's two demographic surveys provided information about nurse participants' personal readiness for disaster response. Overall, 69.1% of Taiwanese nurses' and 64.0% of American nurses reported they did not have necessary water, food, and emergency supplies available in their homes to sustain life following a disaster event. Likewise, 94.3% of Taiwanese nurses and 92.5% of American nurses did not have a written disaster plan in their home. If nurses do not have basic necessities readily available in their homes to care for themselves and their family members during major disaster events, their willingness or ability to readily respond to the workplace may be hindered.

The demographic surveys also shed light on how the need for nurses' quick response to the workplace during disaster situations could potentially challenge family dynamics. For example, 59.4 % of Taiwanese nurses and 36.0% of American nurses reported that they had childcare, eldercare, or pet care obligations they were not prepared to manage in a disaster event. Also, Taiwanese nurses self-reported that they were definitely not (6.6%), probably not (18.9%), or may not (41.8%) be prepared to manage their absence from home if there were a quarantine at their workplace, compared to American nurses who were definitely not (15.0%), probably not (16.0%), or may not (16.0%) be prepared. Yet, the scientific literature clearly supports that nurses who are personally prepared for disaster situations are more likely to respond to the workplace

when disaster events occur (Arbon et al., 2013; Goodhue et al., 2012; Tichy, Bond, Beckstrand, & Heise, 2009).

Correlations between one demographic variable, age, and the Nash Duty to Care (Nash, in press) total scale and subscales also demonstrated that as age increased in years, the number of events nurses responded to, professional preparedness, confidence in the employer, perceived risk, and overall duty to provide care also increased. Professional preparedness was the only subscale that demonstrated significant differences between mean scores of the TWNA group (M = 12.62, SD = 2.66) and the ANA group (M = 14.22, SD = 4.06). Results from these correlations can shed light on suggestions for disaster response planning. For example, administrators and nurse managers should consider disaster response leadership positions for nurses who have the most experience working during disaster response efforts and who also have adequate professional preparedness, including appropriate disaster nursing education. A positive correlation between the number of disaster events nurses responded to and professional preparedness was also demonstrated, which further supports the need to consider nurses' professional preparedness in disaster response planning.

Similarly, correlations observed between the two study instruments, the Nash Duty to Care Scale (Nash, in press) and the PCO scale (Sharma, 2010), also posed some interesting discussion points. One correlation demonstrated that as POW increased, so did nurses confidence in the employer (CE), perceived risk (PR), and perceived obligation (PO) – three of the four subscales on the duty to care instrument. However, perceived obligation was the only subscale that maintained a significant difference in mean scores among the TWNA group (21.13, SD = 3.78) and the ANA group (M = 19.17, SD = 3.35).

This was also not surprising since Eastern cultural values support maintaining social obligations (Lin, 2011; Wang & Greenwood, 2015; Yang et al., 2010a). Also, the perceived obligation (PO) subscale on the duty to care instrument maintained a positive correlation with INT, POW, ambiguity intolerance (AMB), and masculinity (MAS). It is interesting to note that mean scores for POW, AMB, and MAS were all significantly higher for the TWNA group, similarly associated with typical collectivist societal norms within the scientific literature (Sharma, 2010).

Ultimately, acknowledging and understanding nurses' personal values and personal challenges can help administrators and policy makers make pragmatic adjustments to existing disaster response policies that "assume" nurses will respond to given work roles. These revisions can potentially lead to more valid and reliable disaster management plans and disaster response plans, better nurse response rates, less absenteeism, and improved patient outcomes. Moreover, these potential applications in the field of disaster nursing can begin with simple, open and honest discussions at the workplace. Disaster policy adjustments can also be implemented at little cost and on a global level. Ultimately, these changes can result in a positive effect in the rehabilitation and recovery phase of the disaster management continuum.

Finally, internal consistency reliability on two of the four subscales of the duty to care instrument among the TWNA group were unacceptable, thereby limiting generalizability. These low reliability scores for the Taiwanese group will require further scrutiny. While Cronbach's alpha for the Nash Duty to Care (Nash, in press) total score for both groups was within acceptable limits according to the scientific literature, there were lower alpha subscale scores on the American group compared to findings in the

instrument development manuscript (Nash, in press). However, one must consider that there was a major difference in samples recruited for these two studies. Testing of the Nash Duty to Care scale was among registered nurse students who were enrolled in RN to BS/BSN, MS/MSN, DNP, or PhD programs at three major universities in the United States. Nurse faculty members from the three universities were also included in the sample population. In contrast, this research study recruited an international sample. It is reasonable to discern that the less diverse and more educated sample in the instrument development study may have factored into high reliability scores.

Strengths and Limitations

The primary strength of this study was that it worked toward filling a gap in the scientific nursing literature. To date, there has been no scientific research focused solely on nurses' perceived duty to care in disaster situations, with the exception of the pilot study to test the Nash Duty to Care scale (Nash, in press). This study adds to the existing body of nursing scientific research and highlights the relevance duty to care in disaster situations among nurses in clinical, academic, leadership, and management roles. It also supports the urgent need for future discussion and exploration of the concept of duty to care among nurse scientists and policy makers across the globe. Other strengths include simplicity of the survey; providing nurses with the opportunity to participate at their convenience; the ability to reach potential participants via common electronic communication devices, such as computers, tablets, iPads, and phones; and the ability to collect data from a wide geographic range of participants in a very short period of time

Limitations in this study included threats to internal validity, including experimental mortality (attrition) and instrumentation, and threats to external validity

including social desirability and generalizability. Attrition, or participant drop, occurred prior to study completion. Online surveys are associated with low response rates, typically 30% to 60%, which limit internal validity of the survey results (Portney & Watkins, 2015). Oversampling, a small incentive (gift card), "thank you" messages, and study updates incorporated in the research plan helped to control this threat and recruit and engage study participants.

Likewise, control was exerted by collecting and reporting demographics (age, race, gender, etc.) on those participants who completed the survey. It is important to point out that a significant participant surge was observed among TWNA members (n = 418) over a three day period. While larger sample sizes foster statistical conclusion validity, the unequal group sample sizes (TWNA, n = 521; ANA, n = 137) did not support hypothesis testing. Therefore, comparisons of the demographics across 3 selected groups (2 random groups) were compared to the entire TWNA dataset (n = 521). This helped support the selection of the 137 participant member random sample chosen from the TWNA total dataset for hypothesis testing. Demographics of participants who dropped out could not be reported, since the demographic surveys were positioned at the end of the online study.

Instrumentation was another threat to internal validity, since there was potential for inconsistency in the translation of study documents (introductory letter/consent form, written invitation, and survey instruments) from English to Chinese and inconsistency in the delivery of these surveys to nurse participants across the two groups. While all datasets were carefully assessed for systematic error, internal consistency reliability was particularly concerning for two subscale scores on the Nash Duty to Care (Nash, in press)

scale among the TWNA group: PP (α =.39) and CE (α = -.14). Since these Cronbach's alpha scores were unacceptable, these subscales cannot be used to assess comparisons between the TWNA group and the ANA group and do not support the ability to generalize findings. Moreover, since this affected two of the four subscales on the duty to care scale, extreme caution must be used with generalizing the research findings of the total score on the instrument. Control of this threat included translation and back-translation of the written study surveys by professional translators native to Taiwan and China and instructions provided by the PI prior to invitation distribution.

Social desirability was a threat to external validity, since nurse participants were queried about placing their own needs above patient and community needs, which may have elicited responses that were not honest. While self-report surveys are a common method to gain knowledge about participants' beliefs, they also rely on the accuracy of participants' subjective accounts (Portney & Watkins, 2015). Participants may have self-reported what they think they should have said, rather than what they would actually do or actually believed. To exert control over this threat the researcher informed participants in the introductory letter that there were no "right or wrong" answers and that honest or truthful responses were best, assuring everyone that anonymity would be maintained and that organizations and employers would not have access to survey results. Nursing faculty with expertise in Taiwanese culture were also consulted to ensure the Taiwanese introductory letter/informed consent reflected culturally competent verbiage to additionally exert control.

Generalizability was also a threat to external validity, since the sample may not be representative of the general nursing population. While recruitment from two different

cultures and countries helped support generalizability, there are still many other cultures and geographic locations worldwide that were not considered. Likewise, all phases or concepts of the conceptual framework, the disaster management continuum, were not tested and resulted in a partially tested model. Although this threat was recognized, the conceptual framework was still utilized since it was the best fit for the study. Control was exerted through a thorough analysis and discussion of the sample's demographics, compared to the general (national and global) population; discussion of homogeneity of the sample; and discussion of the statistical findings with regard to the limitations of the sample and its effects on generalizability.

Future Recommendations

Nurses are acknowledged as essential caregivers in disaster or mass-casualty events (Adams & Berry, 2012; Yamamoto, 2013; Yan et al., 2015), yet there are few research studies that have focused attention on the personal, professional, ethical, or cultural effects on their decision making process for disaster response. While evidence from this study identified that there were many significant cultural differences between the Taiwanese group and American group of nurse participants, scientific research has yet to explore how these differences affect professional partnerships between nurses during international response efforts. This is particularly important since globalization has necessitated collaboration across boarders during major disaster events. While this study introduced a new discussion point in the specialty area of disaster nursing, future research should focus on international research collaborations among nurses, to identify culturally competent actions that can promote understanding and improved working

partnerships and environments for nurses when they are required to work in uncertain or demanding conditions.

Duty to care is a concept that many nurses struggle with when called to work during disasters or catastrophic events (Adams & Berry, 2012; ANA, 2010; Arbon et al., 2013; Godderis & Rossiter, 2013; Strangeland, 2010), yet little research has focused on this important nursing concept. During disasters nurses are exposed to increased risks of morbidity and mortality, and faced with a variety of personal and professional obligations that can impede their ability and willingness to respond to the workplace (Godderis & Rossiter, 2013). Yet, most disaster preparedness plans, disaster mitigation plans, and disaster management plans are structured with the assumption that nurses will respond to their given roles (WHO & ICN, 2009), and give little or no consideration to nurses' needs at the individual level to meet employer demands. This approach to disaster management planning needs further consideration, especially since nurses are the health care professionals in highest demand during disasters.

Future research should include collaboration among nurse administrators, nurse managers, nurse educators, and nurse policy makers on an international level, to consider proactive work strategies to support nurses' personal, professional, social, ethical, and cultural needs during disaster response efforts. Nurse managers should learn about nurses' preparedness on the individual level, especially with regard to personal obligations that can affect their ability and willingness to take action. Knowledge of nurses' personal, professional, and ethical challenges before they are assigned roles as a key players in disaster management plans is essential. Likewise, health care administrators and policy makers must incorporate scientific nursing evidence within

disaster preparedness plans and disaster management plans, to ensure they are pragmatic, valid, reliable, and support positive public health outcomes.

Finally, one additional future recommendation is further revision of the Nash Duty to Care (Nash, in press) scale for disaster response. Major problems encountered in this study occurred primarily with the Chinese (Traditional) version of the duty to care instrument. While a great deal of insight was gleaned from this research, challenges such as poor internal consistency reliability limited the researcher's ability to generalize findings. Follow-up research has already been planned to include retesting the Taiwanese version of the instrument after translation is reevaluated and revisions are made. The TWNA online survey, which remains active, currently has 825+ participants that will serve as the study sample. A faculty member with insight into the language and expertise in data analysis has agreed to serve on the research team. Future research to revise and retest the Taiwanese version of the Nash Duty to Care Scale will also encourage collaboration with nurse scientists on an international level and further advance the discussion about duty to care for disaster response.

Summary

Overall, very little is known about nurses' perceived duty to provide care when disaster or mass-casualty situations arise (ANA, 2010; Johnstone & Turale, 2014; Strangeland, 2010). While it is unclear when or where the next catastrophic event will occur, there is no doubt that the world will continue to be confronted with ongoing natural and human-induced disasters. Although many employers maintain the expectation that nurses will serve as essential responders in disaster management plans (Adams & Berry, 2012; Yamamoto, 2013; Yan et al., 2015), nurses worldwide maintain a

variety of personal characteristics, professional challenges, and social obligations that can affect their decision to report for duty during disaster situations (Adams & Berry, 2012; ANA, 2010; Arbon et al., 2013).

While the concept of nurses' duty to care already represents wide gap in U.S. emergency and disaster response systems (ANA, 2010), assessment of this concept across cultures remains unexplored. Cross-cultural research is crucial, since current forces of globalization require nurses from different geographic locations and cultures to work together as team members during emergency, disaster, and mass-casualty response efforts (Alfred et al., 2013; Bournes & Ferguson-Paré, 2005). Moreover, understanding how nurses from different cultures perceive duty to care is critical to the development of culturally competent disaster management plans, not only to minimize absenteeism, strengthen workplace sustainability, and support positive public health outcomes, but also to assist nurses' with maintaining their personal and professional needs when they are in greatest demand.

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Chapter Five

Summary and Conclusion

This program of research began with a focus and interest on nurses' personal preparedness for disaster response. The concept of duty to care was subsequently considered, followed by an examination of how cultural values affect duty to care across an international nursing sample. While initial review of the scientific literature provided evidence that personal preparedness affected nurses' perceived readiness to respond to the workplace (Arbon et al., 2013b; Goodhue et al., 2012; Tichy, Bond, Beckstrand, & Heise, 2009), no scientific research focused exclusively on this important nursing concept. To help bridge this gap in the nursing literature an exploration of the concept of personal preparedness was examined in a research study, titled *Unveiling the Truth about Nurses' Personal Preparedness for Disaster Response: A Pilot Study* (Nash, 2015), the first manuscript in this dissertation portfolio.

Overall, descriptive statistics from the online pre-test, post-test personal preparedness education intervention study demonstrated that although the majority of nurse participants had some previous disaster nursing education, a significant percentage did not possess a variety of common household survival supplies to care for family members, pets, and self during disaster events. Parametric statistical analyses confirmed a significant improvement in nurses' perceived preparedness after an education intervention, especially among participants who had dependent care responsibilities. It

was also demonstrated that the majority of nurse participants changed their perception about the relevance of personal disaster preparedness following the intervention.

While these results supported encouraging findings, ultimately few participants reported feeling confident to handle the first 72 hours following a disaster situation. Considering the relevance of nurses' disaster preparedness to public health outcomes (Adams & Berry, 2012; Al Khalaileh, Bond, & Alasad, 2012; Goodhue et al., 2012; Melnikov, Itzhaki, & Kagan, 2014), further review of the scientific disaster nursing literature was explored. Evidence indicated that many nurses struggled with the decision to report to the workplace when disasters events occurred (Adams & Berry, 2012; ANA, 2010; Arbon et al., 2013a; Grimaldi, 2007; Iserson et al., 2008; Malm et al., 2008; Twedell, 2009), however, no instrument was found to measure nurses' perceived duty to care for disaster events. The second manuscript, *Development, Testing, and Psychometric Qualities of the Nash Duty to Care Scale for Disaster Response* (Nash, in press) aimed to bridge this second gap in the scientific literature.

Overall, statistical analyses and results from the second manuscript maintained that the Nash Duty to Care scale (Nash, in press) was a psychometrically sound, reliable instrument. However, one limitation of the study was a small sample size. Reevaluation was recommended across a broader, more culturally diverse nursing population. The third manuscript, *East Meets West: Cultural Values and Duty to Care for Disaster Response*, addressed this limitation, by measuring nurses' perceived duty to care on across two countries – Taiwan and the United States. The effects of *cultural values* were similarly evaluated, not only because nurses from different cultures must form

professional alliances during major disaster response efforts (Alfred et al., 2013; Giarratano, G., Savage, Barcelona-deMendoza, & Harville, 2014), but also since nurses from Taiwan and the US maintain different cultural values. This was the first study to consider the concept of duty to care on an international level. Results demonstrated that while many nurses maintained cultural values traditional to their country of origin, the difference in duty to care across both countries was not significant. While a universal characterization of perceived duty to care could not be discerned because of unacceptable internal consistency reliability on two of the four subscale scores among the TWNA group (professional preparedness and confidence in the employer), follow-up research is already planned to reevaluate, revise, and refine the instrument in Chinese (Traditional).

Scientific studies in this program of research maintained some limitations, such as threats to internal validity and external validity. Therefore, it is important for scientific inquiry to further explore the concepts of nurses' disaster preparedness and perceived duty to care for disaster response. Future research efforts should focus on expanding the international sample to include nurses from multiple countries, to potentially identify a universal characterization of perceived duty to care that can inform future disaster management planning efforts worldwide.

In conclusion, the pertinence and legitimacy of this developing program of research cannot be overstated, as scientific evidence provided in this dissertation portfolio demonstrated that disaster preparedness and duty to care for disaster response can be linked to public health outcomes. Since nurses maintain the coveted status as the world's most trusted and relied upon health care providers, their trepidation to provide care during disaster events requires timely attention. The research in this portfolio serves as a

starting point to bring greater awareness to this unexplored concept. The manuscripts in Chapter 2 and Chapter 3 were accepted for publication in peer-reviewed scientific nursing journals. These publications aim to prompt discussions about the personal, professional, social, and ethical challenges at the workplace during disaster events. Likewise, findings from all three manuscripts in this portfolio support the need to recruit and maintain nursing professionals with disaster nursing expertise in future disaster management planning efforts.

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Appendix A. International Council of Nurses, Code of Ethics for Nurses

"1. Nurses and people: The nurse's primary professional responsibility is to people requiring nursing care.

In providing care, the nurse promotes an environment in which the human rights, values, customs and spiritual beliefs of the individual, family and community are respected.

The nurse ensures that the individual receives sufficient information on which to base consent for care and related treatment.

The nurse holds in confidence personal information and uses judgement in sharing this information.

The nurse shares with society the responsibility for initiating and supporting action to meet the health and social needs of the public, in particular those of vulnerable populations.

The nurse also shares responsibility to sustain and protect the natural environment from depletion, pollution, degradation and destruction.

2. Nurses and practice: The nurse carries personal responsibility and accountability for nursing practice, and for maintaining competence by continual learning.

The nurse maintains a standard of personal health such that the ability to provide care is not compromised.

The nurse uses judgement regarding individual competence when accepting and delegating responsibility.

The nurse at all times maintains standards of personal conduct which reflect well on the profession and enhance public confidence**.**

The nurse, in providing care, ensures that use of technology and scientific advances are compatible with the safety, dignity and rights of people.

3. Nurses and the profession: The nurse assumes the major role in determining and implementing acceptable standards of clinical nursing practice, management, research and education.

The nurse is active in developing a core of research-based professional knowledge.

The nurse, acting through the professional organization, participates in creating and maintaining equitable social and economic working conditions in nursing.

4. Nurses and co-workers: The nurse sustains a co-operative relationship with co-workers in nursing and other fields.
The nurse takes appropriate action to safeguard individuals when their care is endangered by a co-worker or any other person" (ICN, 2012, pp. 2-3).

Appendix B. The Disaster Management Continuum

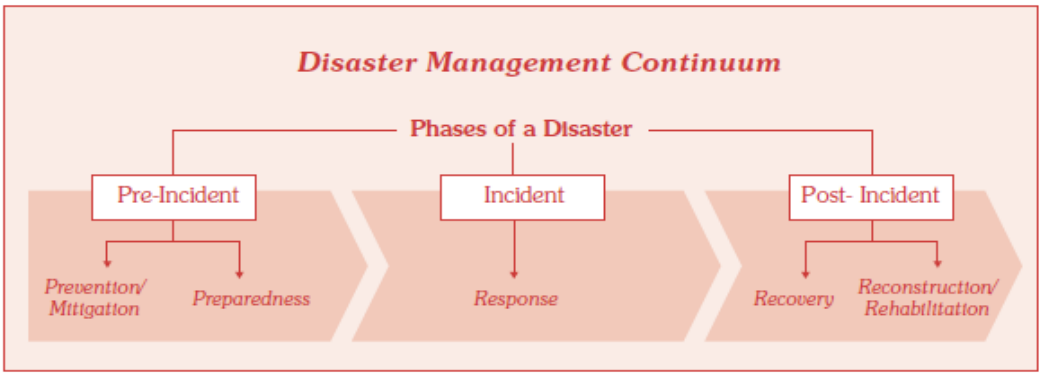


Figure 1. Disaster Management Continuum (WHO & ICN, 2009)

Appendix C. Personal Cultural Orientation (PCO) Scale

(Chinese Traditional and English)

In the second section, we would like to know about your general attitudes towards yourself and others.
在第二部份，我們想要了解你對個人及其他人的看法。

Please read each statement below. Indicate the degree to which you disagree or agree (1 = strongly disagree to 7 = strongly agree) with each statement.
請閱讀以下的每個句子。請表示你對各句子的同意或同意程度 (1= 非常不同意 7= 非常同意)

I would rather depend on myself than others.
我寧願依賴自己也不願依賴他人。

My personal identity, independent of others, is important to me.
自我個性不受他人影響，對我是重要的。

I rely on myself most of the time, rarely on others.
大部份時間我都是靠自己，很少會依賴他人。

It is important that I do my job better than others.
把工作做得比他人更好，對我是重要的。

I enjoy being unique and different from others in many respects.
我很享受在許多方面有個人特色和與眾不同之處。

I often do 'my own thing'.
我經常做自己。

The well-being of my group members is important for me.
我組員的利益，對我是重要的。

I feel good when I cooperate with my group members.
與我的組員合作時，我會感到開心。

It is my duty to take care of my family members, whatever it takes.
無論要付出任何代價，我都有責任去照顧我的家人。

Family members should stick together, even if they do not agree.
即使彼此意見不同，家人也應凝聚一起。
I enjoy spending time with my group members.
我享受與我組員一起的時間。

We must respect the views of our group members.
我們必須尊重我們組員的意見。

I easily conform to the wishes of someone in a higher position than mine.
我容易接受比我職位高的人的意見。

It is difficult for me to refuse a request if someone senior asks me.
對於比我職位高的人的要求，我很難拒絕。

I tend to follow orders without asking any questions.
我傾向聽從指示，並對指示不做出質疑。

I find it hard to disagree with authority figures.
對權威人仕提出異議，我感到困難。

I have respect for people in higher positions.
我尊重職位較高的人士。

A person's social status reflects his or her place in the society.
一個人的社會地位反映他在社會上的位置。

It is important for everyone to know their rightful place in the society.
認識自己在社會裡的正確位置，對每個人都是重要的。

It is difficult for people from different social status to interact with each other.
不同社會地位的人士互相來往，是有困難的。

Unequal treatment for different people is a fact of life.
在現實生活中，不同的人是會獲得不同的對待。

I believe some people have an advantage over others in every society.
我相信在任何社會，總有些人比其他人優勝。

I tend to avoid talking to strangers.
我會避免與陌生人交談。

I prefer a routine way of life to an unpredictable one full of change.
我寧願過有規律的生活，也不願生活充滿變化而難以預計。

I would not describe myself as a risk-taker.
我不會認為自己為冒險者。

I do not like taking too many chances to avoid making a mistake.
為了避免出錯，我不喜歡冒險。

I am very cautious about how I spend my money.
對於如何花費自己的金錢，我是非常小心。

I am seldom the first person to try anything new.
我很少會是第一個去嘗試新事物。

I find it difficult to function without clear directions and instructions.
沒有清晰方向及指示，我會感到難以運作。

I prefer specific instructions to broad guidelines.
我喜歡具體的指示多於概括的指引。

I tend to get anxious easily when I don't know an outcome.
當我不知道結果時，我會容易變得焦慮。

I feel stressful when I cannot predict consequences.
當我不能估計後果時，我會感覺緊張。

I feel safe when I am in my familiar surroundings.
在我熟悉的環境裡，我會感到安全。

I get confused easily when dealing with complex problems.
當處理複雜的問題時，我會容易感到困惑。

Q8. Women are generally more caring than men.
女性普遍比男性懂關心。

Men are generally physically stronger than women.
男性普遍比女性體質上強壯。

Men are generally more ambitious than women.
男性普遍比女性有野心。

Women are generally more modest than men.
女性普遍比男性謙虛。

Men are generally more logical than women.
男性普遍比女性有邏輯。

Men are generally more aggressive than women.
男性普遍比女性有幹勁。

It is ok for men to be emotional sometimes.
男性有時感性些是可以接受的。

Men and women can both be the bread winner in a family.
男性及女性均可成為家庭的經濟支柱。

Men can be as caring as women.
男性可以像女性般懂得關心。

Women can be as ambitious as men.
女性可以像男性般有野心。

Men and women can be equally aggressive.
男性可以與女性同樣有幹勁。

Both men and women can be high achievers.
男性及女性均可以是高成就者。

I am concerned about loss of traditional values.
我擔心傳統價值會消失。

Respect for tradition is important for me.
尊重傳統對我是重要的。

I value my family history.
我珍惜我家族的歷史。

Traditional values are important for me.
傳統價值對我是重要的。

I care a lot about my family history.
我非常關心我家族的歷史。

I am quite concerned about protecting my family heritage.
我非常關心如何保護我家的傳統。

I believe in planning for the long term.
我相信長遠計劃。

I work hard for success in the future.
我為日後成功而努力工作。

I am willing to give up today's fun for success in the future.
我會為明日的成就放棄今日的玩樂。

I do not give up easily even if I do not succeed on my first attempt.
即使第一次嘗試失敗，我也不會輕言放棄。

I plan everything carefully.
我計劃任何事情，都非常小心。

I consider many alternatives before making any decision.
在作出任何決定之前，我會先考慮很多選擇。

Subscales: Item # 1 – 6: Independence (IND)
7 – 12: Interdependence (INT)
13 – 17: Power (POW)
18 – 22: Social Inequality (IEQ)
23 – 28: Risk Aversion (RSK)
29 – 34: Ambiguity Intolerance (AMB)
35 – 40: Masculinity (MAS)
41 – 46: Gender Equality (GEQ)
47 – 52: Tradition (TRD)
53 – 58: Prudence (PRU)

Appendix D. Nash Duty to Care Scale (Chinese Traditional and English)

In the first section, we would like to know your honest feelings about responding to your workplace during a disaster or mass-casualty situation. If you are currently unemployed, please share with us your most recent work experience.
在第一部分，我們想知道您對於災難或大量傷患事件爆發時要求您到工作單位待命一事的真實看法。如果您目前處於失業狀態，請與我們分享您最近的工作經驗。

Please read each statement below. Indicate the degree to which you disagree or agree (1 = strongly disagree to 5 = strongly agree) with each statement.
請閱讀以下每個陳述。請表明您對每個陳述的反對或同意程度（1 =非常不同意，5 = 非常同意）。

I have sufficient professional experiences to practice nursing safely in a wide range of disaster settings.
我有足夠專業經驗在大範圍的災難場所中安全地執行照護工作。

I ***do not*** have the ability to manage different types of disaster situations in a variety of disaster settings.
我沒有能力去管理各種災難場所中的不同型態的災難情境。

I have sufficient disaster nursing education to practice nursing safely in response to a wide range of disaster events.
我接受了足夠的災難護理教育，能夠應對眾多型態的災難事件，安全地執行照護工作。

I maintain current disaster knowledge and awareness at all times in preparation for disaster situations.
我堅持學習最新的災難知識並且保持應災意識，為應對災難情境做好準備。

My work environment will likely become chaotic during a disaster or mass-casualty event.
我的工作環境在遇到災難或大量傷患事件時，可能會陷入混亂。

My employer has sufficient written procedures, policies, and plans in place to handle all types of disaster situations.
我的雇主有齊全的書面流程、政策和計劃以應對各種型態的災難情境。

My workplace ***will not*** maintain adequate staffing during a disaster or mass-casualty event.
我的工作場所沒有充足的人手以應付災難或大量傷患事件。

Please consider the following scenario: There is a major disaster event with mass-casualties near your place of employment. You are contacted by your employer and asked to report to work, not knowing what has caused the event or where your services will be utilized in the disaster response efforts.
請思考下述情境：在您的就業地點附近爆發了導致大量傷患生成的重大災難事件。您的雇主聯絡您並要求您到崗，此時事件起因不詳，您亦不知道自己將在救災工作中扮演什麼角色。

Read each statement below. Indicate the degree to which you disagree or agree (1=strongly disagree to 5=strongly agree) with each statement for the disaster scenario.
閱讀以下每個陳述。請表明您對關於此災難情境的每個陳述的反對或同意程度（1 =非常不同意，5 = 非常同意）。

I will report to work, even of conditions begin to deteriorate quickly.
即使險情迅速惡化，我也會到工作單位報到。

I will report to work because of my obligation to my profession, colleagues, and employer.基於對職業、同事和雇主的義務，我會到工作單位報到崗。

I will report to my workplace because I am legally obligated to respond.
基於法定義務，我會前往工作場所報到。

I ***will not*** respond if I have existing family responsibilities or obligations that require my attention.
如果當前存在需要我關注的家庭責任或義務，我不會響應。

I will report to work if my employer *lacks* sufficient personal protective equipment to maintain my safety.
即使我的雇主沒有提供*足夠*的個人防護設備來維護我的安全，我也會到工作單位報到。

I will report to work because the *Nursing Code of Ethics* states it is my professional responsibility to respond.
我會到工作單位報到，因為護理道德規範規定我的職業要求我履行此等責任。

I will report my workplace if I am at *high risk* for exposure to pathogens and/or toxins.
即使存在與病原體和/或毒素接觸的高風險，我也會前往工作場所報到。

I ***will not*** respond if my family or significant others are at *high risk* for exposure to pathogens and/or toxins.
如果我的家人或其他重要之人存在與於病原體和/或毒素接觸的高風險，我不會響應。

I will report to work, even if I fear I will be abandoned by my co-workers.
我會工作單位報到，即使我害怕自己會被同事們拋棄。

I will report to work because it is morally the 'right thing to do.'
我會工作單位報到，因為這樣做在道德上屬於「正確的事」。

I ***will not*** respond if my employer *lacks* communication equipment for me to maintain contact with my family or significant others.
如果我的雇主不能提供足夠的通訊設備以供我與我的家人或其他重要之人保持聯絡，我不會響應。

I will report to work if I maintain the freedom to leave at the end of my assigned shift.
如果我能在分配給我的班次結束時自由離開，我會工作單位報到。

Have you practiced nursing in response to a disaster event?
你的護理實務曾經因應過災難事件?

- ❍ No 沒有
- ❍ Yes 有

Q36. How many events have you responded to? 你因應幾次災難事件照護?

Q37. What type of disaster(s) have you responded to? 您曾經應付過哪些形態的災難？

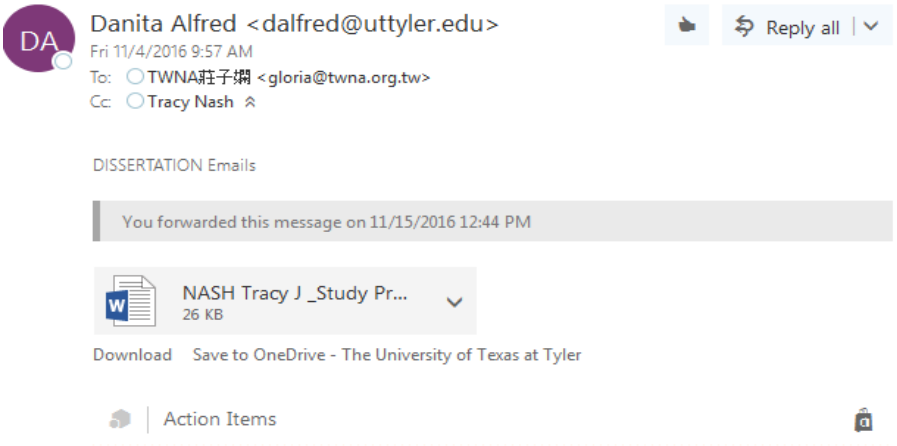
- ❍ Natural disaster 自然災難
- ❍ Man-made disaster 人為災難
- ❍ Both 兩者皆有

It is important for us learn about your disaster response experience(s) to help inform future disaster nursing policies. If you are comfortable sharing, would you please briefly describe your experience(s) with us? Your time and willingness to share is greatly appreciated
瞭解您的災難響應經歷對於我們制定未來的災難護理政策具有重要的價值。如果您願意，可否請您簡要地與我們分享您的經歷？非常感謝您的支持與分享_____

_____

Appendix E. Permission to Access TWNA Members

Request:



Dear Ms. Chuang,

We appreciate your consultation on our behalf and look forward to your response. I am attaching a copy of the study summary in case you or other decision makers require more information.

Please let me know if I can provide any additional information. We are excited for this potential opportunity to collaborate with you.

Kind regards,
Danita Alfred, Study Advisor

Danita Alfred, PhD, RN
Professor, School of Nursing
The University of Texas at Tyler
3900 University Blvd.
Tyler. TX 75799

Phone: 903 566-7019
Fax: 903 565-5533
Email: dalfred@uttyler.edu

Response:

From: TWNA莊子嫻 [mailto:gloria@twna.org.tw]
Sent: Friday, November 04, 2016 7:14 AM
To: Danita Alfred <dalfred@uttyler.edu>
Cc: 11陳淑芬秘書長 <sfchen@twna.org.tw>; 'TWNA何依臻' <monica@twna.org.tw>
Subject: Regarding deploying the survey in the TWNA website

Dear Dr. Aflred,
Thank you for your inquiry about deploying the survey on *nurses' duty to care during disaster events* launched by your Taiwanese student in the TWNA website. Since we haven't done that before, please allow me to check the possibility after I consult with the decision maker. Thank you very much for your patience.

敬祝　平安　喜樂！
Best Regards,
Gloria 子嫻　敬上
****
Gloria Chuang 莊子嫻組長
Section Chief, International Affairs Division
Taiwan Nurses Association
Tel: +8862-2755-2291 ext 22
Fax: +8862-2325-8652
Email: gloria@twna.org.tw
Add: 4F, 281, Xin-Yi Road Sec. 4, Taipei 10681, Taiwan
10681 臺北市大安區信義路四段 281 號四樓
****

Follow-up Response:

From: TWNA莊子嫻 [mailto:gloria@twna.org.tw]
Sent: Friday, November 18, 2016 5:01 PM
To: Danita Alfred <dalfred@uttyler.edu>
Cc: 11陳淑芬秘書長 <sfchen@twna.org.tw>; 'TWNA何依臻' <monica@twna.org.tw>
Subject: RE: Regarding deploying the survey in the TWNA website

Dear Dr. Alfred
I am pleased to let you know, yes, we are able to help with the survey on nurses' duty to care during disaster events launched by your Taiwanese student in the TWNA website. However, the TWNA Board requests that you could share with us the results of this survey.

I am not quite sure how to help with this matter? Could you please have this Taiwanese student contact me by my email or call me anytime next week during the office hour from 9 am to 6 pm if possible. Furthermore, it would be greatly appreciative if you could also let me know how the ANA help with this matter. Thank you very much and look forward to your any further information.

敬祝　平安　喜樂！
Best Regards,
Gloria 子嫻　敬上
****
Gloria Chuang 莊子嫻組長
Section Chief, International Affairs Division

Taiwan Nurses Association
Tel: +8862-2755-2291 ext 22
Fax: +8862-2325-8652
Email: gloria@twna.org.tw
Add: 4F, 281, Xin-Yi Road Sec. 4, Taipei 10681, Taiwan
10681 臺北市大安區信義路四段 281 號四樓
****

Appendix F. Permission to Recruit ANA Members

Request:

June 15, 2016
Jaime Murphy Dawson, MPH
Program Director,
Department of Nursing Practice and Work Environment
American Nurses Association
8515 Georgia Avenue
Silver Spring, MD 20910

Dear Ms. Dawson,

My name is Tracy Jeanne Nash and I am currently a PhD candidate at The University of Texas at Tyler, College of Nursing and Health Sciences. I am a member of the American Nurses Association (ANA) who is looking to speak with someone regarding my future dissertation research. I received your name and address from Melody Seitz, RN, PhD(c), a fellow ANA member and student in my program. She said that you would be willing to speak with me about potentially accessing an ANA listserv. If I understood Melody correctly, you mentioned to her that Sharon Morgan is responsible for this, but is new and that you asked to be kept in the communication loop; therefore, I am contacting you first.

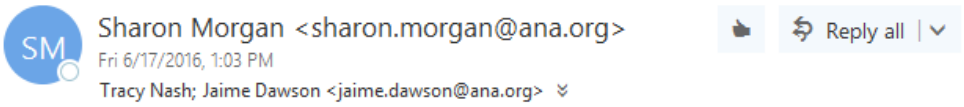
Focus for my dissertation research will be disaster preparedness and response, a topic that the American Nurses Association has addressed in many publications. Understanding that many nurses struggle with the decision to respond to disaster situations, I developed the Nash Duty to Care scale, which was reviewed by a panel of six nurse experts and is currently being piloted in the United States. After results are analyzed and revisions are made, my plan is to use this new instrument in my dissertation research. My goal is to carry out a descriptive comparative study to examine licensed nurses' duty to care among two different populations – nurses in the United States and nurses in Taiwan.

I am writing to you to discuss whether or not it would be possible to have access to an ANA listserv. I will be recruiting licensed nurse participants. Previous disaster nursing experience is not required. I realize that planning ahead of time is crucial to success and thought this would be an appropriate time to reach out and get some feedback. Also, I would like to learn what cost would be involved with this process. I hope to begin data collection this September, after I defend my proposal.

Thank you so very much for your time, attention, and consideration. I look forward to hearing your thoughts.

Respectfully,
Tracy Jeanne Nash, RN, PhD(c)
8437 Pointe Rd.
Park City, UT 84098
Phone: (719) 210-7524
Email: tnash6@patriots.uttyler.edu

Response:



Dear Tracy,

Congratulations on your doctoral candidacy. Nurse preparedness during disasters is only part of the issue; as your research direction indicates, a nurse's duty to care during dangerous and unpredictable events is also a key element to consider. I wish you luck and look forward to your results.

The ANA supports and promotes nursing research which is a core element of the *Nursing: Scope and Standards of Practice*, and is critical to the advancement of professional nursing practice. To be included in ANA communications, or on the ANA website, the study must be IRB approved and you must provide a link to your own survey or study site. Once you have received IRB approval and have your electronic link established, please submit a formal request including:

a. Principle Investigator credentials (by CV submission or similar)

b. Proposal summary description including duration of the study

c. Documentation of IRB approval

d. Electronic link to study survey/site

Once ANA approval has been obtained, please forward a description of your study and request to potential participants, along with the electronic link. ANA will post the link to ANA's NursingWorld website for the duration of the study. This will allow members to access and participate at their discretion. At the end of the study period, the link will be removed.

Please note, ANA does not provide member contact information. We will push your request out through our many state, organizational and other listservs. When you are ready to make the formal request to ANA, please contact me and I can facilitate your request. Please let me know if you have any other questions at this time.

Sharon A. Morgan
MSN, RN, NP-C
Senior Policy Advisor
Nursing Practice & Work Environment
American Nurses Association
PH: (301) 628-5063
Cell: (240) 461-1603
sharon.morgan@ana.org

Appendix G. Chinese Traditional Study Recruitment Invitation

請幫助護理同仁！

諸位護士同仁：

我的名字是 Tracy Jeanne Nash，目前是美國德州大學泰勒分校 (University of Texas at Tyler) 護理與健康科學學院的博士生。我在此邀請您參加一個簡短的匿名調查，完成此項調查需要佔用您大約 15 至 20 分鐘的時間。本次研究的目的是瞭解文化價值觀對於護理人員在災難或大量傷患事件期間工作上提供護理之義務一事的認知影響。我在執行本次研究的過程中得到了台灣護理學會以及國立成功大學護理學院/聯合健康科學研究所的副教授許玉雲博士的協助。
20 歲及以上、具有台灣執業許可證、有願意且能夠使用電腦男、女性護理人員有資格參加本次研究。本研究調查獲得德州大學泰勒分校人體研究倫理審查委員會（IRB# F2016-25，2016 年 10 月 30 日）的批准。您提供的所有資料將被保密，只有相關研究員和論文主席才能查看資料。研究結果書面資料將於 2017 年 9 月之前與台灣護理學會分享。填妥調查之後，請輸入了自己的電子郵箱地址者，將有機會贏得禮品卡，獲獎者隨機抽取，共計十名。是否提供電子郵箱地址完全由您自行決定，電子郵箱地址不會以任何方式與回覆相關聯。填寫本調查即表明您知情並且同意參與本次研究。

當您準備開始填寫時，請點擊下面的連結。

連結：https://uttyler.az1.qualtrics.com/SE/?SID=SV_a4UW8wYr3lZkwSx

非常感謝您抽時間填寫本調查支持我們的工作。

祝 工作順利

Tracy Jeanne Nash，註冊護士，博士 (c)
護理學院
德克薩斯大學泰勒分校
美國德克薩斯州泰勒
tnash6@patriots.uttyler.edu
電話：002-1-719-210-7524

許玉雲 (Yu-Yun Alice Hsu)，博士、護理師
副教授
護理學系/健康照護科學研究所
國立成功大學醫學院地址：1 University Road, Tainan, 70101, Taiwan
地址：成功大學醫學院護理學系台南市大學路一號
電話：+886-6-2353535 分機號 5036 / 傳真：+886-6-2377550

Appendix H. English Study Recruitment Invitation

Please Help a Fellow Nurse Colleague!

Dear Nurse Colleague,

My name is Tracy Jeanne Nash and I am a PhD Candidate at the University of Texas at Tyler, College of Nursing and Health Sciences in Tyler, Texas. I am requesting your participation in a brief, anonymous survey that will take approximately 20 minutes of your time. The purpose of this survey is to learn how cultural values effect nurses' perceived duty to provide care during disaster or mass-casualty situations at the workplace. Male and female registered nurses (RNs) and advanced practice registered nurses (APRNs) who are 18 years or older; licensed to practice in the US; able to read, write, and speak English; and willing, able, and have access to a computer are eligible participate. This study survey is approved by The University of Texas at Tyler Institutionl Review Board (IRB# F2016-25, October 30, 2016) and will remain open for the months of Ocober, 2016 to December, 2016. Your participation in this research is very important, as it represents the views and experiences of American nurses. All information you provide will be kept secure and will only be viewed by the researcher and dissertation Chair. Gift cards will be randomly awarded to ten participants who enter their email address at the completion of the survey. Providing an email address address is strictly voluntary and email addresses will not be linked with responses in any way. Completion of this survey implies your informed consent.

Please click on the link below when you are ready to begin.

Survey link: https://uttyler.az1.qualtrics.com/SE/?SID=SV_1B2NIehAgc8RijX

Thank you so much for your time, consideration, and support!

With much gratitude,

Tracy Jeanne Nash, RN, PhD(c)
tnash6@patriots.uttyler.edu
(719) 210-7524

Appendix I. Timeline of Recruitment and Proposed Research

The study has an anticipated timeline of approximately 8 months from start to finish.

- Defend research proposal and make required changes by mid-October, 2016
- Submit research proposal to UT Tyler IRB by mid/late October, 2016
- Gain IRB approval by late October, 2016 (UT Tyler, IRB)
- Submit request materials to ANA after IRB approval received.
- Submit request materials to Taiwan Nurses Association (TWNA) after IRB approval received.
- Gain approval/begin recruitment/data collection from ANA by November, 2016
- Begin recruitment/data from American nurse participants from November to December 31, 2016
- Translate all surveys from English to Traditional Chinese for Taiwanese nurse participants
- Gain approval and begin recruitment/data collection in Taiwan in January 2017 to February 28, 2017
- Work on dissertation portfolio (through March, 2017)
- Report findings and write results section through March, 2017
- Present findings March, 2017

Appendix J. Chinese Introductory Letter/Informed Consent

文化價值觀對於台灣護理人員的災難照護義務的影響

諸位護士同仁：

我們邀請您參加一項研究，這項研究旨在瞭解您就身為護理人員在災難或大量傷患事件發生時要為患者提供護理一事的總體態度/文化價值觀及認知。本次研究的目的是：

- 瞭解文化價值觀對於護理人員就其在災難或大量傷患事件期間有在工作場所提供護理之義務一事的認知影響

哪些人應該參與本次研究？

- 20 歲及以上的男、女護理人員
- 持有在台灣從事護理工作許可證的護理人員
- 願意、能夠並且有機會使用電腦以完成本次線上調查的護理人員

對參與者的期望：

- 完成一項匿名線上調查，大約需要 15 到 20 分鐘的時間。
- 對於調查問題的回覆沒有「正確或錯誤」之分。
- 誠實的回覆對於我們瞭解文化對於護理義務的認知影響至關重要。您的回覆將受到嚴格的匿名保護。

潛在好處：

- 幫助研究人員瞭解您對於災難情境下的職場責任的意見與感受
- 參加本次研究可以汲取災難響應方面的新知識，可精進您在護理專業知識

潛在風險：

- 參與本次研究無已知風險。
- 參加這次調查，可能會讓您意識到自己還未做好在災難或大量傷患事件發生時向患者或社區成員提供看護的準備。意識到這一點可能會令您感到不適。但這種覺悟也可能會激勵您採取行動。

保密：

您的回覆絕不會洩露您的身分資訊。調查結果不對專業組織和雇主公開。本調查連結由研究員分配，但是調查數據將被存放在 *Qualtrics* 上。Qualtrics 是美國德州大學泰勒分校的簽約線上調查程式。本次調查不要求您提供任何可洩露您身分的個人資料。實施本次研究的德州大學泰勒分校的研究人員將管理調查資料、分析數據並報告統計結果。

研究人員保留使用、發表不具身分識別性的數據的權利。所有數據將存儲在受密碼保護的、加密的大學計算機上。只有學生研究員 Tracy Jeanne Nash 和受僱於大學的畢業護理研究員兼教職工 Danita Alfred 博士有權訪問 Qualtrics 系統。經請求，本大學的人體研究倫理審查委員會主席可以將數據審查納入其日常合規性監管工作。

參與和退出

是否參與本次研究完全聽憑您自願。您可以選擇不參與或在任何時候停止參與，不會因此產生任何不當的後果。不參與本次研究也不會影響您在組織中的地位及您在醫院的就業情況。

如果對本次研究有疑問：

本研究調查獲得德克薩斯大學泰勒分校人體研究倫理審查委員會的批准。如果您對您作為研究參與者的權利有任何疑問，請聯絡 IRB 主席 Gloria Duke 博士，電郵地址：gduke@uttyler.edu，電話：002-1-903-566-7023。

如果您在參與本研究期間或在完成本次研究之後有任何疑問或疑慮，抑或您希望收到本研究最終匯總結果副本，請聯絡：

許玉雲 (Yu-Yun Alice Hsu)，博士，護理師
副教授
護理學系/健康照護科學研究所
國立成功大學醫學院地址：1 University Road, Tainan, 70101, Taiwan
地址：成功大學醫學院護理學系台南市大學路一號
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美國德克薩斯州泰勒
電話：002-1-903-566-7019
dalfred@uttyler.edu

授予同意

我已經閱讀了此知情同意書，我瞭解我的個人權利以及我作為研究參與者需要符合哪些要求。我瞭解參與本次研究的潛在風險和好處，我是在完全自願的情況下參與本次研究的，且我有權利可以隨時退出。我也知道如若我對參與本次研究有疑問或疑慮，我可以與哪些人士聯絡。

我知道填寫線上調查即意味著我已同意參與本次研究。

Appendix K. English Introductory Letter/Informed Consent

Introduction/Informed Consent:

The Effects of Cultural Values among Taiwanese and American Nurses' Duty to Care for Disaster Response

Dear Nurse Colleague,

You are being asked to participate in a study about your general attitudes/cultural values and your perceived duty to provide care to patients during disasters or mass-casualty events. The purpose of this study is to:

- Learn how cultural values effect nurses' perceived duty to provide care during disaster or mass-casualty situations at the workplace

Who Should Participate?

- Male and female nurses 18 years of age or older
- Nurses licensed to practice in the United States
- Nurses who have obtained licensure as an RN or APRN
- Nurses able to read, write, and speak English
- Nurses who are willing, able, and have access to a computer to complete the online survey

Participants' Expectations:

- Completion of an anonymous online survey that will take approximately 20 minutes of your time.
- There are no "right or wrong" answers to the survey questions.
- Honest responses are essential to understanding the influence of culture on perceived duty to care. Strict anonymity will be maintained.

Potential Benefits:

- Increased understanding of professional responsibilities during disaster situations
- Participating in the advancement of the nursing profession and the development of a new survey instrument

Potential Risks:

- There are no known serious risks to participating in this study.
- As a result of taking the survey, you might recognize that you are not personally prepared to provide care to patients or community members during a disaster or

- mass-casualty event. This recognition might cause discomfort. It could also stimulate you to take action.

Confidentiality:

Responses are not identifiable in any way. Professional organizations, employers, or schools of nursing will not have access to any of the survey results. The survey link is distributed by the researcher, but the survey data are housed on *Qualtrics*, an online survey program contracted by the University of Texas at Tyler. No identifiable personal data is requested as part of the survey. The researchers at the University of Texas at Tyler will maintain the surveys, analyze the data, and report the statistical results.

The researchers retain the right to use and publish non-identifiable data. All data will be stored on password protected and encrypted university computers. The only individuals with access to the Qualtrics system is the student researcher, Tracy Jeanne Nash, and Dr. Danita Alfred, a university employed graduate nurse researcher and faculty member. If requested, the Chair of the university's Institutional Review Board may review data as part of their routine compliance monitoring.

Participation & Withdrawal

Your participation is entirely voluntary. You are free to choose to not participate or to cease participation at any time without any undue consequences. Nonparticipation will not affect your standing in the ANA membership in any way.

Questions about the Study:

This study has been approved by the University of Texas at Tyler, Institutional Review Board (IRB). If you have any questions regarding your rights as a research participant, please contact Dr. Gloria Duke, IRB Chair at gduke@uttyler.edu, or at 903-566-7023.

If you have questions or concerns during the time of your participation in this study, after its completion, or you would like to receive a copy of the final aggregate results of this study, please contact:

Tracy Jeanne Nash RN, PhD(c)
College of Nursing
University of Texas at Tyler
(719) 210-7524
tnash6@patriots.uttyler.edu

Danita Alfred PhD, RN
College of Nursing
University of Texas at Tyler
Tyler, Texas, USA
(903) 566-7019
dalfred@uttyler.edu

Giving of Consent
I have read this consent form and I understand what is being requested of me as a participant in this study.

Consent is implied by completion of the online survey.

Appendix L. IRB Approval

THE UNIVERSITY OF TEXAS AT TYLER
3900 University Blvd. • Tyler, TX 75799 • 903.565.5774 • FAX: 903.565.5858

Office of Research and Technology Transfer
Institutional Review Board

October 30, 2016

Dear Ms. Nash,

Your request to conduct the study East Meets West: The Effects of Cultural Values among Taiwanese and American Nurses' Duty to Care for Disaster Response, IRB #F2016-25 has been approved by The University of Texas at Tyler Institutional Review Board as a study exempt from further IRB review. This approval includes a waiver of signed, written informed consent. In addition, please ensure that any research assistants are knowledgeable about research ethics and confidentiality, and any co-investigators have completed human protection training within the past three years, and have forwarded their certificates to the IRB office (G. Duke).

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

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

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

Sincerely,

Gloria Duke, PhD, RN
Chair, UT Tyler IRB

Appendix M. Recruitment of Faculty Member to Translate Surveys

Request:

Dear Dr. Hsu:

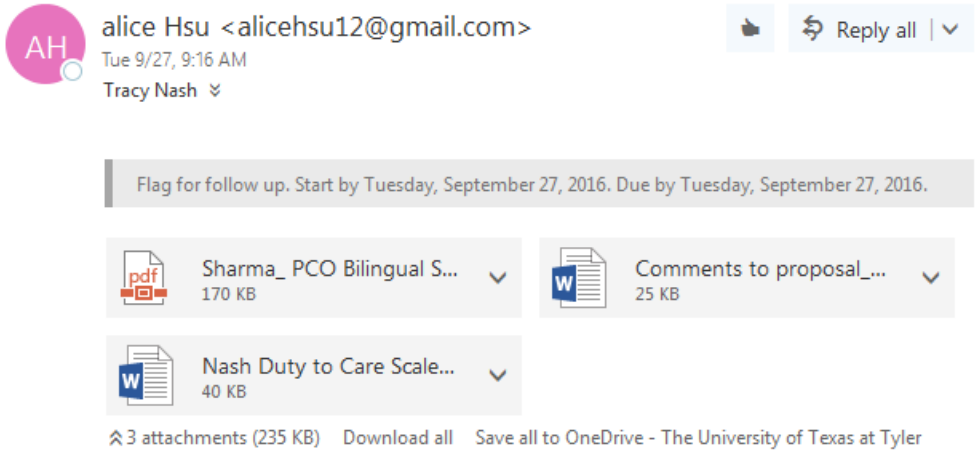
I have developed an introduction/informed consent form, demographic survey, and duty to care scale for my research. Likewise, I have received written consent to borrow another researcher's Personal Cultural Orientation (PCO) scale for my study. I am currently focused on recruiting individual(s) fluent in Chinese to translate and back-translate these forms/surveys for Taiwanese nurse participants. A UT Tyler nursing faculty member (Sylvia Lee, PhD, RN) recommended you as a candidate who may be interested in this task. I would like to formally request your help.

If you are interested in helping with translation, I would greatly appreciate your assistance. I have attached the documents for your review and consideration. Please let me know fees, time requirements, and your personal availability at your earliest convenience.

Many thanks for your time. I look forward to hearing your thoughts.

Kind regards,
Tracy Jeanne Nash, RN, PhD(c)
tnash6@patriots.uttyler.edu
(719) 210-7524

Response:



Dear Tracy,
The attached files include comments and the translated scale.
If you have any questions please do not hesitate to contact me.
Best regards,
Yu-Yun

Appendix N. Recruitment of Professional Translation Company

Dear Mr. Chouhy,

I received your name and contact information from Dr. Charleen McNeill, a nurse faculty member at the University of Arkansas. I am conducting a research study in Taiwan and need my research instrument, demographic survey, study invitation, and introductory letter/informed consent translated from English to Traditional Chinese. I have attached the document for your and consideration and review. A little work has already been done, but none of it is totally reliable.

I would like to receive an estimate of the cost and time required to complete the following tasks:

a.) Pages 1 – 3 are the actual instrument – this section needs translation from English to Traditional Chinese. Back translation of the instrument is required as well.

b.) Page 4 – 6 is the demographic form and conclusion of the survey. This needs also translating from English to Traditional Chinese. I am not sure that back translation is critical for this, but careful proofing is a must.

c.) The remaining pages include the letter of introduction/informed consent and a study invitation. As above, this needs translation from English to Traditional Chinese. Again, careful proofing is appreciated.

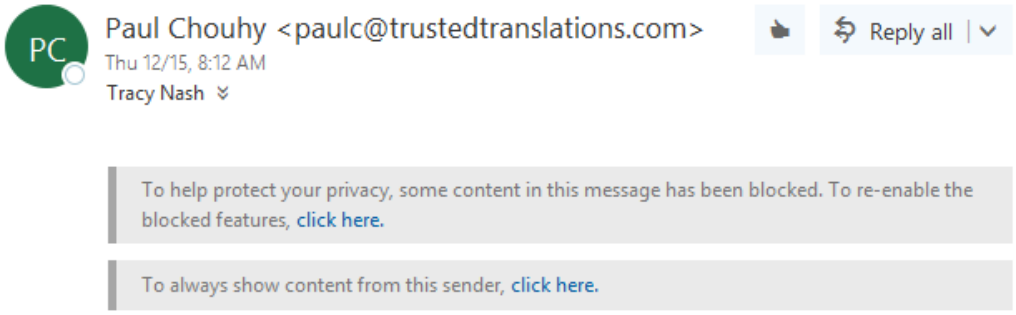
I realize that the holidays are quickly approaching, however, I need to get this translation completed in a timely fashion.

I look forward to hearing your thoughts as soon as time permits in your schedule.

Thank you so much for your time and consideration,

Regards,
Tracy Nash
(719) 210-7524
tnash6@patriots.uttyler.edu

Response:



Hi Tracy,
I hope all is well with you.

Please find our quote below:

File:

Nash_12-11-2016_Traditional Chinese Translation needed for Dissertation Research Study.docx

English US - Chinese traditional

2241 words ($0.20 per word) 448.20

Chinese traditional - English US (Back translation for pages 1-3)

614 words ($0.18 per word) 110.52

Cost: $558.72

Turnaround time: 5 business days.

In the case of doing back translation for the entire document, the cost and turnaround time will be as follows:

English US - Chinese traditional

2241 words ($0.20 per word) 448.20

Chinese traditional - English US (Back translation for pages 1-3)

2241 words ($0.18 per word) 403.38

Cost: $851.58

Turnaround time: 6 business days.

PROCESS OVERVIEW

The translation process at Trusted Translations begins with a Project Manager reviewing all contents of your document and assigning it to a professional translator who is a native of the target language and has an extensive knowledge of your document's subject matter. Once translated, your document will be proofread to ensure accuracy and consistency. The document is then returned to the Project Manager for a final edition.

DESKTOP PUBLISHING (DTP)

A document will often need to be worked on by professional designers who are well acquainted with the applications used to creating it. In this case, an IT Manager will be assigned to the project and will break down the format of the original document and forward it to the Project Manager for text translation. Once translated, the PM will send back the file to the IT Manager who will carefully rebuild the document to be an exact match of the original.

PAYMENT CONDITIONS

We charge 50% up front, payable by Credit Card (AMEX, MasterCard or VISA,) or PayPal before beginning production. The remaining balance is due 10 days after delivery of the project. Or 100% down payment with bank transfer or company check.

Looking forward to your comments.

Feel free to call me on my direct line 786-206-0696 if you have any further questions.

Thanks,

Paul Chouhy
Account Manager
Trusted Translations, Inc.
www.trustedtranslations.com
paulc@trustedtranslations.com
Phone: +1 (786) 206-0696
Fax: +1 (888) 883-6408

Appendix O. Reconceptualization of Hofstede's National Cultural Dimensions

Development of the Personal Cultural Orientation (PCO) Scale's Cultural Dimensions from Hofstede's Original National Cultural Dimensions

Hofstede's (1980) five national-level cultural dimensions	Sharma's (2010) re-conceptualized cultural dimensions	Factor loadings from factor analysis for items in each new subscale
1.Individualism-Collectivism (IND-COL)	1. Independence (IND): the extent to which individuals act independently and maintain a strong self-concept 2. Interdependence (INT): the extent to which individuals act as part of one or more in-groups, have strong reliance on others, and give priority to group needs, rather than self-interests	.69 - .82 . 68 - .77
2. Power Distance (PDI)	1. Power (POW): the extent to which people accept differences in power; how they relate to authority 2. Social Inequality (IEQ): the extent to which people willingly accept the degree of inequality in society	.65-.72 .69-.78
3. Uncertainty Avoidance (UAI)	1. Risk Aversion (RSK): the extent to which individuals are hesitant to take risks 2. Ambiguity Intolerance (AMB)**:** the extent to which individuals can endure ambiguity and uncertain situations.	.73-.83 .67-.77
4. Masculinity–Femininity (MAS)	1. Masculinity (MAS): the level of expression of assertiveness, aggression, and ambition 2. Gender Equality (GEQ): the extent to which people perceive both genders as equals in terms of social roles, rights, and responsibilities.	.65-.78 .75-.78
5. Long- vs. Short-term Orientation (LTO)	1. Tradition (TRD): level of planning, perseverance, and future-orientation 2. Prudence (PRU): level of respect for traditional values, including hard work, benevolence, social consciousness, morality, and respect for one's heritage.	.68-.82 .72-.78

Appendix P. Permission to Borrow the Personal Cultural Orientation (PCO) Scale

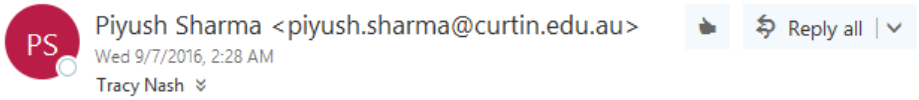
Dear Professor Sharma:

My name is Tracy Jeanne Nash and I am currently a Nursing PhD Candidate at the University of Texas at Tyler, College of Nursing and Health Sciences. I am writing to formally request permission to use your Personal Cultural Orientation (PCO) scale, as published in the 2010 issue of the *Journal of the Academy of Marketing Science* for my dissertation research. My study will focus on the effects of cultural values among American and Taiwanese nurses' duty to care for disaster response. I believe your instrument is ideal to help facilitate my research goals. While the ten subscales provide a comprehensive assessment of the ten individual-level personal cultural orientations, I would also like to request permission to use selected subscales, should I deem it necessary in my research.

Thank you so much for your time and consideration. If you require additional information, please do not hesitate to contact me.

Respectfully,
Tracy Jeanne Nash, RN, PhD(c)
tnash6@patriots.uttyler.edu

Response:



Hi Tracy

Good to hear from you. Please feel free to use the scale as you wish.

Piyush

Professor Piyush Sharma
Associate Editor | Journal of Business Research, Journal of Services Marketing
Editorial Board Member | Journal of the Academy of Marketing Science, European Journal of Marketing, Journal of Service Theory and Practice, International Journal of Emerging Markets
School of Marketing
Curtin Business School
Rm 2031 Bld 408
Curtin University
Bentley, WA 6102
Australia
Tel | +61 8 9266 3744
Mobile | +61 415 043 808

Appendix Q. Taiwanese (Chinese Traditional) Demographic Survey

您持有什麼級別的護理執照？
- 註冊護士 (RN)
- 高級護士

您獲得的最高學位是？
- 護理文憑
- 護理大專文憑 (ADN)
- 護理學學士 (BSN)
- 護理學碩士/理學碩士 (MSN/MS)/其他碩士學位
- 護理學博士 (PhD)
- 其他博士學位

您的專業從業領域是什麼？
- 醫療護理
- 兒科
- 婦產科
- 長期護理/護理院
- 重症監護室 (ICU)
- 職業護理
- 社區護理
- 學校保健護理
- 精神護理
- 急診護理
- 其他：請描述您的從業領域 _____

您當前受僱於什麼機構？
- 醫院
- 長期護理中心/護理院
- 精神病學中心
- 學院/大學
- 社區保健所
- 私人醫生診所
- 社服機構
- 失業
- 其他：請描述您的工作機構 _____

您主要認同哪些宗教信仰？
- 一貫道
- 佛教
- 道教/民間信仰
- 天主教/基督教
- 無
- 其他：請描述您的宗教信仰 _____

您目前的婚姻狀況是？
- ❍ 單身
- ❍ 已婚/已承諾關係
- ❍ 分居
- ❍ 離異
- ❍ 喪偶

您對於自己的性別認定是？
- ❍ 男性
- ❍ 女性

您是否出生在台灣？
- ❍ 是
- ❍ 否 (請告訴我們您的出生地：_____）

請告訴我們您的年齡（歲數）。_____

您持有護士牌照多久了？（年數）_____

您家裡當前有多少居住人口（包括您自己在內）？_____

您對於國際護士協會的護士倫理守則 (Code of Ethics for Nurses) 的熟悉程度如何？
- ❍ 完全不熟悉
- ❍ 略微熟悉
- ❍ 一般熟悉
- ❍ 非常熟悉
- ❍ 極為熟悉

在您雇主的應急或災難響應計劃中，有沒有分配給您的工作？
- ❍ 沒有
- ❍ 不確定
- ❍ 有
- ❍ 失業

您的家人有沒有做好您因為接觸高度傳染性疾病而在工作場所被隔離所以無法歸家的準備？

- ❍ 絕對不會
- ❍ 很可能不會
- ❍ 可能會也可能不會
- ❍ 很可能會
- ❍ 絕對會

您有沒有需要您承擔、但您在災難情境下無法顧及的兒童、老人或寵物照顧責任？
- ❍ 沒有
- ❍ 有

您家裡有沒有準備水（每人每天 1 加侖）、食物和應急物資以渡過災難事件過後的 72 小時？
- ❍ 沒有
- ❍ 有

您家裡有沒有以書面形式確立的災難應對方案以應對災難情境？
- ❍ 沒有
- ❍ 有

本線上調查至此結束。非常感謝您參與本次調查研究。護理學的進步，離不開像您這樣從事護理工作之人的無私的經驗共享。感謝您抽時間接受此次調查並且慷慨地分享您的經驗！
請回覆下面最後一個問題，告訴我們您是否有意參與贏取免費的禮品卡作為您參加本次調查的獎勵。

參與本次調查者，只需輸入電子郵箱地址，即有機會贏得禮品卡，獲獎者隨機抽取，共計十名。是否提供電子郵箱地址完全由您自行決定，電子郵箱地址不會以任何方式與調查回覆相關聯。您是否願意提供自己的電子郵箱地址以參加隨機抽獎？
- ❍ 沒有
- ❍ 有

如果您希望參加電子禮品卡隨機抽獎活動，請提供您的電子郵箱位址。

Appendix R. American (English) Demographic Survey

What is your level of nursing licensure?

- Registered Nurse (RN)
- Advanced Practice Registered Nurse (APRN)

What is the highest level of education you have completed?

- Associate Degree/Associate Degree in Nursing (AD/ADN)
- Bachelor of Science in Nursing/Bachelor of Science (BSN/BS)
- Master of Science in Nursing/Master of Science (MSN/MS)
- Doctor of Nursing Practice (DNP)
- Doctor of Philosophy in Nursing (PhD)
- Doctor of Philosophy other field (PhD)

What is your specialty practice area?

- Medical-Surgical
- OB-GYN
- Critical Care/Intensive Care
- Pediatrics/Neonatal
- Operating Room/PACU
- Emergency/Urgent Care
- Step Down/Transitional/Telemetry/Progressive Care
- Public Health
- Home Health Care
- Ambulatory Care
- Academia/Education/Teaching
- Research Scientist
- School Nurse
- Administrative/Business
- Other

In which setting are you currently employed?

- Hospital
- Nursing Care Facility
- Physician's Office
- Home Health Care
- Outpatient Services
- Elementary or Secondary School
- Employment Services
- Insurance Carrier
- Administration
- Justice, Public order, Safety
- Office/Clinic of Other Practitioners
- College or University
- Public/Community Health
- Unemployed
- Other

Which of the following best describes your race?
- White/Caucasian
- Black/African American
- Asian
- American Indian/Alaskan Native
- Native Hawaiian/Other Pacific Islander
- Two or more races

Are you of Hispanic or Latino origin or descent?
- No
- Yes

Which religion, social, or ethical philosophy do you primarily identify with?
- Protestantism
- Catholicism
- Mormonism
- Judaism
- Muslimism
- None/Atheist/Agnostic
- Other

What is your marital status?
- Single
- Married/Committed Relationship
- Separated
- Divorced
- Widowed

With which gender do you identify?
- Male
- Female

In which country were you born? _____

Please tell us the year you were born. _____

How long have you been licensed as a nurse? (In years)_____

How many people are currently living in your house (including yourself)? _____

How familiar are you with the International Council of Nurses, *Code of Ethics for Nurses*?
- Not familiar at all
- Slightly familiar
- Moderately familiar
- Very familiar
- Extremely familiar

Do you have an assigned role in your employer's emergency or disaster response plans?
- No
- Unsure
- Yes

Are you and your family ready to manage your absence from home if there is a 21 day quarantine at your job?

- ❍ No
- ❍ Yes

Do you have water, food, AND emergency supplies ready in your home at all times for a disaster event?

- ❍ No
- ❍ Yes

Do you have a written disaster plan in your home in preparation for a disaster situation?

- ❍ No
- ❍ Yes

Do you have childcare, eldercare, or pet care responsibilities which you are not prepared to manage in a disaster situation?

- ❍ No
- ❍ Yes

This concludes the online survey. Thank you so much for your participation in this research study. Advances in nursing science are made possible by the willingness of nurse participants like you who openly share their experiences. We appreciate your time and generosity!

Please respond to the final question below to inform us if you would like the chance to win a free E-gift card for your time and participation.

Gift cards will be randomly awarded to ten participants who enter their email address. Providing an email address is strictly voluntary and email addresses ***will not*** be linked with survey responses in any way. Would you like to provide your email adress to be entered into the random drawing?

- ❍ No
- ❍ Yes

Please enter your email address if you would like to be entered into the random drawing for an electronic gift card.

Biographical Sketch

NAME: Nash, Tracy Jeanne

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: Doctoral Candidate, The University of Texas at Tyler, College of Nursing and Health Sciences, Tyler, TX, 75799

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date MM/YYYY	FIELD OF STUDY
Muhlenberg Hospital School of Nursing, Plainfield, NJ	Diploma	06/1985	Nursing
Union County College, Cranford, NJ	AS	06/1985	General Studies
University of Utah, Salt Lake City, UT	BSN	12/2011	Nursing
The University of Texas at Tyler, Tyler, TX	PhD	05/2017	Nursing

A. Personal Statement

My research interests include nurses' personal and professional preparedness for disaster response; emergency preparedness among individuals, communities, and populations; emergency preparedness among vulnerable populations; disaster nursing education; prevention of emerging infectious diseases; and global health issues. My doctoral research has explored nurses' personal preparedness for disaster situations; educational resources to improve nurses' emergency response levels; online curriculum development; and the development of the Nash Duty to Care scale for disaster response. My dissertation study is focused on examining the effects of cultural values among Taiwanese and American nurses' duty to care for disaster events. I have begun planning my post-graduate research by working with a multi-site disaster nursing research team. As a group, our efforts are focused on nurses' willingness and ability to respond to disaster scenarios. My future planned projects include a concept analysis of duty to care, refinement of the Nash Duty to Care Scale in English and Chinese, and other collaborative works with faculty members in the multi-site team.

B. Positions and Honors

Positions and Employment

1986 – 1986: Pediatric RN, Muhlenberg Hospital, Plainfield, NJ
1986 – 1987: Staff RN, First Care Urgent Care Center, Newport News, VA
1987 – 1988: Staff RN, Urgent Care, Forked River, NJ
2005 – 2008: Owner/Operator of Diet Center, Monument, CO and Colorado Springs, CO
2009 – 2009: Public Health Nurse, Maxim Health Services, Salt Lake City, UT
2010 – 2011: RN Study Coordinator, Jean Brown Research. Salt Lake City, UT
2014 – 2015: Graduate Research Assistant, University of Texas at Tyler, TX
2014 – 2015: Graduate and Undergraduate Teaching Assistant, University of Texas at Tyler, TX

2015 – Present. Student Representative to the Graduate Nursing Studies Committee, The University of Texas at Tyler, School of Nursing Graduate Program, TX
2016 – Present: American Nurses Association, Mentor for New Nurses Entering the Profession
2016 – Present: Graduate Nursing Student Academy Liaison, The University of Texas at Tyler, TX

Other Experience and Professional Memberships

2007 – 2009: Emergency Responder, Colorado Volunteer Mobilizer
2011 – Present: Member, Sigma Theta Tau International Honor Society in Nursing
2011 – Present: Member, Utah Nurses Association
2014 – Present: Member, Phi Kappa Phi Honor Society
2014 – Present: Member, Alpha Chi National Honor Society
2015 – Present: Member, American Nurses Association
2016 – Present: Peer Reviewer, *Aletheia – The Alpha Chi Journal of Undergraduate Scholarship,* The University of Texas at Tyler, TX
2016 – Present: Member, Graduate Nursing Student Academy

Honors

2012: Featured student in "Going Baccalaureate to Move Forward." *The University of Utah, College of Nursing Annual Magazine*, Salt Lake City, UT
2015: K. Patricia Cross Future Leader Award Nomination, The University of Texas at Tyler, College of Nursing and Health Sciences, Tyler, TX
2016: The National Society of Leadership and Success Nomination

C. Contribution to Science

1. My publications have addressed disaster nursing with a primary focus on personal preparedness, professional preparedness, and the development of an instrument to measure nurses' perceived willingness to respond to disaster situations in the workplace. While research in disaster nursing has increased over recent years, there are still many gaps in the scientific literature with regard to nurses' readiness to respond and sustain surge capacity during disaster events. These publications have demonstrated significant findings and support the need for future scientific research.

a. Nash, T. J. (2015). Unveiling the truth about nurses' personal preparedness for disaster response: A pilot study. *MEDSURG Nursing, 24*(6), 425-431.
b. Nash, T. J. (2016). A guide to emergency preparedness and disaster nursing education resources. *Health Emergency and Disaster Nursing*. Advance online publication. https://hedn.jp/
c. Nash, T. J. (in press). Development, testing, and psychometric qualities of the Nash duty to care scale for disaster response. *Journal of Nursing Measurement*.

2. In addition to the contributions described above, with the collaboration of two faculty members I developed a new online Nursing Gerontology course. Since it is demonstrated that many nursing students have negative opinions and choose not to work with older adults, we focused on innovative, active learning strategies to engage students in geriatric nursing content. Our goal was to improve students' attitudes and foster their desire to work with the aging population. Development of this course was based on Mezirow's Transformative Learning Theory.

a. Mastel-Smith, B., Nash, T**.**, & Caruso, K. (2016). Addressing future demands: Development of an online gerontological nursing course. *Geriatric Nursing, 37*404-407. doi:10.1016/j.gerinurse.2016.08.007