

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

Tracy Jeanne Nash, PhD, RN

*The University of Texas at Tyler, College of Nursing and Health Sciences*

**Background 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 3 universities in the United States. **Results:** Exploratory factor analysis resulted in a 19-item, 4-factor model explaining 67.34% of the variance. Internal consistency reliability was supported by Cronbach's alpha ranging from .81 to .91 for the 4-factor subscales and .92 for the total scale. **Conclusions:** The psychometrically sound instrument for measuring nurses' perceived duty to care for 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 and cause damage to infrastructures, but also cause human migration, injury, suffering, and most important, the loss of life. Although 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; American Nurses Association [ANA], 2010; Arbon, Cusack, et al., 2013; 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. Although the *Code of Ethics for Nurses* outlines nurses' moral duty to provide care for patients (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' safety, health, 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 HIV (Iserson et al., 2008; Twedell, 2009). Although 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 an HIV diagnosis. 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; Malm et al., 2008; Paixão, Barreto, Teixeira, Costa, & Rodrigues, 2016; Twedell, 2009). Pragmatic questions about nurses' ethical duty to provide care are paramount (Qureshi et al., 2005), because 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 patients with HIV in the past. Moreover, duty to care is identified as an urgent ethical issue regarding the success of current disaster management plans (ANA, 2010). Overall, the concept is an aspect of disaster preparedness that remains overlooked in the scientific 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. In 2014 alone, 107,000,000 people were affected by disasters across the globe, with 58,000,000 people impaired by floods, droughts, and storms in China and 8,600 people killed by Ebola in West Africa (International Federation of Red Cross and Red Crescent Societies [IFRC], 2015). Likewise, technological disasters were responsible for 5,884 deaths, whereas 317 natural disasters were reported worldwide, affecting 94 countries (IFRC, 2015). From 2004 to 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 (IFRC, 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] & 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 is 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 usage to measure nurses' duty to care in future scientific research.

## **BACKGROUND AND CONCEPTUAL FRAMEWORK**

### **Background**

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 used 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 (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, Cusack, et al., 2013; Goodhue et al., 2012; Grimes & Mendias, 2010), perceived knowledge and awareness (Arbon, Cusack, et al., 2013; 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 & Mendias, 2010; Melnikov, Itzhaki, & Kagan, 2014), and lack of perceived competence or self-efficacy to manage disasters in various settings (Baack & Alfred, 2013; Balicer et al., 2010; Ben Natan, Nigel, Yevdayev, Qadan, & Dudkiewicz, 2013; Hope et al., 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, Ranse, et al., 2013; Grimes & Mendias, 2010) compared to natural disasters (Arbon, Ranse, et al., 2013; 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, Cusack, et al., 2013; Chaffee, 2006; Fung & Loke, 2013; Goodhue et al., 2012; Lim et al., 2013; Nash, 2015; Qureshi et al., 2005), and readiness at home to maintain quarantine at the workplace (Liu & Liehr, 2009; McGillis Hall & Kashin, 2016; Nathawad, Roblin, Pruitt, & Arquilla, 2013) are demonstrated to affect 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 are personally prepared to respond to disaster or mass-casualty events (Lim et al., 2013). These results are consistent with other scientific findings, which demonstrate that nurses' without written personal preparedness plans are less willing to provide care in disaster situations (Adams & Berry, 2012; Martin et al., 2013; Melnikov et al., 2014; Nash, 2015). 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 & Mendias, 2010; Martin et al., 2013; Nash, 2015; Qureshi et al., 2005).

The effects of personal preparedness regarding duty to care was further established in a study by Arbon, Cusack, et al. (2013). They reported that nurses with disaster plans had a 7.74 times higher odds of responding to work roles during disaster incidents than those without disaster plans. This evidence substantiated the relevance of personal preparedness for

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 is organizational trust. According to Altuntas and Baykal (2010), the concept of trust is a crucial component of successful professional work relationships. Saran et al. 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 various definitions in the nursing literature, for this article, 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 & Mendias, 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 U.S. nurses in Texas contracted the virus because of inadequate personal protective equipment (PPE) at the workplace (Hollis, 2014; Sagar, 2015). Lack of confidence regarding Ebola has resonated at a global level, resulting in fear, anxiety, and doubt for many nursing professionals, both in the United States 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 was 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 & Mendias, 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 & Mendias, 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 several ethical challenges regarding 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 & Mendias, 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 & Mendias, 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 U.S. *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 & Mendias, 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 another dimension of ethical accountability that nurses frequently struggle with in disaster situations. Because the ANA (2015) and ICN (2012) *Codes* do not specify guidelines for nurses during disaster or mass-casualty situations, nurses can be 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, whereas 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 United States, other health care professions have not followed suit (Grimaldi, 2007; Iserson et al., 2008). For example, although 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 also 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 various 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 will focus primarily on the incident response phase. Ultimately, the ANA (2015) and ICN (2012) *Codes* and the disaster management continuum (WHO & ICN, 2009) frame nurses’ ethical practice standards in disasters and serve as the conceptual framework in this research. Because 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.

## **METHOD**

### **Description**

The concept of duty to care was carefully researched, evaluated, and illustrated following an extensive literature review of five major databases from 2005 to 2016: Cumulative Index to 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 that were 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, whereas 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 because it is concise and has a central midpoint, which allowed the participants to provide neutral responses 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 regarding 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—preincident (prevention/preparedness), incident (response), and postincident (recovery/reconstruction/rehabilitation)—primarily focused on disaster response. 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 responses. 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 29–145 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 (Calderón & Beltrán, 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 2 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 an 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 registered nurse (RN) to bachelor of science/bachelor of science in nursing (BS/BSN), master of science/master of science in nursing (MS/MSN), doctor of nursing practice (DNP), or doctor of philosophy (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 because of attrition. Because there was only one point of data collection, attrition was projected to remain low (Polit & Beck, 2012).

Although 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, whereas 11.3% were male. Male nurses were represented more highly in this study compared to a recent U.S. national average of female (91%) and male (9%) RNs (U.S. Department of Health and Human Services, 2013). Likewise, the average age of study



participants was 41 years old; 9 years younger than the U.S. national average of 50 years old (U.S. Department of Health and 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, whereas 63% of the RN national average similarly maintained roles in these areas (U.S. Department of Health and Human Services, 2013). Also, 27.2% of participants previously practiced nursing in response to a disaster event, whereas 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 Principal Investigator (PI) and faculty sponsor had access to the raw study data and subsequent study results.

The researcher protected research participants' rights to self-determination, anonymity, confidentiality, privacy, fair treatment, and protection from harm (ANA, 2015). Because participation in this study posed no foreseeable or known serious risks to study participants, a waiver of written and signed prospective informed consent was sought from participating IRBs. The waiver was appropriate because 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, completion of the survey would imply their informed consent, and provided appropriate contact information for the 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 e-mail 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 10–15 min 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 RNs who were (a) male and female 18 years of age or older; (b) licensed to practice in the United States; (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 an SPSS Version 20 data file for analysis. Reminder postings were distributed via online access points throughout the study period in 2-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 data set. After incomplete cases were removed to prevent overestimation and negatively worded items were reverse-scored, principal axis factoring without rotation was used 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 (KMO) measure of sampling adequacy* was .918, well above the suggested .50 minimum value, whereas *Bartlett's test of sphericity* was highly significant,  $\chi^2(372) = 4,987.026$ ,  $p = .000$ . Both values met assumption testing and patterned relationships among the factors were supported. Likewise, the diagonal element of the *anticorrelation 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,  $t = 8.08E-007$ , whereas low was different from zero indicating the absence of multicollinearity among the data set (Yong & Pearce, 2013).

The data were then subjected to EFA with orthogonal varimax rotation and Kaiser normalization. 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 because 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 because 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, whereas

Item 16 had factor loadings all below .34, cross loadings on Factor 2 (.347) and Factor 5 (.327), a low communality score (.278), 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 cross loadings on Factor 2 (.389) and Factor 3 (.386), 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. Although 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. The new five-factor *pattern factor matrix* supported the deletion of Items 13, 14, and 15, because all maintained poor factor loadings, most correlation scores were below .30 for each variable, and all maintained low communalities. Furthermore, reexamination of Items 13 and 14 provided evidence 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 cross-loading on Factor 1 (.537) and Factor 4 (.441). 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 (a) Factor 1, *perceived risk*, with an eigenvalue of 7.97 accounting for 41.93% of the variance; (b) Factor 2, *perceived obligation*, with an eigenvalue of 2.15 accounting for 11.31% of the variance; (c) Factor 3, *professional preparedness*, with an eigenvalue of 1.67 accounting for 8.78% of the variance; and (d) Factor 4, *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 (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*,  $\chi^2(372) = 3,922.336$ ,  $p = .000$ , 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 .00001, indicating that multicollinearity was not a problem in this data set. Examination of the *factor transformation matrix's* off diagonal elements also supported that oblique rotation was a suitable technique for this data set, as symmetrical off-diagonal elements were readily observed (Yong & Pearce, 2013).

Although 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 .6. In this study ( $N = 372$ ) the average communality after factor extraction was .6. Goodness of fit was finally examined by assessing the summary of the percentage of nonredundant residuals on the *reproduced correlation matrix*. According to Yong and Pearce (2013), models with a good fit will maintain less than 50% of the nonredundant residuals with absolute values greater than .05, which was true for this data set that had 6.0% of nonredundant residuals with absolute values greater than .05, thereby supporting construct validity.

**TABLE 1. Pattern Matrix of Factor Loadings for the Four-Factor, 19-Item Nash Duty to Care Scale**

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

*(Continued)*

**TABLE 1. Pattern Matrix of Factor Loadings for the Four-Factor, 19-Item Nash Duty to Care Scale (Continued)**

Variables/Factors	Perceived Risk	Perceived Obligations	Professional Preparedness	Confidence in the Employer
Trust_Confid				
Item 20	.004	-.030	-.030	.844
Trust_Confid				
Item 22	.147	.058	-.055	.686
Trust_Confid				
Item 21	-.098	.134	.037	.638

*Note.* Extraction method: principal axis factoring. Rotation method: promax with Kaiser normalization. Rotation converged in 5 iterations. Risk = perceived risk; Obliga = perceived obligation; Pro = professional preparedness; Confid = confidence in employer.

Although this new instrument provided only a sampling of possible items that can be included to measure nurses' perceived 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 ( $\alpha$ ) 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 (Table 2), validating the questionnaire. The instrument is available on request from the author.

## 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 1, which focused on organizational trust, particularly regarding 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

**TABLE 2. Internal Consistency for Factorially Derived Subscales and the Total Nash Duty to Care Scale**

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

values on the first factor. The second factor, perceived obligation, identified nurses' perception of ethical accountability at the workplace. Although 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 3, 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 regarding disaster response. Although 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, eldercare, 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 4, confidence in the employer, accounted for the least amount of variance (5.31%) on the four-factor model, with three items loading on the last factor. Like the first factor, Factor 4 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.

EFA using principal axis factoring and promax oblique rotation with Kaiser normalization effectively grouped the latent variables based on variance. Although 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 using 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.

Although 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 larger sample size and across a more culturally diverse nursing population.

## **Strengths and Limitations**

This psychometric study maintained threats to internal validity, including experimental mortality or attrition, as well as threats to external validity, including social desirability and generalizability. Attrition, or participant dropout, occurred prior to study completion. Online surveys are associated with low response rates, typically 30%–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 because these queries were positioned at the end of the questionnaire.

Social desirability was a threat to external validity because 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 because 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 used from three major universities in this study, none of which were geographically located in Eastern or Western coastal communities in the United States. Likewise, not 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 tested, resulting in a partially tested model. Although this threat was recognized, it was still selected for the framework to support this research. Control included discussion of the demographics compared to the U.S. population, consideration of the statistical findings regarding the limited sample, and informing the reader that generalizability was extremely limited.

## **RELEVANCE TO NURSING PRACTICE, EDUCATION, OR RESEARCH**

Although 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 various 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 provide care for disaster events. The instrument provides a cost-effective means to gather data from a large sample and wide geographic range of nurses in a very short time. Its online platform also supports anonymity and offers participants the opportunity to participate when it is most convenient for them. Because there is little doubt that 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 on health care providers, it is crucial for the concept of nurses’ duty to care for disaster response to be further scrutinized, considering it has the potential to affect health outcomes worldwide.

## **REFERENCES**

- Adams, L. M., & Berry, D. (2012). Who will show up? Estimating ability and willingness of essential hospital personnel to report to work in response to a disaster. *Online Journal of Issues in Nursing, 17*(2), 8. <http://dx.doi.org/10.3912/OJIN.Vol17No02PPT02>
- Alfred, D., Chilton, J., Connor, D., Deal, B., Fountain, R., Hensarling, J., & Klotz, L. (2015). Preparing for disasters: Education and management strategies explored. *Nurse Education in Practice, 15*(1), 82–89. <http://dx.doi.org/10.1016/j.nepr.2014.08.001>

- Aliakbari, F., Hammad, K., Bahrami, M., & Aein, F. (2015). Ethical and legal challenges associated with disaster nursing. *Nursing Ethics*, 22(4), 493–503. <http://dx.doi.org/10.1177/0969733014534877>
- Altuntas, S., & Baykal, U. (2010). Relationship between nurses' organizational trust levels and their organizational citizenship behaviors. *Journal of Nursing Scholarship*, 42(2), 186–194. <http://dx.doi.org/10.1111/j.1547-5069.2010.01347.x>
- American Nurses Association. (2010). *Issue brief: Who will be there? Ethics, the law, and a nurse's duty to respond in a disaster*. Retrieved from <http://nursingworld.org/MainMenuCategories/WorkplaceSafety/Healthy-Work-Environment/DPR/Disaster-Preparedness.pdf>
- American Nurses Association. (2015). *Code of ethics for nurses with interpretive statements*. Silver Springs, MD: Author.
- Arbon, P., Cusack, L., Ranse, J., Shaban, R., Z., Considine, J., Kako, M., . . . Hammad, K. (2013). Exploring staff willingness to attend work during a disaster: A study of nurses employed in four Australian emergency departments. *Australasian Emergency Nursing Journal*, 16(3), 103–109. <http://dx.doi.org/10.1016/j.aenj.2013.05.004>
- Arbon, P., Ranse, J., Cusack, L., Considine, J., Shaban, R. Z., Woodman, R. J., . . . Mitchell, B. (2013). Australasian emergency nurses' willingness to attend work in a disaster: A survey. *Australasian Emergency Nursing Journal*, 16, 52–57. <http://dx.doi.org/10.1016/j.aenj.2013.05.003>
- Baack, S., & Alfred, D. (2013). Nurses' preparedness and perceived competence in managing disasters. *Journal of Nursing Scholarship*, 45(3), 281–287. <http://dx.doi.org/10.1111/jnu.12029>
- Balicer, R. D., Barnett, D. J., Thompson, C. B., Hsu, E. B., Catlett, C. L., Watson, C. M., . . . Links, J. M. (2010). Characterizing hospital workers' willingness to report to duty in an influenza pandemic through threat- and efficacy-based assessment. *BMC Public Health*, 10, 436–445.
- Beardwood, B. A., & Kainer, J. M. (2015). Exploring risk in professional nursing practice: An analysis of work refusal and professional risk. *Nursing Inquiry*, 22(1), 50–63. <http://dx.doi.org/10.1111/nin.12048>
- Ben Natan, M., Nigel, S., Yevdayev, I., Qadan, M., & Dudkiewicz, M. (2013). Nurses willingness to report for work in the event of earthquake in Israel. *Journal of Nursing Management*, 22(7), 931–939. <http://dx.doi.org/10.1111/jonm.12058>
- Burns, N., & Grove, S. K. (2009). *The practice of nursing research: Appraisal, synthesis, and generation of evidence* (6th ed.). St. Louis, MO: Saunders Elsevier.
- Calderón, J. L., & Beltrán, R. A. (2004). Pitfalls in health communication: Healthcare policy, institution, structure, and process. *Medscape General Medicine*, 6(1), 9.
- Campbell, A. G. (2006). The nurses' survey. In *The SARS Commission final report, Volume 3: Spring of fear* (pp. 966–977). Retrieved from [http://www.archives.gov.on.ca/en/e\\_records/sars/report/v3.html](http://www.archives.gov.on.ca/en/e_records/sars/report/v3.html)
- Chaffee, M. W. (2006). Making the decision to report to work in a disaster: Nurses may have conflicting obligations. *The American Journal of Nursing*, 106(9), 54–57.
- Cone, D. C., & Cummings, B. A. (2006). Hospital disaster staffing: If you call, will they come? *American Journal of Disaster Medicine*, 1(1), 28–36.
- Davidson, J., Sekayan, A., Agan, D., Good, L., Shaw, D., & Smilde, R. (2009). Disaster dilemma: Factors affecting decision to come to work during a natural disaster. *Advanced Emergency Nursing Journal*, 31(3), 248–257. <http://dx.doi.org/10.1097/TME.0b013e3181af686d>
- Demircan, N., & Ceylan, A. (2003). The concept of organizational trust: Reasons and results. *Journal of Management and Economy*, 10(2), 139–150.
- Evans, C. A., & Baumberger-Henry, M. (2014). Readiness: How prepared are you? *Journal of Emergency Nursing*, 40(5), 448–452. <http://dx.doi.org/10.1016/j.jen.2014.03.006>
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). Los Angeles, CA: Sage.
- Frank, D., & Sullivan, L. (2008). The lived experience of nurses providing care to victims of the 2005 hurricanes. *Southern Online Journal of Nursing Research*, 8(3).
- Fung, O. W. M., & Loke, A. Y. (2013). Nurses' willingness and readiness to report for duty in a disaster. *Journal of Emergency Management*, 11(1), 25–37. <http://dx.doi.org/10.5055/jem.2013.0125>
- Godderis, R., & Rossiter, K. (2013). 'If you have a soul, you will volunteer at once': Gendered expectations of duty to care during pandemics. *Sociology of Health & Illness*, 35(2), 304–308. <http://dx.doi.org/10.1111/j.1467-9566.2012.01495.x>
- Good, L. (2007). Addressing hospital nurses' fear of abandonment in a bioterrorism emergency. *AAOHN Journal*, 55(12), 493–500.



- Goodhue, C. J., Burke, R. V., Ferrer, R. R., Chokshi, N. K., Dorey, F., & Upperman, J. S. (2012). Willingness to respond in a disaster: A pediatric nurse practitioner national survey. *Journal of Pediatric Health Care, 26*(4), e7–e20. <http://dx.doi.org/10.1016/j.pedhc.2010.11.003>
- Grimaldi, M. (2007). Ethical decisions in times of disaster: Choices healthcare workers must make. *Journal of Trauma Nursing, 14*(3), 163–164.
- Grimes, D., & Mendias, E. (2010). Nurses' intentions to respond to bioterrorism and other infectious disease emergencies. *Nursing Outlook, 58*(1), 10–16.
- Haines, R., Street, M., & Haines, D. (2008). The influence of perceived importance of an ethical issue on moral judgment, moral obligation, and moral intent. *Journal of Business Ethics, 81*(2), 387–399.
- Hollis, E. (2014). Ebola virus poses new challenge to healthcare community. *Biomedical Instrumentation & Technology, 48*(6), 425–429. <http://dx.doi.org/10.2345/0899-8205-48.6.425>
- Hope, K., Durrheim, D., Barnett, D., D'Este, C., Kewley, C., Dalton, C., . . . Links, J. (2010). Willingness of frontline health care workers to work during a public health emergency. *Australian Journal of Emergency Management, 25*(3), 39–47.
- Hsin, D., & Macer, D. (2004). Heroes of SARS: Professional roles and ethics of health care workers. *Journal of Infection, 49*, 210–215.
- International Council of Nurses. (2012). *Code of ethics for nurses*. Retrieved from <http://www.icn.ch/who-we-are/code-of-ethics-for-nurses/>
- International Federation of Red Cross and Red Crescent Societies. (2014). *World disasters report 2014*. Retrieved from <https://www.ifrc.org/en/publications-and-reports/world-disasters-report/world-disasters-report-2014/world-disasters-report-2014-data/>
- International Federation of Red Cross and Red Crescent Societies. (2015). *World disasters report 2015: Focus on local actors, the key to humanitarian effectiveness*. Retrieved from <http://ifrc-media.org/interactive/world-disasters-report-2015/>
- Iserson, K., Heine, C., Larkin, G., Moskop, J., Baruch, J., & Aswegan, A. (2008). Fight or flight: The ethics of emergency physician disaster response. *Annals of Emergency Medicine, 51*(4), 345–353.
- Johnstone, M., & Turale, S. (2014). Nurses' experiences of ethical preparedness for public health emergencies and healthcare disasters: A systematic review of qualitative evidence. *Nursing & Health Sciences, 16*(1), 67–77. <http://dx.doi.org/10.1111/nhs.12130>
- Kagan, I., Ovadia, K., Gazit, I., & Silner, D. (2004). The SARS threat in Israel: One medical center's experience. *The Journal of Nursing Administration, 34*(7–8), 318–321.
- Li, L., Wan, C., Ding, R., Liu, Y., Chen, J., Wu, Z., . . . Li, C. (2015). Mental distress among Liberian medical staff working at the China Ebola treatment unit: A cross sectional study. *Health and Quality of Life Outcomes, 13*, 156. <http://doi.org/10.1186/s12955-015-0341-2>
- Lim, G. H., Lim, B. L., & Vasu, A. (2013). Survey of factors affecting health care workers' perception towards institutional and individual disaster preparedness. *Prehospital and Disaster Medicine, 28*(4), 353–58.
- Liu, H., & Liehr, P. (2009). Instructive messages from Chinese nurses' stories of caring for SARS patients. *Journal of Clinical Nursing, 18*(20), 2880–2887. <http://dx.doi.org/10.1111/j.1365-2702.2009.02857.x>
- MacIntyre, C. R., Chughtai, A. A., Seale, H., Richards, G. A., & Davidson, P. M. (2015). Uncertainty, risk analysis and change for Ebola personal protective equipment guidelines. *International Journal of Nursing Studies, 52*(5), 899–903. <http://dx.doi.org/10.1016/j.ijnurstu.2014.12.001>
- Malm, H., May, T., Francis, L., Omer, S., Salmon, D., & Hood, R. (2008). Ethics, pandemics, and the duty to treat. *American Journal of Bioethics, 8*(8), 4–19.
- Martin, S. D., Brown, L. M., & Reid, W. M. (2013). Predictors of nurses' intentions to work during the 2009 influenza A (H1N1) pandemic. *The American Journal of Nursing, 113*(12), 24–31.
- McGillis Hall, L., & Kashin, J. (2016). Public understanding of the role of nurses during Ebola. *Journal of Nursing Scholarship, 48*(1), 91–97. <http://dx.doi.org/10.1111/jnu.12182>
- Melnikov, S., Itzhaki, M., & Kagan, I. (2014). Israeli nurses' intention to report for work in an emergency or disaster. *Journal of Nursing Scholarship, 46*(2), 134–142. <http://dx.doi.org/10.1111/jnu.12056>
- Moral. (2015). In *Dictionary.com*. Retrieved from <http://dictionary.reference.com/browse/moral?s=t>
- Nash, T. J. (2015). Unveiling the truth about nurses' personal preparedness for disaster response: A pilot study. *Medsurg Nursing, 24*(6), 425–431.
- Nathawad, R., Roblin, P., Pruitt, D., & Arquilla, B. (2013). Addressing the gaps in preparation for quarantine. *Prehospital and Disaster Medicine, 28*(2), 132–138. <http://dx.doi.org/10.1017/S1049023X1200180X>

- O'Boyle, C., Robertson, C., & Secor-Turner, M. (2006). Nurses' beliefs about public health emergencies: Fear of abandonment. *American Journal of Infection Control, 34*, 351–357. <http://dx.doi.org/10.1016/j.ajic.2006.01.012>
- O'Sullivan, T. L., Dow, D., Turner, M. C., Lemyre, L., Corneil, W., Krewski, D., . . . Amaratunga, C. A. (2008). Disaster and emergency management: Canadian nurses' perceptions of preparedness on hospital front lines. *Prehospital and Disaster Medicine, 23*(3), s11–s18.
- Ovadia, K., Gazit, I., Silner, D., & Kagan, I. (2005). Better late than never: A re-examination of ethical dilemmas in coping with severe acute respiratory syndrome. *Journal of Hospital Infection, 61*, 75–79. <http://dx.doi.org/10.1016/j.jhin.2004.12.018>
- Paixão, E. S., Barreto, F., Teixeira, M. G., Costa, M. N., & Rodrigues, L. C. (2016). History, epidemiology, and clinical manifestations of Zika: A systematic review. *American Journal of Public Health, 106*(4), 606–612.
- Polit, D. F., & Beck, C. T. (2012). *Nursing research: Generating and assessing evidence for nursing practice* (9th ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
- Portney, L. G., & Watkins, M. P. (2015). *Foundations of clinical research: Applications to practice* (3rd ed.). Philadelphia, PA: F. A. Davis.
- Qureshi, K., Gershon, R. R., Sherman, M. F., Straub, T., Gebbie, E., McCollum, M., . . . Morse, S.S. (2005). Health care workers' ability and willingness to report to duty during catastrophic disasters. *Journal of Urban Health, 82*, 378–388
- Sagar, P. L. (2015). Nurses leading the fight against Ebola virus disease. *Journal of Transcultural Nursing, 26*(3), 322–326. <http://dx.doi.org/10.1177/1043659615574326>
- Secor-Turner, M., & O'Boyle, C. (2006). Nurses and emergency disasters: What is known. *American Journal of Infection Control, 34*, 414–420. <http://dx.doi.org/10.1016/j.ajic.2005.08.005>
- Slepski, L. A. (2005). Emergency preparedness: Concept development for nursing practice. *The Nursing Clinics of North America, 40*, 419–430.
- Sobieraj, J., Reyes, J., Dunem, K., Carty, I., Pennathur, A., Gutierrez, R., & Harris, M. (2007). Modeling hospital response to mild and severe influenza pandemic scenarios under normal and expanded capacities. *Military Medicine, 172*(5), 486–490.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). New York, NY: Pearson.
- Twedell, D. (2009). Duty to care. *Journal of Continuing Education in Nursing, 40*(2), 53–54. <http://dx.doi.org/10.3928/00220124-20090201-04>
- U.S. Department of Health and Human Services. (2013). *The U.S. nursing workforce: Trends in supply and education*. Retrieved from <http://bhpr.hrsa.gov/healthworkforce/supplydemand/nursing/nursingworkforce/>
- U.S. Department of Labor Statistics, Bureau of Labor Statistics. (2014). *Occupational employment and wages*. Retrieved from <http://www.bls.gov/news.release/pdf/ocwage.pdf>
- Wenji, Z., Turale, S., Stone, T. E., & Petrini, M. A. (2015). Chinese nurses' relief experiences following two earthquakes: Implications for disaster education and policy development. *Nurse Education in Practice, 15*(1), 75–81. <http://dx.doi.org/10.1016/j.nepr.2014.06.011>
- World Health Organization & International Council of Nurses. (2009). *ICN framework of disaster nursing competencies*. Retrieved from [http://www.wpro.who.int/hrh/documents/icn\\_framework/en/](http://www.wpro.who.int/hrh/documents/icn_framework/en/)
- Yong, A. G., & Pearce, S. (2013). A beginner's guide to factor analysis: Focusing on exploratory factor analysis. *Tutorials in Quantitative Methods for Psychology, 9*(2), 79–94.

**Acknowledgments.** The author gratefully acknowledges and thanks a distinguished team of nurse scholars who generously donated their time, insight, and expertise to evaluate the scale for content validity: Danita Alfred, PhD, RN; Susan Yarbrough, PhD, RN, CNE; Charleen McNeill, PhD, RN; Jenifer Chilton, PhD, RN; Pam Martin, PhD, RN; Jacqueline Owens, PhD, RN; and Donna Casey, BSN, MA, RN, FABC, NE-BC.

Correspondence regarding this article should be directed to Tracy Jeanne Nash, PhD, RN, The University of Texas at Tyler, College of Nursing and Health Sciences, 8437 Pointe Rd., Park City, UT 84098. E-mail: [tracyjnash@outlook.com](mailto:tracyjnash@outlook.com)