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Disaster Nursing: A Retrospective Review

Paula A. Stangeland, BSN, RN, CRRN, PhDc

KEYWORDS

- Nursing • Disaster • Hurricane • Posttraumatic stress
- Preparedness

Natural disasters are destructive forces of nature that severely affect human lives as well as the environment. Catastrophic health emergencies including human-made and natural disasters usually result in mass casualties that require hospitals to increase capacity.[1,2] However, to increase capacity and provide quality patient care, facilities must have adequate staffing. Researchers have shown that health care professionals (HCP), including nurses, physicians, and dentists, feel responsible for responding to disasters; however, these same studies indicate that approximately 40% of health care professionals reported that they would not respond during health emergencies.[3,4]

Nurses' intent to respond to disasters is a topic that has not been exhaustively researched. It is prudent to understand nurses' intent to respond, as the capacity of hospitals is directly related to the number of staff nurses available to care for the influx of patients during disasters.[5] Because nurses are invaluable to disaster response efforts, more research is necessary to validate findings of recent studies and clarify the needs of nurses who respond to disasters and other health emergencies. Existing literature does not adequately describe the needs of nurses while working during disaster situations, nor is it clear why nurses do or do not respond. Further complicating nursing's response to emergencies is the influence of the nursing shortage and the identified lack of education preparing nurses for disaster response, making these recommended areas for further exploration.[6]

REVIEW OF THE LITERATURE

The purpose of this article is to provide a critique of published works that are representative of research studies that have explored disaster preparedness related to nursing. In addition, rationale for conducting future research in the area of nurses' experiences of intent to respond and working during major disasters is discussed. An extensive review of the literature was completed using health care literature databases including

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University of Texas Medical Branch, School of Nursing, 301 University Boulevard, Galveston, TX 77555-1029, USA
E-mail address: pastange@utmb.edu

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CINAHL, Medline (Ovid), PubMed, and PsycINFO. In 1974, the Robert T. Stafford Disaster Relief Act was signed into law, establishing the process by which presidents could declare disasters in states overwhelmed by catastrophic events. Therefore, the literature review was limited to the past 36 years. Keywords entered into the databases were nursing, disaster, hurricane, posttraumatic stress, and preparedness. The search revealed a vast amount of disaster-related literature, which was categorized into 8 thematic sections: (a) defining disaster, (b) nursing during and after disaster, (c) nursing education in disaster preparedness, (d) military nurse preparedness, (e) postdisaster stress, (f) ethical issues and intent to respond, (g) policy, and (h) hospital emergency policy.

DEFINING DISASTER

The association between disasters and human existence is indisputable, hence many definitions for disaster are found in the literature. A comprehensive definition for disaster is difficult to locate in the literature—most definitions are either too broad or too narrow, and many organizations have created their own definitions for the term. For the purpose of this review, the definition of the term that was deemed most appropriate was that used by the American Red Cross (ARC), which defines disaster as:

> *A threatening or occurring event of such destructive magnitude and force as to dislocate people, separate family members, damage or destroy homes, and injure or kill people. A disaster produces a range and level of immediate suffering and basic human needs that cannot be promptly or adequately addressed by the affected people, and impedes them from initiating and proceeding with their recovery efforts. Natural disasters include floods, tornadoes, hurricanes, typhoons, winter storms, tsunamis, hail storms, wildfires, windstorms, epidemics, and earthquakes. Human-caused disasters—whether intentional or unintentional—include residential fires, building collapses, transportation accidents, hazardous materials releases, explosions, and domestic acts of terrorism.*[7]

Common to all definitions of disaster is the characteristic that disasters are destructive events that more often than not require assistance from outside the community.

NURSING DURING AND AFTER DISASTER

Researchers report that nurses are one of the largest groups of emergency responders during a disaster and are at risk for psychosocial problems that may need interventions to help them cope with exposure to disasters.[8,9] In the immediate aftermath of a disaster, the effects can be overwhelming to nurses working in the area, as there is a great deal of chaos and confusion that nurses must contend with and overcome.[8,10–12]

Studies indicate disaster emergencies create an atmosphere of pandemonium and uncertainty and that nurses perceive they have been or will be abandoned by leadership.[8,10,12,13] Feelings of abandonment by management and a lack of communication play a major role in the decision-making processes of nurses and other HCPs when deciding to work during a disaster.[13–15] Nurses state that they feel disaster plans are made by leaders or managers without input from the nurses who will actually be working and taking care of patients during and after the disaster.[8,12]

Giarratano and colleagues[8] conducted an interpretive phenomenological study based on van Manen's "lived experience" philosophy. The sample included 16 perinatal nurses who worked during Hurricane Katrina. The purpose of the study was to

make explicit the perinatal nurses' shared meanings of their lived experience of providing care in New Orleans during Hurricane Katrina. Major themes that emerged from the study include (a) duty to care, (b) conflicts in duty, (c) uncertain times, (d) strength to endure, (e) grief, (f) anger, and (g) feeling right again. Findings demonstrated that nurses who work during disasters must live through the uncertainty of the situation and be prepared to adapt to the needs that arise in both patient care and self-preservation situations. This study revealed that primary resources needed by nurses while working during a disaster include excellent basic nursing skills, intuitive problem solving, and a sense of staff unity. Researchers noted that the nurses exhibited a wide range of problems related to stress. These problems included changed sleep patterns, change in mood, eating problems, substance abuse, and avoidance behaviors. At the same time, it was recognized that the nurse participants practiced in harmony with duty to care values and demonstrated behaviors of strength, courage, and resilience.[8]

O'Boyle and colleagues[13] completed a qualitative study with a purposive sample of 33 nurses who participated in focus groups ranging from 2 to 9 participants in each group. The sample of nurses was recruited from 3 Midwest hospitals that were designated as receiving sites for evacuees. The purpose of the study was to identify beliefs and concerns of nurses who worked in hospitals designated as receiving sites during public health emergencies. Abandonment was the major theme that emerged from the focus group interviews. This theme was supported by subthemes including: chaos, unsafe environment, loss of freedom, and limited institutional commitment. Nurses felt that policies were not well thought out, and that they were left out of the communication loop. In addition, the nurses stated that they did not receive any preparedness training to handle bioterrorist events.[13] Nurses believed that in the event of a bioterrorist attack, there would be a disruption in normal staffing resources. Aware that nurse staffing under normal conditions is at times already strained, the nurses feared that they would not be free to leave the workplace. Therefore, these researchers reported that the participants in the study believed that a shortage of nursing staff would be indirectly related to nurses who refused to work during a disaster. A limitation of this study is the small number of participants in some of the focus groups, which might have limited the discussions.

A qualitative descriptive study completed by Broussard and colleagues[10] explored school nurses' feelings and experiences working in the aftermath of Hurricanes Katrina and Rita. The sample consisted of 41 female school nurses from across the state of Louisiana who attended an Annual School Nurse Conference held in March 2006. Nurse participants had an average age 48 years. Researchers reported that the participants were from all areas of Louisiana, including areas that were not in the path of either hurricane. Participants were asked one question: "Please share your experiences and feelings about Hurricanes Katrina and/or Rita".[10] In addition to the qualitative question, demographic data were collected that included: (a) age, (b) years of experience as a school nurse, (c) gender, (d) support systems loss or damage to home and vehicle, (e) damage to school, and (f) change in work assignment as a result of the storm. Data analysis was not described; however, findings were categorized into 2 major themes: personal impact and professional impact. Personal impact included 3 subthemes: (a) uncertainty, (b) helplessness, and (c) thankfulness. Professional impact included 2 themes: practice challenges and practice rewards. The participants portrayed a wide array of emotions and feelings that were similar to previous studies. Researchers recommended that all school nurses would benefit from having both formal and informal support systems and mental health services available to them in the aftermath of future hurricanes.[10] Identifying the philosophic

underpinnings as well as the method for data analysis and rigor would have strengthened the validity of this study.

NURSING EDUCATION IN DISASTER PREPAREDNESS

Although some nurses identified their experiences of working during and in the aftermath of Hurricane Katrina and other health emergencies as rewarding, they also identified planning and education as critical needs for providing care in future disasters.[3,9–11] Hughes and colleagues[9] report that nurses believe that they need to be involved at the onset of the emergency planning process. During emergencies, nurses stated that they used their most basic skills and teamwork when providing patient care, but recognized that further education is necessary to enhance their knowledge prior to future events.[3,8,11]

According to the International Nursing Coalition for Mass Casualty Education (INCMCE), every nurse must have sufficient knowledge and skill to recognize the potential for a mass casualty incident.[16] In addition, the INCMCE states that every nurse must be able to identify when a mass casualty event may have occurred, know how to protect oneself, know how to provide immediate care for those individuals involved, and be able to recognize their own role and limitations during such a disaster. The INCMCE also recommends that nurses know where to seek additional educational information and how to access resources.[16]

The position of the American Nurses Association (ANA) related to practice during disaster is that all nurses are individually accountable for their actions and should practice according to their code of ethics.[17,18] Despite that the ANA acknowledges that working during disasters places nurses in unusual situations and conditions, the organization's code of ethics defines and directs the responsibilities of all practicing nurses regardless of the situation or setting. However, in the 2010 draft of the scope and standards of practice, the ANA recognizes that these standards may change during times of disaster.[19]

The Essentials of Baccalaureate Education for Professional Nursing Practice was created by The American Association of Colleges of Nursing (AACN).[20] This document provides guidelines for baccalaureate-level nursing schools to prepare students for disaster response. The AACN mandates that the baccalaureate nursing education curriculum contain emergency-preparedness and disaster-response information.[20] Specifically, the guidelines state that baccalaureate nursing programs should prepare graduates to use clinical judgment appropriately and provide timely interventions when making decisions and performing nursing care during disasters, mass casualties, and other emergency situations. In addition, nursing students should understand their role and participation in emergency preparedness and disaster response with an awareness of environmental factors and the risks these factors pose to self and patients.[20] It is not known whether the voices of nurses experienced in disaster have informed these essentials of education.

Educational competencies for associate degree nurses were created by the National League for Nurses (NLN) with support from the National Organization of Associate Degree Nursing.[21] Although the document provides core competencies that all associate degree nurses must meet, it does not specifically explicate the responsibilities of associate degree nurses during emergency situations. A particular skill indirectly related to disaster preparedness includes the ability to adapt patient care to changing health care environments.[21]

Gebbie and Qureshi,[22] well-known nurse experts in disaster management, maintain that it is necessary for all nurses to be prepared during disasters. These experts define

the difference between emergency and disaster, and state that disasters disrupt many services and cause unforeseen threats to public health. These researchers further describe disasters as requiring assistance from outside the affected community. Gebbie and Qureshi,[22] at the request of the Centers for Disease Control and Prevention (CDC), developed 14 core emergency preparedness competencies for nurses. Although these competencies were developed by nurses; it is not known whether they have been incorporated or implemented in any educational program or facility where nurses work.

Research has shown that nursing schools may be lacking in the area of preparing students for disaster nursing.[23,24] Jennings-Saunders and colleagues[23] completed a descriptive survey study that investigated nursing students' perceptions regarding disaster nursing. One purpose of the study was to propose recommendations to help advance the discipline of nursing and nurse clinicians. A convenience sample of 51 senior nursing students participated. Each participant completed the Disaster Nursing Perception Questionnaire and the Demographic Profile Form. Data were analyzed for meaning and relationships of words using the data analysis technique of Morgan and Baxter. This study revealed that nursing students do not comprehend what disaster nursing means and why it is important to know what community resources are available during times of disaster. Furthermore, the study revealed that it is not known to what extent nursing faculties teach disaster preparedness in nursing programs, even though it is required.

Weiner and colleagues[24] administered an on-line survey to 2103 United States nursing program deans and nursing program directors to assess the level of disaster preparedness curricula in United States nursing schools. Only 348 surveys (17%) were completed and returned. This low response rate was identified as a limitation of the study. Baccalaureate and associate degree nursing programs made up more than 77% of the response rate. The study revealed that faculty was inadequately prepared to teach disaster preparedness and that most programs were overly saturated, leaving little room for disaster-preparedness education. A significant finding revealed that United States nursing school program curricula were limited in the area of disaster preparedness.

This review of the literature revealed that nursing school governing bodies have developed competencies to be included in the nursing curriculum; however, nursing programs have been identified as still lacking in the area of disaster nursing curriculum. In addition, studies reveal that nursing faculty members are not prepared to teach disaster nursing. Education of faculty in the area of disaster preparedness and response is an area that requires added consideration to adequately prepare students for disaster situations that may arise in the students' future careers.

MILITARY NURSE PREPAREDNESS

Military nursing has played a critical role in the history if nursing. Including data related to military nursing further enriches this review by addressing a significant area related to disaster and emergency preparation for nurses. Nurses' involvement in war-zone care dates back to the Crimean War in the 1800s, when Florence Nightingale cared for injured soldiers and introduced modern nursing during times of war. Researchers today posit that nursing during wartime has increased the profession's understanding of caring and responding during disasters.[24] It is recognized today that military nursing is challenged by working in diverse situations. Yet, according to recent studies, literature does not adequately describe military disaster nursing.[25]

On December 8, 1941, the United States declared war on Japan after the bombing of Pearl Harbor. Trapped in the midst of this war were 99 army and navy nurses who had no combat training. These nurses were caught in the middle of the battle on Bataan, a province of the Philippines. A few of the nurses escaped by boat but 77 were captured by the Japanese and held captive for 3 years in the Philippines. These nurses represent the first group of women in the military to be imprisoned by enemy forces.[26]

Elizabeth Norman[26] had the privilege of interviewing 20 of the 77 female nurses and wrote a book titled *We Band of Angels: The Untold Story of American Nurses Trapped on Bataan by the Japanese*. Norman began her study in 1990 and discovered that only 48 of the nurses were still living. During this study, she also found that most of the nurses had joined the military seeking adventure and romance. The nurses interviewed by Norman reported that the Philippine Islands were paradise until the war broke out and they were captured and held prisoner.

Norman[26] realized and reported that the nurses always started the conversation with humor but the interview soon found the nurses talking about the painful memories, with a few interviews ending in tears. During the study it was reported that all the nurses had similar accounts of the ordeal of being held captive and that all of the nurses answered the interview questions using "we" instead of "I." These comments led Norman to realize that the nurses viewed "unit cohesiveness" as their most important survival tool.[26]

Baker and colleagues,[27] using a self-report questionnaire, studied the stresses experienced by female nurses in Vietnam. A sample of 60 female Army nurses was recruited to complete this study. Findings revealed that 60% of the participating nurses reported they were poorly prepared by the military to serve in Vietnam. Also, registered nurses with less than 2 years of clinical experience before going to Vietnam were more likely to experience posttraumatic stress syndrome (PTSD) than nurses with more years of experience. The investigators identified the use of a self-report questionnaire as a study limitation, noting that the nurses had to recall events that occurred between 14 to 22 years prior to the study, adding to possible response bias. Baker and colleagues concluded that more research in this area is necessary.

Ravella[28] completed a descriptive study using a voluntary sample of 20 Air Force nurses in San Antonio, Texas, who served in Vietnam at various times during the Vietnam War. This study used in-depth interviews to gain insight into individual nurse perceptions of their wartime experiences, coping skills, and significant events that they remembered. Findings revealed that 25% of the participants described symptoms of PTSD. Participants also reported crucial survival skills including strong social support, maturity, nursing experience, humor, religion, and relaxation. The most significant events remembered were directly related to patient care situations and threats to survival. These events were reported by 60% of the nurses interviewed. Lastly, all of the nurses interviewed reported that their most rewarding professional experience was serving in the Vietnam War.[28]

Using a qualitative design, Stanton and colleagues[29] examined and compared experiences of nurses who served during World War II, the Korean War, the Vietnam War, and Operation Desert Storm. A sample of 22 nurses who volunteered to participate in the study were interviewed and asked to describe their experiences of serving during wartime. These researchers revealed that military nursing is an experience that is very different from community nursing. The 5 common themes that emerged from the study were: (a) reacting personally to the war experience, (b) living in the military, (c) the meaning of nursing in the military, (d) the social context of war, and (e) images and sensations of war.

In 2006 a proposed model for military disaster nursing was developed.[25] This model included actions deemed necessary during the 3 phases of disaster: (a) preparedness, (b) response, and (c) recovery. Military nurses possess a wide range of skills and are usually leaders in patient care. According to Wynd,[25] future disasters will encompass a wide range of disasters causing diverse mass casualties. Wynd also emphasized that more research is necessary to determine whether this proposed model for military disaster nursing will be useful during military as well as civilian disasters.

Although both can be stressful and traumatic, the literature reviewed revealed that nursing in the military is different from community disaster nursing. Because the literature reveals that working during disasters and traumatic situations causes increased stress for nurses, it is necessary to include information related to disorders that have been associated with experiencing traumatic situations.

POSTDISASTER STRESS

Working during disasters can have an immense impact on responders. It has been recognized in the literature that PTSD can develop soon after experiencing a traumatic event.[30] During times of disaster, caregivers and first responders react immediately to address physical injuries. However, these same caregivers have a tendency to react slowly or ignore injuries to themselves that are concealed deep within the consciousness. The National Institute of Mental Health (NIMH) defines PTSD as:

> *An anxiety disorder that can develop after exposure to a terrifying event or ordeal in which grave physical harm occurred or was threatened. Traumatic events that may trigger PTSD include violent personal assaults, natural or human-caused disasters, accidents, or military combat.*[31]

According to the NIMH, PTSD can start at any time after experiencing a traumatic event. Symptoms of PTSD include bad dreams, flashbacks from the traumatic event, feeling like the traumatic incident is happening again, terrifying thoughts that one cannot control, staying away from places and things that are reminders of the event, feeling worried, guilty, or sad, feeling alone, problems sleeping, feeling on edge, angry outbursts, and thoughts of hurting oneself or others.[31,32]

Traumatic stress can change lives forever.[33] Researchers report that long-term dissociative and PTSD symptoms may occur after natural disasters.[34,35] In addition; survivors of disaster experience traumatic stress and the sights, sounds, and smells of the disaster are embedded in their minds forever.[33]

Acute stress disorder (ASD) is a condition that has a close relationship to PTSD. Researchers have documented that women are at higher risk for developing ASD and PTSD than men who have experienced traumatic events.[31,36] Laposa and colleagues[37] completed a secondary data analysis study addressing the correlation between sources of workplace stress and PTSD symptoms. The study sample included 51 emergency department employees located in urban Canada. Seventy-three percent of the participants were identified as nurses. PTSD was assessed using the Posttraumatic Stress Diagnostic Scale (PDS). Stress was measured using the Health Professionals' Stress Inventory—Revised (HPSI-R). Both scales were reported to have a Cronbach alpha of .80 or higher, which is adequate for internal consistency. Major findings included that 12% of the participants met all of the criteria for PTSD. Eighty-two percent of the respondents confirmed they did not attend debriefing sessions provided by the hospital and 100% of the respondents reported they did not receive professional help for stress outside of the workplace. In addition, results revealed that 20% of the participants reported they had considered changing jobs

after stressful incidents. Researchers concluded that this study supports the need for employers to provide emotional support for workers who have experienced working during disaster or other traumatizing events that may lead to long-term emotional upset.[37]

Hughes and colleagues[9] completed a review of the literature to describe nursing's contribution to the psychosocial recovery of survivors of emergencies during all stages of disaster preparedness and recovery over a long-term period. The purpose of the integrative review was to provide guidance to nurses who are involved in emergency planning and response during the acute phase of an emergency. A second objective of the study was to inform nurses of the psychosocial effects that they may experience as health care providers working during disaster situations. These researchers revealed that nurses may experience stress-related psychosocial consequences that continue well past the disaster. Relevant factors that must be taken into account are: (a) level of exposure to the disaster, (b) environmental or working conditions and management practices, (c) nurses' perceptions and individual coping and stress reduction practices, and (d) the amount and type of training and previous experience. Hughes and colleagues[9] state that nurses are the largest entity of the emergency response team and need to be included from the beginning of emergency planning. Nurse responders must also undergo extensive education on the potential psychosocial symptoms that may be experienced as a result of working during a disaster.

When entire communities are affected by disaster, it is not possible to maintain previously normal daily activities. Conner and colleagues[30] suggest that identifying persons at risk for PTSD may improve outcomes after exposure to disasters and trauma. In addition, it is recognized that many screening and assessment instruments exist that measure PTSD after disaster; however, the validity of these instruments is unclear and more research is needed to verify their appropriateness. Brewin and colleagues[38] state that in order for PTSD screening instruments to be useful, they must be brief, consist of the minimum number of items necessary for accurate identification, and be written in a language that is easy to read. Furthermore, the symptoms of PTSD and ASD that may be experienced by nurses responding specifically to a major hurricane disaster may be different. Thus, one must first explore these perspectives by asking those who actually did respond and work in an affected facility. Only then will researchers begin to understand why nurses may elect not to respond during future hurricanes.

ETHICAL ISSUES AND INTENT TO RESPOND

Conflicting issues between family and self, safety, and work obligations often make it difficult for nurses and other HCPs to decide to work during a disaster.[12,39,40] Ethical opinions vary widely regarding decisions to report to duty during times of disaster and other health emergencies. The duty to report to work in health emergencies remains an intense topic of discussion in the health care arena. As unparalleled demands are placed on nurses and other HCPs who are called to work during disasters, some believe that the code of ethics for health care workers should specifically define the responsibilities of the HCP.[40] While the American Medical Association (AMA) and the Canadian Medical Association (CMA) have addressed the issue of responsibilities of physicians in their code of ethics, some researchers believe that it remains to be determined whether other health care professions will follow the same course of action in addressing the issue of providing care during health emergencies.[40]

The ANA revised the code of ethics for nurses to include interpretive statements to accommodate nurses' comprehensive role in the health care environment.[17] Because nurses are continually confronted with many challenges including unpredictable and complex medical and emergent conditions that affect both individuals and communities, the revised code of ethics addresses some of the more complex ethical obligations of nurses. The ANA code of ethics does not explicitly detail the obligation of nurses to report to duty during emergencies; however, it does address nurses' responsibilities to the public. One such responsibility outlined in the ANA code of ethics is that nurses have an obligation to "participate in institutional and legislative efforts to promote health and meet national health objectives."[17]

In an effort to examine ethical issues that arise during a pandemic disaster, Ehrenstein and colleagues[41] completed a quantitative survey design study. Surveys were sent to 1898 health care workers (HCWs) at a university hospital in Regensburg, Germany. Only 644 surveys were returned and of the 644 returned surveys, 264 of these HCWs were nurses. The purpose of the study was to solicit opinions of employees on professional ethics of proper response to pandemic influenza. Researchers discovered that 182 (28%) of the 644 HCWs surveyed believed that it was professionally acceptable to abandon the workplace to protect themselves and their family during a pandemic.[41] In addition, 77% of the respondents disagreed that HCWs should be permanently dismissed for not reporting to work during a pandemic, and 21% of the participants believed that HCWs without children should care primarily for the influenza patients. The researchers concluded that HCWs would benefit from further education regarding efficacy and availability of medications during a pandemic. It was also recognized that professional ethical guidelines are needed to help HCWs fulfill their duties in cases of pandemics.[41] Although this study revealed interesting information regarding the HCW's willingness to report to work during a pandemic, the survey used to complete the study was a newly developed instrument, and reliability and validity have not been established.

Qureshi and colleagues[39] completed a quantitative survey design study using a 23-item questionnaire. The sample consisted of 6428 HCP in the New York area. The purpose of this study was to assess the ability and willingness of HCPs in New York City to report to work during different types of catastrophic events. This study revealed that 47.9% of the participants reported the most frequent reason for employees' unwillingness to report to duty during a disaster was a fear and concern for the safety of their family and themselves. In addition, 82.5% of participants reported that they were most likely to report to duty in cases of mass casualty. However, 20% of the participants reported that they were not sure of their ability or willingness to report to duty during any catastrophic event. The researchers reported that a majority of the 6428 HCP participants in the New York area said they were least likely to report to duty in the case of severe acute respiratory syndrome (48.4%), radiation (57.3%), chemical terrorism (67.7%), and smallpox (61.1%). A reported limitation to this study is that it was conducted only in New York and cannot be generalized to other populations.[39]

Using a survey design, Balicer and colleagues[3] explored public health workers' perceptions toward working during an influenza pandemic as well as factors that may influence intent to respond if such an event occurred. The survey was sent to 531 employees of 3 major health departments in Maryland, with a return of 308 surveys. Clinical staff, nurses, physicians, and dentists accounted for 102 of the respondents. Data were analyzed using logistic regression to evaluate the association of demographic variables, and attitudes and beliefs with self-described likelihood of reporting to work during a pandemic disaster. The researchers studied the association between attitudes and beliefs related to pandemic preparedness and the self-reported

likelihood of reporting to work. Of the 308 participants, only 163 (53.8%) stated that they would most likely report to work during a pandemic emergency. Forty percent noted that they would be asked by their health department to respond during an influenza pandemic event. Balicer and colleagues[3] reported that 66% of all participants perceived themselves to be at risk when performing their duties during a pandemic event. It was concluded that to reduce the perceived personal threat during a pandemic and increase the likelihood of employees responding during influenza pandemics, HCPs would benefit from continuing education regarding pandemics. These individuals must be assured that adequate protective equipment and psychological support would be made available to responders. Researchers also concluded that if employees are unwilling to respond during an influenza pandemic emergency, this behavior may cause a considerable deficit in national emergency response plans. Limitations to this study include the use of a subjective self-report survey and subject recruitment from 3 clinics in Maryland, therefore findings cannot be generalized to other populations. Lastly, the power of the study was not reported.[3]

Grimes and Mendias[42] completed a descriptive study that examined nurses' intentions to respond to an infectious disease emergency. This study was guided by Icek Ajzen's Theory of Planned Behavior. A sample of 313 licensed nurses in Texas who completed a state board of nursing mandated 2-hour bioterrorism continuing education class were recruited to participate in this study. Data were collected using 3 researcher-developed questionnaires. The Statistical Package for the Social Sciences (SPSS) version 16 was used to analyze data. According to the researchers, 292 participants completed all 3 questionnaires. The sample included both registered nurses (98%) and licensed vocational nurses (2%), with the majority being female (87%). Only 25% of the nurses who reported that they had a professional duty to respond also had a high intent-to-respond score. This significant finding raises concerns about adequate staffing during times of bioterrorism disasters or infectious disease events.

James and colleagues[43] completed a quantitative cross-sectional study with a sample of 291 nurses who worked during Hurricane Katrina in Mississippi. The purpose of this study was to evaluate the impact of Hurricane Katrina with respect to age on Mississippi nurses who worked during Hurricane Katrina. Nurses' ages in this sample ranged from 23 to 73 years. The sample was divided into 2 groups according to age: Group 1 was 23 to 45 years old and Group 2 was 46 to 73 years old. The researchers reported that there was a significant positive association between nurses aged 43 to 73 years and the development of poststorm depression, anxiety, PTSD, and lower health status when compared with nurses who were 23 to 45 years old. Older nurses developed more symptoms of stress-related disorders than the younger nurses. It was concluded that taking into consideration the growing shortage of nurses in the United States, it is important to understand how working during stressful situations affects older nurses, as retention of older nurses is important as a short-term resolution to the nursing shortage. This study used 7 self-report scales to gather data, which can be considered a limitation of the study. Self-report questionnaires are an excellent method to gain knowledge about a participant's feelings or beliefs; however, data gathered through self-report relies on the accuracy of the participant's subjective account and may also reveal socially desirable responses.[44] The findings of this study relied solely on self-reported data; hence, the results must be reviewed with caution.

Individuals as well as whole communities are greatly affected by any type of disaster emergency; whether it is natural or human-made.[9] A study performed by Brodie and colleagues[14] reported that there were approximately 21,700 Hurricane Katrina evacuees from New Orleans displaced to Houston, Texas. Following Hurricane Katrina, the CDC and the Louisiana Department of Health and Hospitals reported that there

were 7543 nonfatal injuries such as cuts, broken bones, and animal bites secondary to clean-up efforts after Hurricane Katrina between September 8 and October 14, 2005.[45] These incidents make it clear that there is an unquestionable need for nurses to understand the importance of their response in times of disaster emergencies.

Conflicts of duty to family and work are further complicated by reports of nurses who have lost their jobs for not reporting to duty during times of emergency and impending disaster.[12,39,46] In addition to conflicts of duty to family and work, there is growing concern among HCPs that there is a lack of obligation in the duty of care during emergencies.[40]

DISASTER POLICY

Natural disasters cannot be prevented; however, damage caused by the event may be reduced if advanced action is taken to curtail risk and vulnerability to potentially affected communities. Government policies have attempted to address the issue of disaster relief and assistance to communities after large-scale disasters. To better understand disaster-related policy, it is important to review policies that directly impact society as a whole.

Disasters cause a disruption in government and community functions of affected areas. Because of this disruption of functions, Congress created and passed The Robert T. Stafford Disaster Relief and Emergency Relief Act. This public law authorizes the President of the United States to declare that a state of emergency or a major disaster exists. A stipulation to the president's authority is that the governor of the state(s) affected must request a declaration of disaster to receive assistance.[47] The Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 100-707 was signed into law November 23, 1988 and remains in effect today. This law amended the Disaster Relief Act of 1974 PL-93-288 and constitutes the statutory authority for most federal disaster response activities, especially as they pertain to the Federal Emergency Management Agency (FEMA) and FEMA programs. Although this law has been amended several times throughout the past few years, the primary purpose remains the same: to provide orderly and systematic assistance to local governments in areas of declared disaster so they can provide aid to citizens.[47]

During the Bush administration, the directives that were used to disseminate presidential decisions on national security matters were designated as National Security Presidential Directives.[48] The United States Department of Homeland Security requires states to assume an all-hazards approach to the development of competencies to prevent, prepare for, respond to, and recover from a broad array of disasters. These laws are designated as Homeland Security Presidential Directives, and stipulate continuity requirements for all executive departments and agencies. The laws provide guidance for state, local, territorial, and tribal governments, as well as private sector organizations, to ensure a comprehensive integrated national program that will enhance the credibility of the United States national security position and enable a rapid and effective response to and recovery from national emergencies.[48] Homeland Security Presidential Directive 8 establishes policies to strengthen the preparedness of the United States to prevent and respond to all disasters, and establishes mechanisms for improved delivery of preparedness assistance to federal, state, and local entities. Nurses' input into these policies is unknown.[49]

HOSPITAL EMERGENCY POLICY

Although hospitals are but one component of health care during disasters, they are critical entities during disaster response. There is a paucity of research in the literature

that directly relates to nursing and hospital policy. Hospital policy is guided by standards set forth by The Joint Commission (TJC).[46] The TJC is an independent, not-for-profit organization that completes reviews, and evaluates and accredits hospitals and other health care organizations, basing its decisions on national quality and safety standards. According to TJC, hospital emergency policies should include disaster incidents both human-made and natural that are specific to the organization. Types of disasters that should be included in hospital policies are identified by probability and frequency of incidents for the area, and are based on definitions provided by the ARC and the Disaster Relief Act of 1974.

Using an exploratory, descriptive design, French and colleagues[12] investigated the needs and concerns of the nurses who responded during Hurricane Floyd. The purpose of the study was to determine whether the written plans of 4 hospitals addressed the needs and concerns of the nurses who worked during this disaster. A sample of 30 nurses who worked in the emergency department of the 4 hospitals participated in focus groups to discuss their experiences. Findings revealed that hospital policies were inadequate to deal with valid concerns of nurses. According to French and colleagues,[12] nurses' concerns included personal safety, family safety, and provision of basic needs, wages, adequate leadership, and pet care. Furthermore, the study reported that family commitment conflicted with professional obligations, resulting in nurses losing their jobs if they were unable to report to work.

Bartley and colleagues[50] completed an anonymous pre- and postinterventional study to test the hypothesis that an audiovisual presentation of hospital disaster plans would improve the knowledge, confidence, and skill of hospital employees. The sample included a convenience sample of 50 hospital employees that consisted of nurses, physicians, and administrators who would most likely be in a position of authority during a disaster. Findings showed a significant increase in the test pass-rate results from preintervention (18%) to postintervention (50%). In addition, pretest mean scores were higher for emergency room staff (12.1) versus other staff (6.2) in various areas of the hospital. The researchers also reported that there were no significant results in the general perception of preparedness. Bartley and colleagues[50] reported that the participants described the exercise as beneficial to themselves and their departments. It was acknowledged that the convenience sampling technique used to complete this study may have added to bias of the study, and that the small sample size resulted in decreased power of the study. This study suggests that simulation exercises can enhance staff knowledge levels related to disaster planning. However, it is recognized by many that more research is needed in the area of hospital disaster preparedness plans and policies.

SUMMARY

A plethora of information exists in the literature regarding emergencies and disasters. Nevertheless, significant gaps in the science related to nurses working during disasters are revealed. Few studies have addressed the perspective of nurses and their intent to respond to future disasters. Because nurses are invaluable to disaster response efforts, more research is essential to validate current findings and elucidate the needs of nurses who respond to disasters and other health emergencies.

There is a paucity of research in the literature describing nurses' lived experiences of working during hurricanes. Natural disasters inevitably inflict human suffering, and nurses are expected to respond and provide services during these catastrophic times. Lost within this expectation are the experiences and concerns of the nurses who are

called upon and intend to respond to the disaster, and yet are themselves affected by the disaster. Understanding the experiences and needs of nurses who decide to respond to the call of duty and work during disasters remains unclear in the literature. Research in the area of disaster response intentions by nurses becomes the initial step in understanding the phenomenon of working during a disaster and creating innovative approaches that address working during disasters.

Disaster policies have been developed and implemented at the international, national, state, local, and hospital level. Nevertheless, disasters continue to adversely impact communities and hospitals at all levels causing injuries, death, and destruction of infrastructure. To reduce the impact of disasters, continued research is needed to inform and strengthen future disaster policies. Knowledge gained from future research has great potential to inform nursing education, research, and practice, as well as health policy related to the care of individuals and responders before, during, and after disasters.

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