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Review Article

Nurses' experiences of ethical preparedness for public health emergencies and healthcare disasters: A systematic review of qualitative evidence

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Abstract Little is known about nurses' direct experiences of ethical preparedness for dealing with catastrophic public health emergencies and healthcare disasters or the ethical quandaries that may arise during such events. A systematic literature review was undertaken to explore and synthesize qualitative research literature reporting nurses' direct experiences of being prepared for and managing the ethical challenges posed by catastrophic public health emergencies and healthcare disasters. Twenty-six research studies were retrieved for detailed examination and assessed by two independent reviewers for methodological validity prior to inclusion in the review. Of these, 12 studies published between 1973 and 2011 were deemed to meet the inclusion criteria and were critically appraised. The review confirmed there is a significant gap in the literature on nurses' experiences of ethical preparedness for managing public health emergencies and healthcare disasters, and the ethical quandaries they encounter during such events. This finding highlights the need for ethical considerations in emergency planning, preparedness, and response by nurses to be given more focused attention in the interests of better informing the ethical basis of emergency disaster management.

Key words disasters, emergencies, ethics, health care, mass casualty incidents, nurses.

INTRODUCTION

The outbreak of severe acute respiratory syndrome (SARS) in 2003 provided the world with salutary lessons regarding the need to pay closer attention to the necessity, role, and impact of ethics frameworks for guiding decision-making in public health emergencies (Gostin, 2004; Thompson *et al.*, 2006; World Health Oranization, 2007a). As the University of Toronto Joint Centre for Bioethics Pandemic Influenza Working Group (2005) observed in the aftermath of SARS:

> Leaders in governments and health care systems had not previously developed an ethical framework or held prior consultations to deal with the suite of ethical issues forced on them by SARS. . . . SARS showed there are costs of not having an agreed-upon ethical framework, including loss of trust, low morale, fear, and misinformation. SARS taught the world that if ethical frameworks had been more widely used to guide decision-making, this would have increased trust and solidarity within and between health organizations (p. 4).

Two years later, in the aftermath of Hurricane Katrina, the need for clear ethics guidance during a catastrophic mass casualty event was likewise highlighted when a New Orleans physician and two nurses were arrested and charged with second-degree murder in relation to the "mercy killings" of four elderly patients (Curiel, 2006; Grimaldi, 2007; Lugosi, 2007; Okie, 2008). None of the four patients in question were expected to die immediately from natural causes, were in pain, or had consented to the lethal dose of drugs they were given. The patients were euthanized because the team believed they had "no realistic chances of surviving in a stranded, incapacitated hospital" (Curiel, 2006: 2067). The case raised provocative questions about what might lead a healthcare professional to consider euthanasia in such a situation. It also raised the more specific questions of whether the doctor and two nurses in this case had been properly prepared to make the life and death decisions they made (Curiel, 2006), and, if not, what if anything could have prepared them? (Curiel, 2006; Grimaldi, 2007; Lugosi, 2007; Okie, 2008).

Nurses and disasters

Nurses constitute the largest workforce within healthcare systems globally and are pivotal to any coordinated response to public health emergencies or healthcare disasters

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Table 1. Key concepts (working definitions)

Key concepts	Working definition
Public health emergency	"A disaster is the sudden occurrence of a calamitous, usually violent, event resulting in substantial material damage, considerable displacement of people, a large number of victims and/or significant social disruption. This definition excludes situations arising from conflicts and wars, whether international or internal, which give rise to other problems in addition to those considered in this paper. From the medical standpoint, disaster situations are characterised by an acute and unforseen imbalance between the capacity and resources of the medical profession and the needs of survivors who are injured, whose health is threatened, over a given period of time" (World Medical Association, 2006: 1).
Healthcare disaster	"[A]ny incident that overwhelms the resources of the health care system, locally and regionally, and the effects are expected to last for more than 96 h" (State Expert Panel on the Ethics of Disaster Preparedness, Wisconsin Division of Public Health, 2006: 2).
Mass Casualty Incident (MCI)	"An incident which generates more patients at one time than locally available resources can manage using routine procedures. It requires exceptional emergency arrangements and additional or extraordinary assistance" (World Health Oranization 2007b: 31). Events such as the Oklahoma City bombing in 1995 and the September 11 attacks in 2001 are well-publicized examples of mass casualty incidents.
Healthcare disaster ethics	"[A] set of principles and values that serve to direct the duties, obligations and parameters of the delivery of health care in a disaster situation. Disaster ethics is the study of what ought to be done in a disaster situation" (State Expert Panel on the Ethics of Disaster Preparedness, Wisconsin Division of Public Health, 2006: 2).
Altered/crisis standards of care.	"The level of care possible during a crisis or disaster due to limitations in supplies, staff, environment, or other factors. These standards will usually incorporate the following principles: (1) prioritize population health rather than individual outcomes; (2) respect ethical principles of beneficence, stewardship, equity, and trust; (3) modify regulatory requirements to provide liability protection for healthcare providers making resource allocation decisions; and/or (4) designate a crisis triage officer and include provisions for palliative care in triage models for scarce resource allocation (e.g., ventilators). Crisis standards of care will usually follow a formal declaration or recognition by state government during a pervasive (pandemic influenza) or catastrophic (earthquake, hurricane) disaster which recognizes that contingency surge response strategies (resource-sparing strategies) have been exhausted, and crisis medical care must be provided for a sustained period of time" (Institute of Medicine, 2009: 112–3).

involving mass casualties (defined in Table 1). Like their co-workers, nurses are in a primary position of having to make "tough moral choices" about rationing, restrictions, and responsibilities in the provision of life-sustaining care in a mass casualty event. Despite this, little is known about nurses' ethical preparedness for the unique ethical issues and challenges that such scenarios pose, and how nurses actually deal with them during public health emergencies and disasters. National and international nursing organizations have formulated codes of ethics and position statements outlining the role and responsibilities of nurses in disaster preparedness. These documents do not, however, provide clear guidance for ethical decision-making and conduct in extreme situations (Grimaldi, 2007). Although there is a growing body of research on nurses' clinical and emotional preparedness for public health emergencies and disasters, their ethical preparedness has generally not been considered (Gebbie & Qureshi, 2002; Thomas *et al.*, 2007). Because of this, little is known about:

- what disaster ethics education nurses receive worldwide;
- the ethical challenges that nurses may face during public health emergencies and catastrophic mass casualty events;
- how to prepare nurses for ethical responses in extreme conditions;
- whether it is even possible to prepare for catastrophic mass casualty events (i.e., to "prepare for the unpreparable");
- how much ethical preparedness is "enough";
- whether the ethical behavior of nurses during future public health emergencies and disasters can ever be ensured (Will nurses always be willing to care when their own personal safety, life, and health may be at risk? And is it reasonable to expect them to care?);
- how much personal risk and self-sacrifice can be reasonably and justifiably expected of nurses during public health emergencies and catastrophic mass casualty events.

Nurses' ethical preparedness

A systematic review of qualitative evidence of nurses' actual experiences, responses, and competencies in regard to healthcare disaster ethics has not been previously undertaken. Although nurses' experiences of ethical issues (e.g., willingness to care when faced with personal danger) have been captured in research reports, these have tended to be characterized as "personal issues," not ethical issues per se (Slepski, 2007). In some reports they have simply been

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overlooked altogether (O'Boyle *et al*., 2006a,b; Secor-Turner & O'Boyle, 2006) and an assumption has perhaps been made that ethics is self-evident. However, ethics is never "self-evident," and in order to understand nurses' direct experiences of healthcare disaster ethics and their implications, a systematic investigation of the phenomena is warranted.

Purpose, objectives, and research question

In this study, literature reporting qualitative research studies investigating nurses' direct experiences of public health emergencies and disasters and the ethical quandaries that may (and do) arise during such events was systematically reviewed and synthesized. Objectives of the review were to:

- determine the ethical standards and frameworks nurses used, or were expected to use, to guide their decision-making and conduct during public health emergencies and disasters;
- identify gaps and weaknesses in ethics guidance documents and educative processes available to nurses to inform their preparation for and management of ethical challenges posed by public health emergencies and disasters;
- improve understanding of the ethically justified expectations regarding what the public, employers, and co-workers can reasonably expect from nurses (their role and responsibilities) during public health emergencies and disasters.

The specific question addressed by this review was: What are nurses' experiences of preparing for and managing the ethical challenges posed by catastrophic public health emergencies and healthcare disasters?

METHOD

Design

This systematic review considered qualitative data reported in studies using methodological approaches such as phenomenology, hermeneutics, naturalistic inquiry, exploratory descriptive, grounded theory, case study, and feminist research.

Inclusion and exclusion criteria

Studies were eligible for inclusion if they:

- used samples of only nurses, registered or authorized under a given country's state of emergency provisions to practice in jurisdictions in occurrences of a public health emergency (e.g., pandemic influenza) or sudden-onset catastrophic mass casualty event (e.g., flood, hurricane, earthquake, tsunami, volcanic eruption, bush fires, terrorist attack);
- reported the *actual* and *direct experience* of nurses in the event(s) in question.

Studies or reports were excluded if they involved: quantitative or mixed methods; mixed sampling of nurses and other healthcare workers; personal reflections/anecdotal accounts of an event; speculative or anticipatory accounts of how nurses *believed* they would respond in a public health emergency or disaster; foreign language reports; analysis of policy documents; or other phenomena not directly related to the review question above.

Key concepts

For the purposes of this literature review, five key concepts were identified and defined: public health emergency; healthcare disaster; mass casualty incident; healthcare disaster ethics; and altered or crisis standards of care (Table 1). In keeping with the formal working definitions adopted for the purposes of this review (e.g., World Medical Association, 2006; see Table 1), war and war-related events were excluded. Bombing and terrorist attacks were included, such as the terrorist attack on the World Trade Center in New York in September 2001, since attacks of this nature meet the criteria of being a mass casualty incident (MCI) as defined by the World Health Organization (2007a). This definition is: "An incident which generates more patients *at one time* than locally available resources can manage using routine procedures [and which] requires exceptional emergency arrangements and additional or extraordinary assistance" [emphasis added] (World Health Organization, 2007b, p. 31). The reference made to "at one time" in this definition is significant and stands in contradistinction to the mass casualty events that occur during a conventional campaign of war, that is, at *multiple times* and at *multiple locations* over a sustained period of time (e.g., over months and even years) requiring quite a different kind and level of response.

Retrieval processes

A literature search was made of both published and unpublished English language studies using keywords listed in Table 2. A search was performed from the beginning date of each database selected until the end of 2011 (Tables 3,4). A three-step search strategy was utilized in each component of this review. An initial limited search of CINAHL and MEDLINE was undertaken followed by an analysis of text-words contained in the title, abstract, and index terms used to describe an article. A second search using all identified keywords and index terms was then undertaken across all included databases. Third, the reference list of all identified reports and articles were searched for additional studies.

Table 2. Keywords (Boolean/phrase search, all years until 2011)

Keywords
Nurses
Public health emergencies
Healthcare disasters
Disaster preparedness
Pandemic influenza
Ethics
Professional obligation
Avian flu
H5N1
Earthquake
Tsunami
Volcanic eruption
Hurricane
Terrorist attack
Bombing

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Table 3. Databases searched

CINAHL with full text
MEDLINE with full text
PsychINFO
Health Reference Center Academic
Expanded Academic ASAP
Academic Search Complete
Global Health
Informit
Health Policy Reference Center
ISI Web of Knowledge
JSTOR
Philosophers' Index
NLM and NIH Bioethics Information Sources
Social Services Abstracts
Proquest Health and Medical Complete
European Information Network – Ethics in Medicine and Biotechnology
ScienceDirect

Table 4. Grey literature databases

"Grey Literature Report" from New York Academy of Medicine
ProQuest Dissertations and Theses Full Text
Proceedings First
Institute for Health and Social Care Research (IHSCR),
AHRQ (Agency for Healthcare Research and Quality)
Grey Source: A Selection of Web-Based Resources in Grey Literature
HMIC (Health Management Information Consortium)
NurseScribe
Index to Theses
WHOLIS: WHO Library database
Newspaper Source Plus
LexusNexus
Legislation and health policy
Education policy
Conference proceedings
Documentaries
Webpages of professional nursing, public health and emergency management organisations.

Number of articles reviewed

A total of 40 potentially relevant articles were initially identified by the literature search. Following an evaluation of the abstracts, 14 papers were excluded on methodological grounds and 26 were retrieved for detailed examination. All articles initially selected for retrieval were each assessed independently by two reviewers for methodological validity using the online standardized critical appraisal Joanna Briggs Institute Qualitative Assessment and Review Instrument (JBI-QARI) (JBI, 2011). This instrument is a comprehensive online process of systematically and critically reviewing qualitative research reports by two reviewers through extracting information from each research report about the methodologies, phenomena of interest, the setting, the geographical and cultural context, participants, and data analysis, and making a decision as to whether to include the report in the review; making decisions regarding 10 aspects of the methods used, content and findings of the research reports, and assessing congruity and rigor; and extracting themes and sample quotes of participants to highlight themes. Categorization then moves from individual reports to a synthesis of the findings as a whole. Once the reviewers had each completed each stage of the above process they met to discuss findings, and confer on any disagreements regarding aspects of the review.

Of the 26 articles retrieved and assessed, 12 were deemed to meet the inclusion criteria and were systematically reviewed (Table 5). Fourteen articles were excluded on the grounds of: not being research (personal reflections only) ($n = 4$); samples included participants other than nurses (e.g., healthcare workers, doctors, public health professionals) ($n = 6$); research focus speculative/anticipatory (i.e., what nurses *believed* they would do in an public health emergency or disaster, not what they *actually* did) ($n = 2$); used mixed methods ($n = 1$); and involved war/war-related situations ($n = 1$).

Qualitative data were extracted from the selected articles using the online standardized Joanna Briggs Institute QARI Data Extraction Tools, which consisted of a Qualitative Assessment and Review Instrument and a "findings" instrument (JBI, 2011). The data extracted included specific details about the interventions, populations, study methods, and outcomes of significance to the review question and study objectives. Where possible, qualitative research findings were pooled using JBI-QARI. This involved the aggregation or synthesis of findings to generate a set of statements that represented the aggregation and categorizing of findings on the basis of similarity in meaning.

RESULTS

Twelve papers met the inclusion criteria and reported the findings of qualitative studies investigating nurses' experiences and perceptions of responding to a range of public health emergencies and catastrophic mass casualty incidents, notably: hurricanes, earthquakes, terrorist attacks, and infectious diseases outbreaks (SARS) (Table 5). The events included the US hurricanes Celia (1970), Floyd (1999), Katrina (2005), Rita (2005), Gustav (2008), and Ike (2008); earthquakes in Taiwan (Nantou County, 1999), Iran (Bam, 2003), and China (Wenchuan, 2008); terrorist attacks on the US World Trade Center (New York, 2001) and Israel (central cities, 2000–2002); and the SARS epidemic in Taiwan (2002–2003). Registered nurses recruited to the studies were drawn from a variety of healthcare and practice settings, including: hospital wards, emergency departments, intensive care units (ICU), operating rooms, senior administration and management, school nursing, and imaging departments. Samples were generally small, ranging from 5 to 70 participants (a combined total of 361 participants for all studies). Of these, most were female, aged 21–70 years, had carer responsibilities, and were involved in providing front-line assistance during the disaster event for between 1 and 55 days (Table 5).

Significantly, of the 12 papers reviewed, only one study (Frank & Sullivan, 2008) directly identified ethical issues

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Table 5. Included studies

Study	Methods	Participants	Context, emergency event, date(s) occurred	Outcomes	Notes/ethical issues
Broussard and Myers (2010)	Naturalistic inquiry–qualitative descriptive; interviews using open-ended broad questions	*n* = 5 school nurses who had experienced repeated hurricanes in coastal Louisiana	USA (coastal Louisiana): hurricanes Gustav and Ike (2008), Katrina and Rita (2005)	Three key themes: (a) anticipating the disaster; (b) returning after the storm; (c) making the decision to stay. Resilience a key process. Ongoing support and identification of mental health needs of entire school community maximizes recovery. Nurses need to understand and put into practice elements of resilience to maximize adaptation to environmental stressors	Each participant referred to a sense of "doing what needed to be done." Not identified or discussed as an ethical issue per se
Broussard *et al*. (2008)	Naturalistic inquiry–qualitative descriptive; interviews using open-ended broad questions	*n* = 41 school nurses (SNs); all female; mean age 48 years; mean average of 11 years as SN (1–27 years) who had experienced hurricanes in coastal Louisiana	USA (coastal Louisiana): hurricanes Katrina and Rita (2005)	Difficult to plan for emergency disasters. *Personal impact*: uncertainty, helpless and thankful to be alive. *Professional impact*: practice challenges, increased workload (overwhelmed), lack of supplies, practice rewards (gratitude could help). Disaster planning crucial. In general SNs would benefit from having access to formal and informal support systems after disasters (e.g., mental health counsellors). Active participation in community-based disaster preparation is crucial, focusing on the needs of children of all ages	No ethical issues per se identified or discussed
Dickerson *et al*. (2002)	Phenomenology (although method used more in keeping with qualitative exploratory descriptive design); interviews using open-ended broad questions	*n* = 17 registered nurses (RNs) (2 males, 15 females) from variety of healthcare settings	USA (New York): terrorist attack on World Trade Center September 11 (2001)	Nurses need training for future disasters and preparation for leadership in the field. Some nursing organizations underutilized. While feeling an overwhelming sense of loss, also engendered unifying spirit of community, camaraderie bonding of workers. Participants rediscovered pride in nursing	Recognition that in day-to-day contexts resources used for most critically ill. Whereas during a disaster the team functions to "salvage most people, not the most ill" and "this 'reversed care priority' is unsettling to many nurses." Nurses also need knowledge of reverse triage concept and proper allocation of limited resources. Nursing values of human caring, of meeting needs of victims and rescue workers most important
Frank and Sullivan(2008)	Phenomenology (van Kamm's methodology); semistructured (telephone) interviews	*n* = 9 licensed registered nurses (LRNs), all female (38–63 years), from variety of backgrounds; provided disaster care for average of 9 days after event	USA (southeast): hurricane Katrina (2005)	Five themes: (1) chaos (excitement, nervousness, fear, being overwhelmed); (2) reality check (enormity of situation, overload, individuals and systems being overwhelmed); (3) reorganizing (creatively structuring thinking to be more effective); (4) stabilizing (learning to "sit in the dark," struggling to implement care, making decisions beyond scope of practice); (5) planning for the future (being able to help and give; recognizing efforts of others; need to be prepared and have better planning to help others)	Raised questions regarding: ethical issues in dealing with healthcare system (agencies fighting each other); nurses struggling with their own moral values and whether people are good or evil; not knowing one's role – making judgments they should not have made and making decisions beyond their scope of practice; wondering whether they did enough "Was I helpful?" "Why did this happen?"

confronted during the event (nurses struggling with their own moral values; making judgments and deciding beyond their scope of practice; and questioning the moral standing of people – are they "good or evil"?). Six studies (Laube, 1973; Dickerson *et al*., 2002; French *et al*., 2002; Shih *et al*., 2002; O'Boyle *et al*., 2006a,b; Broussard & Myers, 2010) indirectly identified ethical issues confronted during the event (resource allocation and reversed priorities of care; conflict between professional obligations and family commitment; vulnerability of nurses and fear of abandonment; safety and the risk of harm). Five studies (Riba & Reches, 2002; Nasrabadi *et al*., 2007; Broussard *et al*., 2008; Shih *et al*., 2009; Yang *et al*., 2010) did not identify any ethical issues, even though the nurses' experiences reported had a discernible ethical dimension (duty to care; careful decision-making; trust; open communication; altered standards of care; safety;

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Table 5. Continued

Study	Methods	Participants	Context, emergency event, date(s) occurred	Outcomes	Notes/ethical issues
French *et al*. (2002)	Naturalistic inquiry–exploratory descriptive design, using four focus-group interviews (with 5–15 participants in each); findings compared with disaster protocols for hurricane situations	*n* = 30 emergency department nurses; 22 (73%) female, more than half had 10 years experience, 20 (66%) married, 15 (50% had children under 18 years of age, 18 (60%) were over 40 years of age, 8 (27%) had partners employed in disaster duty	USA (East Coast, Florida): hurricane Floyd (1999)	Participants had valid concerns about personal and family safety, provision of adequate leadership and basic needs, and pet care during the storm. Family commitments conflicted with professional obligations. Written policies for disaster response woefully inadequate; much work needs to be done to prepare for future disasters	Issues identified (although not described as "ethical issues per se"): termination of employment due to job abandonment, absenteeism related to conflict between family commitment, and professional obligations
Laube (1973)	Naturalistic inquiry–structured qualitative interviews, using open-ended questions	*n* = 27 RNs (supervisors, head nurses and staff nurses) from four hospitals and three American Red Cross disaster shelters; aged 50–70 years, 22 RNs had family responsibilities, 16 had previous disaster experiences	USA (Texas): hurricane Celia (1970)	Source of greatest stress for participants: excessive physical demands, concern for safety (self and family), and concern for supplies. Effort required mobilizing and assisting nurses for future disaster roles; providing relief to nurses who stay through the emergency	Issues identified (although not described as "ethical issues per se"): concern for safety (self and family), and provision of resources/supplies
Nasrabadi *et al*. (2007)	Naturalistic inquiry–exploratory descriptive design using semistructured interviews	*n* = 13 RNs with bachelor degree (34–56 years, mean age 36 years), most male, none had any prior experience in disaster conditions, all volunteered after earthquake for at least 2 weeks	Iran: Bam earthquake (2003)	Three themes regarding need: (1) for previously prepared practical protocols; (2) for qualified and real teamwork in the situation (including recognizing vital role nurses can play in disaster response); (3) to establish periodic comprehensive training programs for disaster relief nursing. Lessons to be learned from SARS outbreak on "survivor factors" – including careful decision-making, effective communication, and trust between management and employers. Need to understand extreme emotional experiences of disaster survival	No ethical issues per se identified or discussed
O'Boyle *et al*. (2006a)	Naturalistic inquiry–qualitative study (approach not named) using focus groups interviews (with 2–9 participants) using semistructured questions	*n* = 33 RNs employed in hospitals designated for public health emergency and bioterrorism receiving hospitals; participants had to have worked for a minimum of 8 hours every 2 weeks	USA (Minnesota): *n* = 3 midwestern metropolitan hospitals designated as public health emergency and bioterrorism receiving hospitals	Nurses had overarching concerns about being abandoned during a potential crises and their inability to manage patient needs. Feared: working in a chaotic environment without presence of leadership and clear chain of command; being left with insufficient protective equipment; having little freedom to leave an unsafe environment; being left to function without employer commitment to provide care for themselves or their loved ones should they become ill	Issues identified (although not described as "ethical issues per se"): hospital obligation to nurses/institutional commitment to: (1) provide sufficient protective resources; (2) care for themselves or their loved ones should they become ill

guilt). All papers variously identified nurses' lack of clinical and emotional preparedness for public health emergencies and disasters and concluded the need for "better preparation" for future events. However, only three identified the need for nurses to gain more knowledge about what might be deemed standout "ethical issues": resource allocation and reverse triage/care priority (Dickerson *et al*., 2002); how to better plan and prepare for helping others (Frank & Sullivan, 2008); and strengthening nurses' capacity to be "considerate, altruistic health-care givers" (Shih *et al*., 2002).

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Table 5. Continued

Study	Methods	Participants	Context, emergency event, date(s) occurred	Outcomes	Notes/ethical issues
Riba and Reches (2002)	Qualitative approach (unnamed) using focus group interviews and "open discussion"	*n* = 60 nurses (working in emergency department, operating room, ICU and imaging departments) from four hospitals situated in cities that underwent multicasualty terrorist attacks	Israel: Multicasualty terrorist attacks (2000–2002)	Four stages of involvement described: (1) call up; (2) waiting for casualties to arrive (characterized by deep fear and stress); (3) caring for victims (complex stage; being on "autopilot," stripped of thought and emotion; focus on tasks); (4) incident closure (need to verbalize thoughts; frustration and guilt experienced when 'despite efforts' patient died; realization of own vulnerability). Need for formal education and training	No ethical issues per se identified or discussed
Shih *et al*. (2002)	Naturalistic inquiry–descriptive qualitative design using focus group, in-depth semistructured interviews	*n* = 46 RNs, 40 female/6 male (aged 21–35 years, mean age 26 years), professional experience 1–11 years. Joined rescue team voluntarily; length of stay in earthquake zone 1–25 days	Taiwan (northern Taiwan): Nantou County earthquake (1999)	Realization that nursing skills were valuable but need exists for effective planning and collaboration among healthcare providers. Experiences reinforced participants' commitment to nursing and enabled them to aspire to have more positive life goals. Identified need for disaster nursing to be incorporated into undergraduate nursing curricula and as a component of continuing education programs for qualified staff. Vulnerability of nurses requires follow-up; need opportunities to discuss feelings and mutual concerns	Issues identified (although not described as "ethical issues per se"): requirement for nurses to recognize the need to be "considerate, altruistic health-care givers"; vulnerability of nurses
Shih *et al*. (2009)	Naturalistic inquiry using a two-step within-method qualitative triangulation research design; focus group interviews using open-ended questions (4–8 participants per group)	*n* = 70 nurse leaders (ranging from directors of nursing to floor unit senior leaders and who worked in their roles during SARS epidemic), 65 female/5 male (aged 20–60 years, mean age 27 years), 27 married, duration of nursing career 5–18 years (mean 13.5 years)	Taiwan: SARS epidemic 2002–2003	Five stages of struggle in responding to SARS: (1) facing shock and chaos; (2) searching for reliable sources information and dispelling myths; (3) developing and adjusting nursing care; (4) supporting nurses and clients (especially psychological support for front line nurses); (5) rewarding nurses (identifying and acknowledging contribution). Panic-ridden situations gradually transformed into bonding adaptations by surviving leaders	No ethical issues per se identified or discussed
Yang *et al*. (2010)	Qualitative study using Gadamer's philosophical hermeneutics as a framework; semistructured, in-depth interviews	*n* = 10 RNs, all female (age 30–43 years), working in emergency and peri-operative areas of three teaching hospitals; voluntarily joined rescue teams, with duration in field hospitals from 16–55 days	China: Wenchuan earthquake (2008)	Three themes: (1) under preparation; (2) challenges and coping; (3) rediscovery of helping and caring role. A systematic educational approach to respond to natural and human-made disasters is strongly suggested	No ethical issues per se identified or discussed

DISCUSSION

In the majority of the 12 papers critically reviewed there was a failure to directly address the issue of ethical considerations in planning, preparedness, and response to public health emergencies and disasters by nurses. This oversight is significant because it leaves both the nursing profession and the public vulnerable to the otherwise preventable harms of what Thomas *et al*. (2007: S26) refer to as "unjust and regrettable decisions" being made during a catastrophic mass casualty event. The risk of such harms is especially high during public health emergencies and disasters because during such

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events the "ethical underpinnings of routine, individualized, patient-centred emergency care" are threatened (Larkin & Arnold, 2003: 170).

In failing to consider ethical preparedness in public health emergencies and disasters, the profession of nursing overlooks that emergencies and disasters pose ethical problems not normally experienced in everyday civilian health (Gostin, 2004; Holt, 2008). As a catastrophe evolves, healthcare services can become overwhelmed and practitioners can find themselves unable realistically to provide the standard and level of care that they are otherwise used to providing (Gravely & Whaley, 2006; ANA, 2008). Moreover, in disaster scenarios, certain behaviors that would ordinarily be regarded as unethical may be seen as justified in the crisis situation (Berlinger & Moses, 2007). Indeed, as health service providers grapple with what Wynia (2007) terms the "three R's" (rationing, restrictions, and responsibilities), tragic choices encompassing ethical trade-offs will invariably have to be made. On this point Campbell *et al.* (2007) warn that, when disaster strikes at extreme levels, there will be increasingly harsh decisions that will be morally agonizing and later morally deadening, to the decision makers and those who implement such decisions.

To sustain healthcare services during a disaster and avoid a catastrophic failure to provide any care at all, accepted standards of care are altered and adapted "to allow for rapid changes in practice" (Hodge & Courtney, 2010: 361; see also American Nurses Association, 2008). The ethical preparedness of health professionals to operationalize altered standards of care (also called "crisis standards of care") is, however, open to question. So too is the ethical preparedness of health professionals to operationalize altered and/or crisis standards of professional ethics. Issues yet to be comprehensively considered include: removing patients from life supports without their consent (there simply will not be time to follow the usual procedures); sacrificing the values and preferences of individual patients for the interests of the community; triaging patients to palliative disaster care when their lives could be saved through active treatment; and other similar deviations necessitated by the extreme conditions under which healthcare providers are working (Berlinger & Moses, 2007; Martin, 2007; Wynia, 2007; Altevogt *et al.*, 2009).

The ethical issues raised by questions of rationing, restrictions, responsibilities, and altered standards of care in mass casualty events are both challenging and fundamental (Stroud *et al.*, 2010). They are challenging because they call into question and contradict "many of the values we hold dearest, such as providing each patient with the best available care" (Stroud *et al.*, 2010: 51). As Stroud *et al.* (2010: 51) further explain:

> if we don't act in accordance with our ethical principles, the repercussions both for individuals and the society after the fact will be enormous. They are fundamental because our ethical principles serve as the foundation of our laws.

These authors go on to contend that "people will only act and sacrifice if they believe they are operating in an ethical system, and that individuals are being treated with fairness and transparency in the full view of the law" (p. 51). Moreover, in the absence of firm evidence, many of the decisions contemplated will often only be "best guesses." It is because of this that decision-making requires a shared ethical construct as its basis.

Public health emergencies and disasters underscore the need for nurses to plan and prepare for mass casualty events (Lurie *et al.*, 2006; Nelson *et al.*, 2007a,b; Gostin & Hanfling, 2009; Hammad *et al.*, 2012). Healthcare facilities are an essential component of emergency responses in widely reported events of hurricanes, earthquakes, tsunamis, volcanic eruptions, SARS, and terrorist attacks. However, most healthcare services have been poorly prepared for and often insufficiently developed for dealing with mass casualty events. In order to mitigate this situation, correctives encompassing planning, training, practising skills, and procuring equipment have been operationalized. Despite this, little attention has been given to the question of the ethical preparedness of those who may find themselves on the frontline of public health emergencies and disasters.

Preventive ethics

Public health emergencies and healthcare disasters underscore the need for "advance moral preparation" (Larkin & Arnold, 2003; Thomas *et al.*, 2007; Veenema & Toke, 2007) and "preventive ethics" (Thompson *et al.*, 2006). One reason for this relates to what Gostin (2004: 572) calls the "public health paradox": since public health decisions will often have to be made without the benefits of full scientific knowledge, the only safeguard "is the adoption of ethical values" in formulating and implementing such decisions.

A second important reason why ethics preparation in advance is needed relates to the unpredictable nature of catastrophic events and the kinds of choices that people will make when faced with extreme uncertainty, vulnerability, and fear. People (health professionals included) might sincerely believe and predict that they will act ethically in a crisis situation, and that they are generally "more likely to engage in selfless, kind and generous behaviors than their peers" (Epley & Dunning, 2000: 861). However, research has shown that actual ethical conduct is often at odds with these beliefs. As Tenbrunsel *et al.* (2010) explain:

> People believe they will behave ethically in a given situation, but they don't. They then believe they behaved ethically when they didn't. It's no surprise, then, that most individuals erroneously believe they are more ethical than the majority of their peers (p. 154).

Research also suggests that when people are faced with danger or extreme situations, they will abandon "the illusion that certain values are infinitely important" and make moral compromises (Tetlock, 2003: 322). When these compromises are framed as "tragic trade-offs", people will acquiesce to the violation of the moral boundaries at issue, which ordinarily would be considered unthinkable (Tetlock, 2003). This has also been termed "ethical fading" whereby self-deception (encompassing "language euphemisms, the slippery-slope of decision-making, errors in perceptual causation, and

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constraints induced by representations of the self") plays a fundamental role in people overestimating their disposition toward being ethical and underestimating their capacity to engage in unethical behavior (Tenbrunsel & Messick, 2004). These observations may help to explain what happened in the Hurricane Katrina case referred to in the opening paragraphs of this article and why such a tragic decision was made to euthanize the four elderly patients concerned without either their knowledge or consent.

Being ethical in extreme situations can be particularly challenging because it may not be clear what the "right thing to do" is. As Kirsch and Moon (2010) reflected, when considering the question of "unforgiving triage" during the aftermath of the Haitian earthquake disaster: "We have no answers. There are no answers" (p. 921).

Ethical preparedness is problematic because there are significant barriers to its realisation. Barriers may include but are not limited to: the lack of an operational definition of what it is; a lack of reliable criteria for measuring and assessing ethical preparedness; and the lack of consensus national and international standards and guidelines on ethical decision-making in public health emergency and healthcare disaster scenarios. Compounding this problem is the lack of congruity between national emergency plans and health professional codes of ethics and conduct.

The ethical quandaries associated with mass casualty events need to be considered in advance. This includes giving focused attention to questions of social justice (particularly in regard to the rescue and care of vulnerable populations), the duty to care, ethics guidance (both substantive and procedural values), and civic engagement (Lemon *et al*., 2007; Nick *et al*., 2009). There is also a need for further conceptual and empirical research on professional codes and legislation, and the strength of these to motivate altruism and override self-interest in extreme situations (Singer *et al*., 2003; Malm *et al*., 2008). Although existing ethical codes and guidelines are instructive, they are generally unable to resolve such questions as: "If providers are at risk, should they stay and treat patients? Will they choose to stay? And how will ethics and other factors affect their decisions?" (Iserson *et al*., 2008: 345).

Strengths and limitations of the study

Of the 40 studies identified during the initial literature search, only 12 were of sufficient methodological quality and relevance to be included in this systematic review. Although the review has yielded important insights into the status of healthcare disaster ethics in nursing, its findings are insufficient to provide an evidential basis for informing practice and policy imperatives in nursing disaster ethics planning and preparation. As a consequence strong inferences cannot be drawn about the ethical standards and frameworks nurses use, or can be expected to use, to guide their ethical decision-making and conduct during the public health emergencies and disasters. Neither were the findings sufficient to identify any gaps and weaknesses in the ethics guidance documents and educative processes that may have been available to nurses to inform their preparation for and management of ethical challenges posed by public health emergencies and disasters (these were simply not considered). Finally, there were insufficient data to conclusively improve understanding of the ethically justified expectations regarding what the public, employers, and co-workers can reasonably expect of nurses (their role and responsibilities) during public health emergencies and disasters.

CONCLUSION

The findings of this review highlighted a significant gap in the nursing research literature on healthcare disaster ethics, particularly in regard to: the ethical challenges and quandaries nurses face during a public health emergency or disaster; how nurses can best be prepared for ethical responses in extreme conditions; whether it is even possible for nurses to prepare for catastrophic mass casualty events; determining how much ethical preparedness is "enough"; whether the ethical behavior of nurses during a future public health emergency or disaster can ever be ensured; how much personal risk and self-sacrifice can reasonably and justifiably be expected of nurses during an emergency disaster; and the necessity, role and impact of ethics frameworks for guiding nurses' decision-making in catastrophic events involving public health emergencies and disasters.

In light of this, it is suggested that further research into these and emergent issues is strongly warranted and that the findings of future research be used to inform evidence-based policy and practice in disaster nursing.

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CONTRIBUTIONS

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