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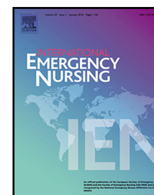

Quality of healthcare services provided in disaster shelters: An integrative literature review

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ABSTRACT

Background: Globally, shelters are a resource to promote critical health and safety in disasters, particularly for vulnerable populations (e.g., children, elderly, chronically ill). This study examines the nature and quality of healthcare services rendered in disaster and emergency shelters.
Objectives: To determine based upon systematic and accurate measurement the scope and quality of health care services rendered in disaster shelters and to describe the health outcomes experienced by shelter residents.
Methods: An integrative review of English-language literature pertaining to the assessment, evaluation, and systematic measurement of healthcare quality and client outcomes in disaster and emergency shelters was undertaken. Articles were identified using a structured search strategy of six databases and indexing services (PubMed, CINAHL, EMBase, Scopus, Web of Science, and Google Scholar).
Results: Limited literature exists pertaining specifically to metrics for quality of health care in acute disaster and emergency shelters, and the literature that does exist is predominately U.S. based. Analysis of the existing evidence suggests that nurse staffing levels and staff preparedness, access to medications/medication management, infection control, referrals, communication, and mental health may be important concepts related to quality of disaster health care services.
Conclusions: A small number of population-based and smaller, *ad hoc* outcomes-based evaluation efforts exist; however the existing literature regarding systematic outcomes-based quality assessment of disaster sheltering healthcare services is notably sparse.

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1. Introduction

Globally, disasters are unfortunately an all too frequent event requiring urgent intervention to prevent death and disease. In the wake of a large-scale disaster or in anticipation of a potentially threatening event, individuals and families may seek out, or be evacuated to, disaster or emergency shelters. Those that depend most heavily on shelters tend to be from otherwise vulnerable populations (e.g., children, elderly, and chronically ill), possess a significant burden of disease pre-event and may be disproportionately impacted physically, mentally, and emotionally by the disaster itself as well as relocation to a novel environment. Despite the proliferation of shelter guidelines post Banda Aceh (2004), Hurricane Katrina (2005), and the Bam, Iran (2003) and Great East Japan (2011) earthquakes, and a growing body of knowledge about resident characteristics, there remains little documented regarding the quality of healthcare provided in disaster shelters (Caillouet et al., 2012; Owens et al., 2005; Takahashi et al., 2012).

Following an acute-onset disaster event, the term 'shelter' is most often used to represent the physical structures that are established to provide disaster victims protection from natural elements and also for coordination of health and social services. Shelters also play other important roles that range from becoming central locations for communication and recovery resources to serving as staging areas for medical treatment (Phillips et al., 2012). Ideally, shelters should provide a safe place for individuals affected by large-scale

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rapid onset disasters and other emergency events to reside and seek assistance. Shelters can provide food, water, a place to sleep, sanitation facilities and access to health and mental health services (Phillips et al., 2012). Extensive damage to housing or shifting, unsafe environmental conditions are the reasons individuals and families are most often temporarily or permanently displaced. Access to a disaster shelter for many victims may make the difference between death and survival. In 1991 a cyclone hit Bangladesh causing multiple fatalities, yet survival rates were high among those who were able to reach official shelters. In areas with shelters there was only a 3.4% fatality rate as compared with a 40% fatality rate in areas without shelter access (Shultz et al., 2005). The ability to effectively shelter victims of disasters is a responsibility of the respective government along with assistance from domestic (Federal Emergency Management Agency, 2010) and international disaster management teams and is fundamental to any large scale response (Coppola, 2006). Governments may agree to authorize non-governmental organizations (NGOs) or the federal government to set up or to run shelters for the affected local government, and may even subcontract with those NGOs to provide both sheltering and medical care. Ordinarily, it is only when there has been a failed government will NGOs travel to and setup shelters on their own.

1.1. Shelter populations

Significant attention has been paid to the client characteristics of those displaced and receiving care in disaster shelters, particularly for traditionally vulnerable populations (e.g., children, elderly, chronically ill) who bear a higher chance of using a public shelter (Enarson, 2010; Phillips, 2009; Wisner, 2004). Shelter residents post-Hurricane Katrina had above average prevalence of chronic disease, only one-half had health insurance, and over one-third received some type of public assistance (Greenough and Kirsch, 2005; Greenough et al., 2008). These socioeconomic factors made the shelter populations more vulnerable from the outset for adverse health outcomes. One-half of persons residing in shelters (55.6%) after Katrina had a chronic illness (hypercholesterolemia, diabetes, pulmonary disease, or psychiatric illness), and among those who arrived at shelters with a chronic disease, 48.4% lacked medication and one third lacked a health provider (Greenough et al., 2008). This is not just an issue in the US. For example, following the Great East Japan Earthquake elderly evacuees and infants residing in shelters had a higher likelihood of contracting infectious disease (Takahashi et al., 2012).

The burden of chronic disease compounded by stress, anxiety, grief and sleeplessness contributed to the challenges of rendering health care services in response to the clinical needs of clients residing in the Katrina shelters (Phillips et al., 2012). Clinicians provided multiple health care services ranging from rendering basic first aid, to more advanced chronic disease management. The interplay of poverty, long standing health conditions and psychological trauma is reported to create a network of vulnerability for poor health outcomes in victims of disaster events (Evans, 2010).

1.2. Types of disaster shelters

Multiple types of disaster shelters exist and they operate under the auspices of a variety of governmental and voluntary organizations. Under the U.S. National Response Framework (NRF) as described in Emergency Support Function 6 (ESF-6) the American Red Cross (ARC) is the support agency designated as responsible for sheltering and mass care. ARC operates under a congressional mandate to provide shelters following natural disasters and other extreme events with support from the Federal Emergency Management Agency (FEMA). ARC establishes and operates approximately 60% of all disaster shelters in the U.S. with the balance sponsored by government, other non-governmental and faith-based organizations (Homeland Security Institute, 2006; Chandra and Acosta, 2009). Internationally, shelters are operated by a collection of local governmental and global humanitarian response NGOs and may range from make shift huts to fully deployable rapid assembly shelters (DRASH) (Owens et al., 2005).

Disaster shelters may also be referred to as emergency or temporary shelters, those transitional places where people can go for short periods of time for protection and to ‘ride out the event’. Somewhat more ephemeral in their being, emergency shelters can be adapted to local conditions and circumstances such as a tent set up in a field or a structure under a bridge (Phillips et al., 2012). Conceptually, these temporary shelters are established based upon the assumption that disaster impacted victims will likely return to their homes quickly (Babister and Kelman, 2002). Temporary shelters may include General Population (GP) shelters for the public at large or Functional/Medical Needs Shelters (FN) for individuals that require a higher level of care (Phillips, 2009; Phillips et al., 2010).

In 2010 FEMA issued its *Guidance on Planning for Integration of Functional Needs Support Services in General Population Shelters*, commonly referred to as the FNSS, dramatically changing the way disaster shelters are operated in the U.S. The FEMA guidelines were established to provide protections for individuals who have access and functional needs and to ensure that they receive lawful and equal assistance before, during, and after disaster events and large scale public health emergencies. The guidelines mandate that Functional Needs Support Services (services that enable individuals with access and functional needs to maintain their independence in a general population shelter) be incorporated into all existing shelter plans, regardless of how the shelter is categorized. The purpose of the mandate is to make sure that persons with functional needs can be accommodated in U.S. general population shelters and are not refused because of specific functional disabilities (blind, hearing impaired, walking impaired, etc.) and not become a burden to other higher level medical needs shelters.

Recent international disasters such as the Philippine typhoons (2013 and 2014) and the Syrian flooding and mudslides (2014) have underscored the importance of emergency coordination of mass care and sheltering following rapid onset events, yet standards for delivering, providing and evaluating this care are not well articulated. The December 2014 release of the Core Sphere Humanitarian Standard for Quality and Accountability provided an update to the Sphere Humanitarian Standards Project designed to provide a baseline for the international public health care of victims of disasters.

This integrative review of the existing literature focuses on assessment, evaluation, and systematic measurement of healthcare services quality and client outcomes in disaster or emergency shelters resulting from rapid or acute-onset events. We hope this information will be an important foundation in deriving consensus around domestic and international practice guidelines.

2. Materials and methods

An integrative review of the literature was conducted on two specific concept areas relating to the overarching topic: literature pertaining generally to nursing and/or health care in emergency or disaster shelters, and any systematic assessment, evaluation, quantitative model, outcomes, or metrics for measuring quality of care in this context. An integrative review of the literature represents a “specific design methodology that summarizes past empirical or theoretical evidence in order to provide a better understanding of a particular phenomenon or healthcare problem” (Broome, 1993, p. 231). Integrative reviews differ substantively from systematic review and meta-analyses approaches that rely on the combination of evidence and may overemphasize the randomized clinical trial and hierarchies of evidence (Evans and Pearson, 2001; Kirkevold, 1997). The integrative review allows for the simultaneous

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