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 im-

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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 set up 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 care in this context. 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 considerations of all evidence.
inclusion of diverse methodologies (i.e. experimental and non-experimental research) in order to more fully investigate and understand a phenomena of concern (Whittemore and Knafl, 2005). Well-done integrative reviews, thus, have the potential to build the science, informing research, practice, and policy initiatives (Whittemore and Knafl, 2005).

2.1. Search strategy

A series of comprehensive searches for relevant English-language literature was performed using six popular publication database and indexing services (PubMed, CINAHL, Scopus, EMBase, Web of Science, and Google Scholar). Initial search terms were obtained from MeSH (Medical Subject Heading) nomenclature and selected sentinel publications then mapped to appropriate database-specific terminology (subject headings, categories, and keywords). The final pool of terms was used to conduct inclusive title, subject, keyword, and full text searches in each of the six listed databases. Papers matching any combination of terms from the two concept areas were retrieved for review. Additional candidate studies were identified through a manual search of emergency shelter and disaster preparedness literature, via discussion with other authors in the field, and from the reference lists of publications retained for full review.

2.2. Screening and review

All candidate literature was subject to independent title, abstract, and finally full-text review by two or more authors according to a series of established criteria (Table 1). A vote from any one author was deemed sufficient to retain a paper during title and abstract review, while a consensus of two or more authors was required for retention during full text review (Figure 1). Studies were excluded that did not relate to disaster shelters or healthcare in shelters, were not original research, were war or human conflict-related, or included demographic and prevalence data only (Table 2). Studies retained for inclusion in this paper were reviewed by all authors, summarized, and study quality was assessed using the Crowe Critical Appraisal Tool (Crowe et al., 2012).

3. Results

From the original search pool of 517 papers, 13 articles were selected for review (Figure 1). All but one study was conducted in the U.S. While none of the articles in the search pool directly addressed a systematic assessment of quality of care in disaster shelters, the papers selected for inclusion did more broadly address healthcare delivery in this context. Despite an absence of date restrictions on our searches, the included papers span from 2007 through 2012. Upon repeat of the search strategy in late December 2014, one additional international article was identified for inclusion. Five of the final fourteen articles were categorized as qualitative studies, six were quantitative studies, and three employed mixed methods (Table 3).

Data analysis was undertaken using content analysis methods. Content analysis looks to identify core consistencies and meanings (Patton, 2002) and to elucidate key patterns, themes and categories (Miller and Alvarado, 2005). The results are summarized below and categories were extracted pertaining to the major issues identified relating to quality of health care services: staff/preparedness, medications/medication management, infection control, referrals, communication, and mental health.

3.1. Staffing and preparedness

Studies cited both staffing numbers and health staff preparedness as critical issues in shelter health care. Shelters surveyed by

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Table 1: Literature search strategy.

<table>
<thead>
<tr>
<th>Concept area keywords</th>
<th>PubMed</th>
<th>CINAHL</th>
<th>Scopus</th>
<th>EMBase</th>
<th>Web of Science</th>
<th>Google Scholar</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Disasters, Disaster, Natural Disaster, Mass Casualty Incident, Relief, Disaster Preparedness, Disaster Response</td>
<td>66,318</td>
<td>21,476</td>
<td>49,981</td>
<td>34,025</td>
<td>110,594</td>
<td>~1.8 mil</td>
</tr>
<tr>
<td>B Emergency Shelter, Shelter, Internally Displaced Persons, Disaster Shelter</td>
<td>3254</td>
<td>992</td>
<td>12,816</td>
<td>3681</td>
<td>92,073</td>
<td>~181,000</td>
</tr>
<tr>
<td>C [A and B]</td>
<td>264</td>
<td>114</td>
<td>839</td>
<td>272</td>
<td>513</td>
<td>~65,600*</td>
</tr>
<tr>
<td>D Quality of Healthcare, Quality, Model, Metric, Outcome, Evaluation, Assessment, Measure, Indicator</td>
<td>-4.8 mil</td>
<td>64,833</td>
<td>327,811</td>
<td>-2.4 mil</td>
<td>517,810</td>
<td>~2.76 mil</td>
</tr>
<tr>
<td>E [A and B and D]</td>
<td>97</td>
<td>2</td>
<td>18</td>
<td>42</td>
<td>219</td>
<td>&gt;4100*</td>
</tr>
<tr>
<td>Retrieved from C and E for review process</td>
<td>97</td>
<td>23</td>
<td>31</td>
<td>40</td>
<td>226</td>
<td>100</td>
</tr>
</tbody>
</table>

* Top 100 hits (sorted by relevance) reviewed for inclusion. Key search terms are in bold.
Table 2
Search terms and review criteria.

<table>
<thead>
<tr>
<th>Search terms</th>
<th>Exclusion criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>–Disasters: Disaster, Natural Disaster, MCI, Relief, Disaster Preparedness, Disaster Response, ...</td>
<td></td>
</tr>
<tr>
<td>–Emergency Shelter: Shelter, Internally Displaced Persons, Disaster Shelter, Temporary Shelter, ...</td>
<td></td>
</tr>
<tr>
<td>–Quality of Healthcare: Care, Quality, Model, Metric, Outcome, Evaluation, Measure, Indicator, ...</td>
<td></td>
</tr>
</tbody>
</table>

Table 3
Literature summary table.

<table>
<thead>
<tr>
<th>Citation</th>
<th>Type of report</th>
<th>Type of data</th>
<th>Study purpose</th>
<th>N</th>
<th>Population</th>
<th>Sample design</th>
<th>Quality score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brahmbhatt et al., 2009</td>
<td>PR research article</td>
<td>QL</td>
<td>Evaluate the level of public health preparedness among responders and identify recommendations to improve public health preparedness in future mass displacement situations</td>
<td>43</td>
<td>Health staff members from shelters in 5 ARC regions in Texas</td>
<td>Convenience sample</td>
<td>93</td>
</tr>
<tr>
<td>Caillouet et al., 2012</td>
<td>PR research article</td>
<td>QL/QN</td>
<td>Understand and characterize the medical needs of evacuees and those receiving care at shelters and temporary medical facilities following a hurricane</td>
<td>3329</td>
<td>Evacuees receiving medical care at shelters and ad hoc medical clinics following Hurricanes Katrina and Rita</td>
<td>All available triage records and treatment notes</td>
<td>90</td>
</tr>
<tr>
<td>Currier et al., 2006</td>
<td>PR research article</td>
<td>QN/QL</td>
<td>To describe the experience of organization, staffing, and administration of the “Katrina Clinic” at the Mississippi State fairgrounds shelter</td>
<td>2299</td>
<td>Patients seen at the clinic with medical records available for analysis</td>
<td>Convenience sample</td>
<td>88</td>
</tr>
<tr>
<td>Deal et al., 2006</td>
<td>PR research article</td>
<td>QL</td>
<td>To describe the positives and negatives of special-needs shelter nursing so others can learn from the experience.</td>
<td>10</td>
<td>Community nurse volunteers and volunteer nursing faculty members who worked in special-needs shelters in Texas after Hurricane Rita in 2005</td>
<td>Convenience sample</td>
<td>85</td>
</tr>
<tr>
<td>Faul et al., 2011</td>
<td>PR research article</td>
<td>QN</td>
<td>To describe the type, extent, and location of injuries treated among shelter evacuees at the Astrodome and contrast this with patterns in the general US population.</td>
<td>1130</td>
<td>Hurricane Katrina evacuees receiving medical treatment for injuries at the Houston Astrodome mega-shelter (September 2005).</td>
<td>All injury treatment records</td>
<td>92</td>
</tr>
<tr>
<td>Inoue et al., 2014</td>
<td>PR Research Article</td>
<td>QL</td>
<td>To assess survivor’s post tsunami health and nutritional status 1 month after the disaster residing in a school based shelter</td>
<td>236</td>
<td>236 shelter clients (evacuees) residing in a school shelter in Ishinomaki City Japan.</td>
<td>Convenience sample</td>
<td>75</td>
</tr>
<tr>
<td>Kishimoto and Noda, 2013</td>
<td>Report</td>
<td>QL</td>
<td>Discussion and review of lessons learned and special considerations regarding diabetes care drawn from the Great East Japan earthquake/tsunami (2011).</td>
<td>NA</td>
<td>Tsunami evacuees and shelter residents with diabetes.</td>
<td>NA</td>
<td>80</td>
</tr>
<tr>
<td>Missildine et al., 2009</td>
<td>PR research article</td>
<td>QN/QL</td>
<td>To describe the experience of evacuees with special medical needs in a shelter in Texas after Hurricane Gustav in 2008.</td>
<td>82</td>
<td>Evacuees who resided at the medical special needs shelter at UT Taylor.</td>
<td>Convenience sample</td>
<td>93</td>
</tr>
<tr>
<td>Murray et al., 2009</td>
<td>PR research article</td>
<td>QN</td>
<td>To describe the development and implementation of a symptom-tracking surveillance system used for potential outbreaks in the Houston Astrodome and Reliant Park shelter.</td>
<td>29,478</td>
<td>Shelter clients residing in the Houston Astrodome and Reliant Park shelter after Hurricane Katrina in 2005.</td>
<td>All consenting clients were included.</td>
<td>90</td>
</tr>
<tr>
<td>Noe et al., 2013</td>
<td>PR research article</td>
<td>QN</td>
<td>To describe and the injuries and illnesses treated by the ARC in shelters and by teams in LA, MS, TN, and TX after Hurricanes Gustav and Ike.</td>
<td>3863</td>
<td>Clients treated by the ARC using the Aggregate Morbidity Form.</td>
<td>All available client records were included.</td>
<td>100</td>
</tr>
<tr>
<td>Phillips, 2009</td>
<td>PR research article</td>
<td>QL</td>
<td>To understand how shelters were opened and operated when traditional providers are overwhelmed.</td>
<td>82</td>
<td>Shelter managers in TX, LA, MS.</td>
<td>Randomized stratified and spatial zone sampling</td>
<td>88</td>
</tr>
<tr>
<td>Rebmann et al., 2008</td>
<td>PR research article</td>
<td>QL</td>
<td>To outline the educational and resource gaps that exist during disaster response as well as to learn from the public health and infection control experiences of past disasters.</td>
<td>3</td>
<td>APIC members attending the 2006 National APIC Conference</td>
<td>Consecutive sampling</td>
<td>100</td>
</tr>
<tr>
<td>Suzuki et al., 2011</td>
<td>PR Research article</td>
<td>QN</td>
<td>To examine the clinical manifestations of shelter acquired pneumonia in refugees transferred to a back up hospital in Japan following an earthquake in 2011.</td>
<td>17</td>
<td>17 shelter clients transferred to Tohoku University Hospital for SAP</td>
<td>Convenience sample</td>
<td>70</td>
</tr>
<tr>
<td>Yee et al., 2007</td>
<td>PR research article</td>
<td>QN</td>
<td>To assess the spread of norovirus and the methods used for infection control at the Reliant Park Complex in Houston following Hurricane Katrina.</td>
<td>1173</td>
<td>Clients triaged at the Reliant Clinic for gastroenteritis from September 2 to 12, 2005.</td>
<td>All available client records were included.</td>
<td>95</td>
</tr>
</tbody>
</table>
Brahmbhatt et al. (2009) had nurses (RN, LPN, NP) present at 93% of sites, more than half the shelters (55.8%) were staffed with first responder staff (emergency medical technicians and paramedics), and 39.5% had volunteer physicians available (Brahmbhatt et al., 2009). Phillips et al. (2012) found that traditional shelters (ARC managed) were most likely to have healthcare professionals on site in comparison with emergent and transitional (smaller faith-based, some ARC support) shelters which often had to transport clients to clinics (Phillips et al., 2009, 2012).

Brahmbhatt et al. reported that while 79% of shelter staff interviewed had received some formal training from the American Red Cross (ARC), only 48% considered their training was adequate. Less than one-third of shelter health staff had public health training, and only 55% had received public health information specific to managing the health needs of evacuees (Brahmbhatt et al., 2009).

A survey of small medical-needs shelters by Deal et al. (2006) highlighted problems with identifying shelter personnel authority, and scope of practice issues (responsibility qualifications, and competencies) as it was often unclear who was in charge and who could perform treatments safely and legally (Deal et al., 2006). Verification of clinical skills and licensures to appropriately assign care and tasks to volunteers was problematic. There was no clear coordinator of the nursing care to make assignments or to schedule volunteers for shifts (Deal et al., 2006).

3.2. Medications/medication management

Procurement of and access to medications were consistently identified as problematic for Hurricane Katrina shelter clients who left their homes without their medications, finished the prescription during displacement, and who needed new medications prescribed (Currier et al., 2006). They noted that the majority of clients at the Katrina shelter had left their homes with only enough prescription medications to last for a day or so (Currier et al., 2006). Over 17 days, the shelter staff filled 4902 prescriptions, with new medications for anxiety and depression more frequently written as time progressed (Currier et al., 2006). Difficulties in achieving and maintaining glucose control and the management of hypertension have been reported in diabetic shelter residents lacking medications (Kishimoto and Noda, 2013).

In addition to providing and filling prescriptions, medication management for special-needs clients was also cited as difficult in shelter settings. For those unable to self-medicate, medication management was difficult to coordinate for staff. One solution was to group the medications and use digital pictures to identify clients (Deal et al., 2006). Missildine et al. (2009) noted that in a medical special needs shelter, 63% of clients reported requesting help with their medications and management and 99% received the assistance necessary.

3.3. Infection control and surveillance

Only 37% of shelters surveyed by Brahmbhatt et al. (2009) had a system in place for screening clients upon arrival to the shelter and no public health providers were present, instead relying on shelter managers and health staff (Brahmbhatt et al., 2009). In contrast, Murray et al. (2009) describe the surveillance system deployed at the Astrodome and Reliant Park Complex following Hurricane Katrina. Clients were interviewed daily using a “cot survey” tool to track symptoms and identify potential referrals (Murray et al., 2009). Evaluation of clinic records at the Reliant Complex revealed that in a 10-day span, 17% of clinic visits were for gastroenteritis. Public health officials put interventions in place to prevent the spread of the illness. These included food-preparation precautions, proper treatment and storage of water, environmental management and cleaning, disinfection of surfaces, day care areas, and lines, as well as isolation of ill clients and proper hand hygiene (Yee et al., 2007).

They were unable to determine which of these interventions had a direct effect on disease reduction, but rather cited a combined effect. Inoue et al. (2014) also noted increased gastrointestinal disease related to nutrition and quality of food intake in a school based disaster shelter (Inoue et al., 2014).

Noe et al. (2013) tested the use of an aggregate reporting form as a means of tracking public health concerns as well as health care delivery issues. Most complaints were for acute minor illnesses, the majority being pain and respiratory (Noe et al., 2013). Focus groups composed of members of the Association for Professionals in Infection Control (APIC) felt that attention to infectious disease often fell by the wayside in disasters while shelter, food, and water took priority for responders (Rebmann et al., 2008).

3.4. Referrals

When healthcare providers at shelters are unable to successfully treat a client, outside referrals to higher level or emergency health care services are made. Referrals made to higher levels of care were made for approximately 35% of the locations assessed by Noe et al. (2013) Of these, 42% were hospital/emergency department/clinic referrals, 24% were pharmacy referrals, and 23% were physician referrals (Noe et al., 2013). Suzuki et al. (2011) reported that cases of shelter-acquired pneumonia referred to hospitals following a catastrophic earthquake in Japan could be attributed to poor shelter conditions, cold temperatures, poor oral hygiene, and under-nutrition (Suzuki et al., 2011).  

3.5. Communication

APIC members cited poor communication as one of the major challenges to disaster response. Focus groups recommended improved and consistent messages to the public, as well as enhanced communication in shelters in the form of a daily “sit down” (Rebmann et al., 2008). In relatively small, specialized shelters, communication was a constraint on nursing care. Deal reports that new nurses had to continuously be oriented to the shelter and important information was lost in hand-offs. A central communication log or record was suggested as a way to improve and maintain consistent communications (Deal et al., 2006).

3.6. Mental health

Mental and psychiatric illnesses were identified as major health care service concerns in disaster shelters, with mental health care identified as one of the most important issues in disaster-stricken areas (Kishimoto and Noda, 2013). Shelter clients experience emotional responses such as grief, loss, fear, anger and for some, guilt over surviving the death of a loved one (Kishimoto and Noda, 2013). Brahmbhatt et al. reported that volunteer health personnel were able to correctly identify scenarios with clients needing emergency psychiatric services 74% of the time, in comparison with 90% for medical cases (Brahmbhatt et al., 2009). Mental health practitioners are not guaranteed at shelter sites as Phillips et al. (2012) notes that only 6 of 82 shelters included had a mental health professional on site. To fill this void, shelter managers reported shelter staff or clergy sometimes provided personal counseling.

4. Discussion

The primary objective of this review was to identify what is currently published in the nursing and medical literature regarding the scope and quality of care provided in disaster or emergency shelters and to identify metrics for quality assessment. Our results were disappointingly limited. No studies addressed these issues directly, nor did they provide evidence of the metrics we were seeking.
Additionally, the majority of the studies were U.S. based and thus, not representative of an international perspective. The results did suggest important components of care quality that could be used to derive appropriate measures and items for quality improvement.

Based on this review, appropriate staffing and health care provider preparedness can be important indicators of quality of care rendered in disaster shelters. Adequate training as well as qualified staff would ensure that the best providers and staff are available (Association of Public Health Nurses 2014). Optimal staffing numbers are also an important consideration for providing care to a vulnerable population. In reality, the staffing and human resource management of disaster shelters is as variable as the multiple numbers of organizations who establish and maintain shelter operations. Shelters are established, maintained and closed down based upon the guidelines of the organization that is sponsoring the shelter, frequently in conjunction with or at the request of local and state governmental emergency management decisions. Shelters may be closed due to the direction of local emergency management and other regulatory bodies.

While many consider disaster shelters “displaced neighborhoods of convenience” in reality following large scale acute-onset events they are more often satellite congregate health care settings frequently functioning under the radar of the normal regulatory oversight of the local health care systems. Normally in the US, State Health Departments license health care facilities and provide oversight of the individuals, activities and services rendered. There are specific policy protections available for those who provide health care in an unlicensed environment. In the event of a Presidential disaster declaration under the Robert T. Stafford Act and when the HHS Secretary declares a public health emergency under Section 319 of the Public Health Service Act, the Secretary is authorized (under section 1135 of the Social Security Act) to take actions including to temporarily waive or modify certain Medicare, Medicaid and Children’s Health Insurance Program requirements to ensure access to sufficient health care services to meet the needs of individuals enrolled in Social Security Act programs during times of disaster (Centers for Medicare and Medicaid, 2009). The purpose of these waivers however is driven by reimbursement and the desire for freedom from Emergency Medical Treatment and Labor Act (EMTALA) sanctions. Historically, health care services rendered within the context of a disaster setting (e.g. shelter) are never pursued for reimbursement, thus federal payment waivers are not requested. This U.S. policy conundrum may contribute to the current situation where metrics for the measurement of quality of health care services in disaster shelters is not mandated.

Internationally, the situation is more complex and often country or region specific.

Access to medications and filling of necessary refills might be another important predictor of care at shelters. As many clients arrived in need of medications for chronic illness, as well as acute health care needs, this becomes critical to wellness. Writing and filling prescriptions also indicates that supply systems are in place for medication procurement and distribution.

Review of the existing literature suggests that infection control and food safety might be one of the most accurate indicators of care in shelters. The Centers for Disease Control and Prevention have issued guidance documents specific to disaster relief and for healthcare professionals (CDC, 2005) as well as provide a surveillance reporting system for use in disaster shelters (CDC, 2006) and a tool for conducting disaster shelter assessments (CDC, 2008). Update and redesign of the surveillance reporting system for disaster shelters was conducted in 2013.

While surveillance and tracking via medical records can be useful in high population shelters, the ongoing and systematic physical assessment and tracking of individuals residing in shelters by licensed health care providers knowledgeable regarding public health is critical to the prevention of disease outbreaks (Brahmbhatt et al., 2009). Cot-to-Cot (Springer, 2012) assessment and surveillance interviews will not only identify possible outbreak situations, but also clients in need of care or referral. Appropriate referrals to authorities can help to ensure that public health concerns are addressed and monitored. Referrals to medical, psychiatric, or pharmacy care can also provide good information regarding care. Ideally, the appropriateness of these referrals would be verified via review of patient disaster charts.

The need for mental health services suggests that the presence of a mental health professional(s) on site at a shelter would improve quality and completeness of care. Finally, given the concerns regarding communication between providers and health care organizations regarding shelter clients and public health reporting, a system to address these issues would be another measure to consider when measuring quality.

4.1. Limitations

The results of our study are limited by the small number of studies in existence that addressed our topic, and by the level of available evidence. Not all of the studies clearly defined the category (type) of the disaster shelter where the study took place, and different frameworks for investigation were employed further limiting auditability and reproducibility. Additionally the 2010 U.S. FNSS guidance (Federal Emergency Management Agency, 2010) regarding the use of the term ‘medical/special needs’ shelter added to the complexity of measuring scope and quality of health care services across time and across various shelter types. As the majority of the studies were U.S. based, generalizability to international disaster settings may be limited. Finally, the internal validity of a review of the literature is always subject to both selection and publication bias. This review presented information based upon a limited number of published studies. In fact, much is currently known about health services in disaster shelters but exists outside of the published peer reviewed journals that the authors studied. Much of what is known exists in books, manuals, field guides and even government publications, and is practical experiential knowledge.

4.2. Future directions

The findings of this integrative review suggest that prior to implementing initiatives directed towards measurement of health care services rendered, a tremendous need exists to first and foremost describe the care that is being provided in disaster shelters both in the United States and internationally. Obtaining consensus among government and non-government organization on the types, frequency, duration and documentation of health care services as well as type of providers rendering health care services in disaster shelters is crucial. Only with this foundational knowledge can we begin to move towards measurement of quality and effectiveness. Efforts should be made to accurately document and describe the care being rendered so as to improve our understanding of the scope and intensity of health care services environment in disaster shelters across the globe.

The lack of evidence supporting the measurement of health care services rendered in disaster shelters is in many ways not surprising, given the variability across shelter settings and the fact that the American Red Cross and many other international disaster services organizations continue to collect data via paper client records that are currently stored within local or regional chapters. In many international disaster settings there may be minimal to no documentation at all of health services rendered. Clearly, rapid and comprehensive improvements in information technology are needed in order to enable the collection of disaster shelter data in a meaningful way. In order to measure the amount and effectiveness of care rendered, organizations need to be able to collect, collate, analyze
and optimally share information in real time and across agencies. Data collection needs to be done in a timely, valid and reliable manner. An international universal measurement tool should be developed and validated for use in disaster shelters.

Finally, within the U.S. there exists a need to develop national standards specifically addressing care for disaster shelters. While many disaster shelters do not include the provision of direct health care services to clients, some do and are, in essence, providing health care in an unlicensed environment. Variations in the provisions within State health care laws may exist. The development of national standards for health care services rendered in the context of disaster sheltering can play a significant role in ensuring the quality and effectiveness of care rendered, with the goal of improving population-based health outcomes. The Sphere Core Humanitarian Standards for International disaster response provide an example for benchmarking public health management guidelines in large scale disaster response (The Sphere Project 2014).

5. Conclusions

Disaster events impact all regions of the world and have a profound effect on the health, economic and social life of individuals and populations. For many victims disaster shelters provide a safe haven and access to health care and mental health resources. This study revealed that 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. Emergency nurses contribute to the provision of health care services in disaster shelters and are uniquely positioned to advocate for additional research addressing clinical excellence in patient care following large scale disaster events. In order to optimize population health outcomes for displaced disaster victims locally and internationally, government and humanitarian NGOs need key health outcomes indicators and a systematic measurement process to monitor and evaluate the quality of care in shelters.

References


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