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How are healthcare provider systems preparing for health emergency situations?

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Abstract

Natural disasters, disease outbreaks, famine, and human conflict have strained communities everywhere over the course of human existence. However, modern changes in climate, human mobility, and other factors have increased the global community's vulnerability to widespread emergencies. We are in the midst of a disruptive health event, with the COVID-19 pandemic testing our health provider systems globally. This study presents a qualitative analysis of published literature, obtained systematically, to examine approaches health providers are taking to prepare for and respond to mass casualty incidents around the globe. The research reveals emerging trends in the weaknesses of systems' disaster responses while highlighting proposed solutions, so that others may better prepare for future disasters. Additionally, the research examines gaps in the literature, to foster more targeted and actionable contributions to the literature.

Key Points

- The literature is saturated with needs assessments for disaster training and primary reports following disasters. More research addressing innovation in hospital disaster simulation, protocols, post-acute response and supply, and staffing is warranted.
- More quantitative research is needed, particularly showing mortality and morbidity outcomes from disaster interventions at the provider and hospital system level.
- Common shortcomings in hospital disaster plans are telecommunication failure, plans for surge capacity, insufficient stockpiles, coordination with other hospitals/disaster responders, and staff knowledge of disaster protocols.

- Hospital system leadership should plan for the repercussions of disruptions in usual care during the disaster, such as chronic disease exacerbation and new acute infections during recovery.
- Healthcare providers and staff are vulnerable to psychological strain, particularly during infectious disease outbreaks, and this should be addressed early and aggressively.

KEYWORDS
disaster, emergency, preparation

INTRODUCTION

Natural disasters, disease outbreaks, famine, and human conflict have strained communities everywhere over the course of human existence. However, modern changes in climate, human mobility, and other factors have increased the global community's vulnerability to widespread emergencies. We are currently in the midst of such a disruptive health event. The COVID-19 pandemic is currently testing health provider systems globally, impacting all sectors and corners of the globe.

Disasters of various types present unique challenges to providers who are on the front lines. Providers, equipped only with their training and the limited, unverified information available to them, have to meet the needs of the surge of patients that present to their facilities. At this point, the literature is saturated with needs assessments, which suggests a general consensus: many medical providers feel unprepared to respond to emergency situations.

Though emergencies by their very nature are unpredictable, we can still influence the preparation and resources of healthcare providers. This paper qualitatively assesses systematically obtained primary reports and meta-analyses published in English from 1998 to 2019, asking “How are Healthcare Provider Systems Preparing for Health Emergency Situations?” The objectives are to learn from our collective mistakes, gain from the literature's proposed solutions, and illuminate areas for improvement or further research.

METHODS

The authors conducted a qualitative assessment of articles systematically obtained from PubMed, Google Scholar, and JSTOR using the search terms in Table 1 in the spring of 2019. In the search, “and” was used between the columns and “or” was used in the columns.

To be incorporated into the analysis, the publication must meet the following criteria: (1) Date of publication after 1998, (2) discuss emergency preparation/response, (3) involve healthcare providers, (4) incorporate clinical management and patient-centered outcomes, (5) have an English version available, and (6) be a primary report/study or meta-analysis.

The authors conducted a search of the PubMed (MEDLINE), Google Scholar, and Journal Storage (JSTOR) digital libraries using the search terms in Table 1 in the spring of 2019. All PubMed results were screened for inclusion due to its relative density of articles that met inclusion criteria, as well as the first 100 results from Google Scholar and JSTOR. We utilized the Rayyan website and mobile app through the Qatar Computing Research Institute of Hamad Bin Khalifa University for the inclusion/exclusion process, screening conducted based on abstracts and keywords (Ouzzani et al., 2016). Once the initial

TABLE 1 Review Search Terms

Keyword 1 Terms	Keyword 2 Terms	Keyword 3 Terms	Keyword 4 Terms	Keyword 5 Terms	Keyword 6 Terms
Emergencies	Planning Techniques	Health Personnel	Preceptorship	Health Facilities	Mortality
Disease Outbreaks	Strategic planning	Nurses	Education, Medical	Bed Occupancy	Days of Lost work
Epidemics	Civil Defense	Physicians	Education, Medical, Continuing	Hospital Bed Capacity	Days of lost services
Pandemics	Relief Work	Emergency Medical Technicians	Teaching Rounds	Health Facility Size	
Mass Casualty Incidents	Quarantine	Health Facility Administrator	Health Education	Hospitals	
Disasters	Disaster Planning	Medical Staff	Disaster Medicine	Community Health Centers	
		Military Personnel			

screening process was complete, the authors read the included articles in entirety for analysis.

A systematic review was initially designed to emulate the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology. A mixed-methods analytic approach was anticipated, beginning with qualitative analysis to be followed by quantitative assessment and potential meta-analysis. However, once the lack of quantitative patient-centered outcome data in the literature was apparent, direct extraction of data and quantitative assessment to satisfy the PRISMA checklist was not feasible. Thus, the methodology shifted to a predominantly qualitative analysis of the literature, only quantifying proportions of major trends in the literature.

RESULTS

The authors screened 509 citations from PubMed, and 100 from each Google Scholar and JSTOR, for a total of 709 abstractions and analysis. Only 2% of Google Scholar and 6% of JSTOR results met the inclusion criteria, compared to 31% of those identified via PubMed, resulting in 141 articles included for full analysis. The flowchart of the article collection process is seen in Figure 1. The geographic distribution of the included articles is presented in Figure 2, and the distribution of articles by disaster type is presented in Table 2. Figure 2 depicts a large geographic disparity in the articles, with the bulk of articles arising from North America and Asia.

Qualitative assessment of the included articles revealed distinct themes in which each study could be categorized. Half of the articles retrospectively analyzed the shortcomings of a true emergency, categorized as “Primary Report/Study” (74 articles). The other half of the included articles focused on disaster preparation. Their varied approaches can be sub-categorized as “Simulation and training” (23), “Formal Protocols” (19), “Supply, Staffing and Capacity” (14), and “Post-Acute Response” (11). The second half of the articles, which

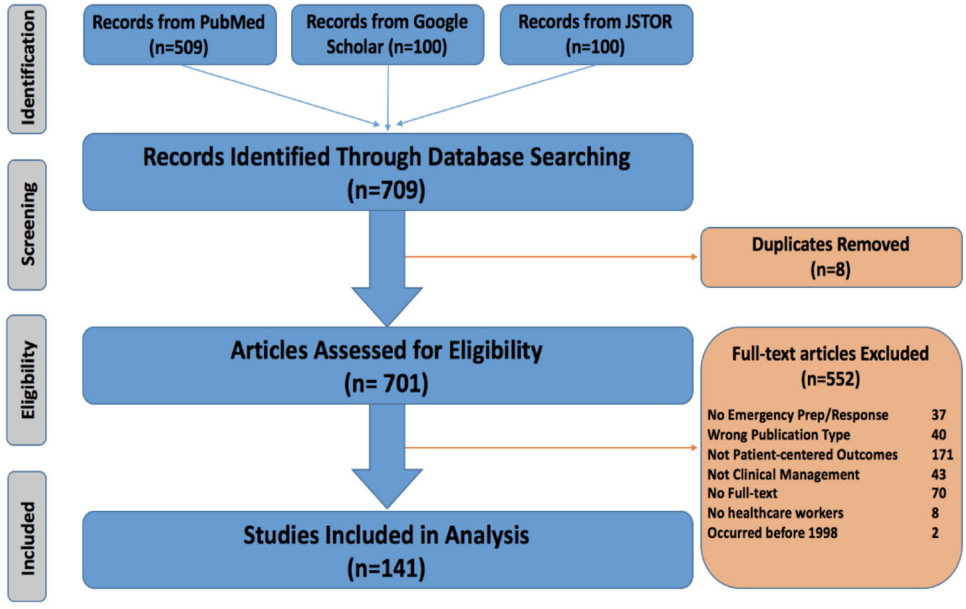

FIGURE 1 Systematic review flowchart

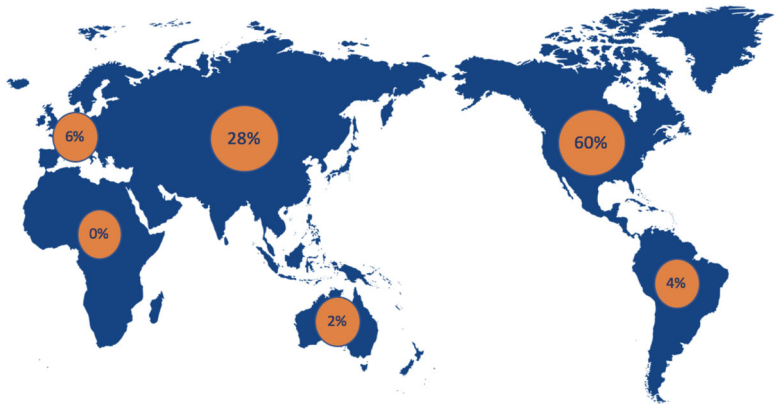

FIGURE 2 Geographic distribution of articles

TABLE 2 Types of disasters described

Type of disaster	% of articles
Natural disasters	56
Terror/Intentional events	17
Accidents	13
Infectious disease outbreaks	10
War	4

focused on preparation, had an even larger geographic disparity of articles than the total articles that Figure 2 depicts, with 76% of articles originating in North America and 15% from Asia.

The distribution of the articles by year is presented in Figure 3. Over the past two decades, the number of articles peaked in the mid 2000s following the SARS epidemic, Indian Ocean tsunami, and Hurricane Katrina. Our subsequent analysis of the articles that meet inclusion criteria are by no means comprehensive of available work regarding preparation, response, and recovery to disasters. Rather, the themes reflect the trends in the included articles.

Disaster response: Primary report/study

Approximately half of the included articles (74 articles, 52%) were primary reports or studies that hospitals published following a disaster, assessing their training and response. The authors of these articles had endured various true emergency situations and retrospectively analyzed their experiences in either narrative (58 articles, 78%) or study (16 articles, 22%) format. The majority (63 articles, 85%) of the articles described emergency operations in existing medical infrastructure. The remainder of the articles (11 articles, 15%) described mobile medical operations that were set up in response to a disaster, the majority (8 articles, 71%) of which were led by the United States. The vast majority of the primary reports explicitly mentioned the existence of an emergency action plan that was activated during an

emergency (61 articles, 83%) and presented lessons learned after the activation of said plans (58 articles, 78%). These common shortcomings, listed by percent of included articles, are presented in Figure 4.

For these common problems, the papers collectively offered solutions that they planned to implement within their respective systems in preparation for another emergency. For the

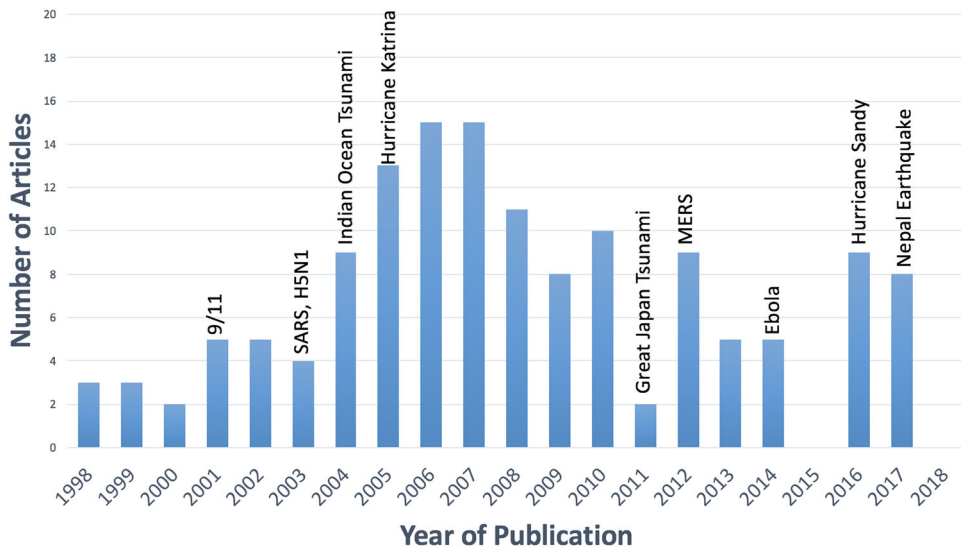

FIGURE 3 Distribution of articles by year

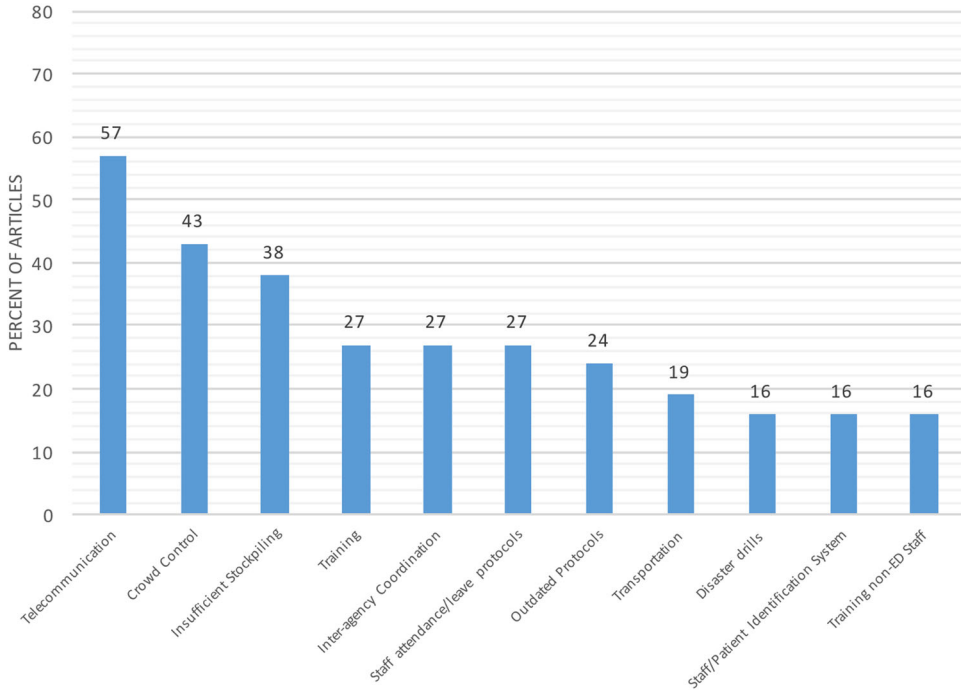

FIGURE 4 Common issues in disaster response

issue of telecommunication, the authors repeatedly described the massive number of phone calls to the hospital/emergency department, increased radio "traffic," lack of cellphone signal close to the epicenter of emergencies or in health facilities, as well as the inability to contact other leaders within the healthcare facility. Solutions offered were to equip emergency departments and ambulances with satellite radio transmission, to re-issue pagers or radios for Hospital Incident Command System leadership in the event of an emergency, and to have a second landline number for community partners (G. G. Lavery & Horan, 2005).

Additionally, many articles described the issue of crowd control in emergency departments, as many types of health emergencies lead to a surge of patients. This surge of patients, volunteers, and family members is exacerbated by the fact that a majority of people self-present to the emergency department (ED) rather than by ambulance, which leads to a maldistribution of patients across a community's hospitals (Zoraster et al., 2007). As a solution, the hospitals sealed ED entrances, triaged outside, limited ED presence to essential staff, and kept additional/volunteer staff out of the ED but close in case they were needed (Lee et al., 2016). One article advocated for hospital incident command system leaders to wear vests to clearly denote their role, and even labeling providers with "Airway doctor," "Trauma nurse," "Trauma surgeon," and so on, to avoid confusion in a crowded space (Lee et al., 2016). Multiple articles encouraged establishing family assistance centers for next of kin looking for victims, which can be expected on a magnitude of three to five people per patient (Lynn et al., 2006). More ED space can be made available by discharging stable patients home earlier than normal from the wards. Some articles described disrupted road infrastructure, during which health staff coordinated with other first responders, such as fire departments or military to create alternative means to transport patients to and from hospitals (Chen et al., 2010; Jenkins et al., 2010). In this way, patients admitted from the ED could rapidly be moved up and ED boarding and crowding minimized.

With regard to insufficient stockpiling before a foreseeable infrastructure-disrupting event like a hurricane, hospitals discussed stockpiling water to last 5 days and minimizing the number of people in the hospital beforehand (Bovender & Carey, 2006). Additionally, they described how stockpiles of medications in areas surrounding an emergency can be exhausted as people evacuate and seek medications for chronic diseases in the EDs and pharmacies of surrounding regions (Hogue et al., 2009).

The majority of the articles (61 articles, 83%) mentioned that their facility had an emergency plan that was activated during the emergency. Nonetheless, there was a recurring theme of staff being unaware of such plans or protocols as well as generalized confusion when such plans were activated. Many articles called for more disaster drills with clear direction. One article studied its disaster drills, showing they had no significant impact on regular patient care (Timm & Kennebeck, 2008). In drills, it is important to create a clear identification scheme for both hospital incident command system leaders (vests) or patients (paper record/handwritten wrist band with triage status) in the event of the electronic medical record (EMR) systems becoming unavailable (Lee et al., 2016). Additionally, clear protocols for staff attendance/leave in the event of a disaster should be established to mitigate staff elopement and subsequent overstressing of the remaining staff (Kodama et al., 2014; Laditka et al., 2009; Santibañez et al., 2016).

Multiple articles expressed the need for increased collaboration with other disaster responding organizations, such as local public health agencies, police, EMT/paramedics, fire brigades, and militaries. Some formed a regional emergency response coalition, meeting regularly and forming a regional central command structure in the event of an emergency (Cyganik, 2003). A consideration for action would be to create a memorandum of understanding outlining joint planning; all-level workforce training; and the sharing of supplies, manpower, and data such as patient census in the event of a disaster (Werner et al., 2005).

Disaster preparation: Simulation and training

A contingent of articles (23 articles, 16%) addressed disaster simulation and training in their health systems. The largest proportion of articles that addressed simulation and training assessed the competency of existing training measures in place (eight articles, 33%). Unfortunately, the majority of the assessments were based on qualitative data, with the only quantitative data coming from pre- and post-training assessments that are vulnerable to response shift bias. Another 33% of the articles (eight articles) described actual simulation exercises, with half of them in the clinical setting and half in a tabletop format. The remainder of the articles discussed needs assessments for training (three articles, 13%), systematic reviews of training (two articles, 9%), and descriptions of training programs (two articles, 9%).

Many primary reports called for more disaster drilling to increase staff knowledge of disaster protocols, refine emergent decision-making at various levels in emergency health systems, and foster oral and written communication between such levels. The drills described by the articles in this section—from in-hospital drills with staff to tabletop exercises with clinical leaders and community partners—were universally seen as helpful from a qualitative standpoint. Analysis of pre- and post-tests universally supported that assessment. However, two systematic reviews attempted to provide more robust evidence for or against the utility of such exercises. They agreed that there is limited quantitative evidence proving the effectiveness of such drilling and that those studies have "significant limitations in design and evaluation methods" (Hsu et al., 2004). For this reason, the reviews both concluded that there is insufficient evidence to draw a valid conclusion (Hsu et al., 2004; Williams et al., 2008). Nonetheless, one noted that the drills are useful to "improve familiarity with disaster procedures, identify problems in different components of response (e.g., incident command, communication, triage, patient flow, materials and resources, and security) and provide the opportunity to apply the lessons learned to disaster response" (Hsu et al., 2004).

Disaster preparation: Proposed plans

Nineteen articles (13%) focused on delineating plans for future disasters. Some advocated for identifying multiple hospitals in a region to be involved in planning (Lynn et al., 2006; Potter et al., 2005). They emphasized that when planning, it is important to estimate the expected wounded in various types of mass casualty incidents (Lynn et al., 2006). One can subsequently use those figures to calculate the maximum number of patients able to be absorbed per hospital, as well as the necessary supplies and staff. Staff needs should be overestimated by 30%, taking into consideration that 30% of called-in personnel will not be available. Alternative spaces for triage, treatment, and stretcher routes should be considered (Lynn et al., 2006). Hospital and regional command centers, clear leadership roles and duties, and postactivation checklist should be outlined. Lastly, staff call-in/report protocols should be published.

Past infectious disease outbreaks such as SARS have shown high rates of nosocomial infection, with 21% of SARS patients being healthcare workers. To address this known issue, an article suggested the following hierarchy: (1) Engineering controls, followed by (2) administrative and work practice controls, and supplemented by (3) personal protective equipment (PPE) (Thorne et al., 2004). Engineering controls include temporary structures, outside facilities for screening, and negative pressure rooms. Administrative controls include restricting patient contact, staff/patient movement, control measures for high-risk

procedures, and monitoring staff adherence to isolation procedures. PPE should be seen as a supplement to a more important means of transmission prevention.

A portion of the articles (four articles, 21%) discussed individualized departmental task forces that have been formed to take on emergency situations. Such task forces complement the overarching hospital incident command system and lead to individualized response models, increased staff morale, and staff "buy-in" about the importance of disaster preparedness within individual departments (Zavotsky et al., 2004). The task forces corresponded and trained with outside first response organizations, and some even planned to assign staff members to leave the hospital to join such organizations in the field in the event of a mass casualty situation (R. F. Lavery et al., 2000).

The remaining articles focused on best practices in the care of a specific patient group (three articles, 16%). For example, obese, elderly, and perinatal women have increased health needs and limited mobility. Thus, all should be considered special-needs and at-risk patient populations, and all patient plans should consider them (Geiling, 2010; Orlando et al., 2010).

Disaster preparation: Post-acute response (recovery)

The smallest proportion of articles focused on post-acute phase disaster response (11 articles, 8%), taking varying approaches. The majority of the articles (seven articles, 64%) focused on the issues providers face in the post-acute/recovery period, when regular health infrastructure remains disrupted. Articles called for a more coordinated international response to disasters, ensuring the qualification of those deployed and prioritizing the autonomy and needs of the host nation's ministry of health (Carballo et al., 2005). Other articles examined the issues that patients face in the event of prolonged infrastructure failure, both acute and chronic. For example, when infrastructure fails, patients cannot access their chronic medications or healthy food and present with related complications of their chronic illnesses (Hogue et al., 2009). One article found increased rates of dental caries in the months following earthquakes in two countries, Japan and Haiti (Hosokawa et al., 2012). Interestingly, rates of caries were particularly high in areas with international responders, which the authors attributed to international teams distributing sugary food and candy, which have a long shelf life, to survivors. Oral hygiene can be a nidus of infection, particularly if elderly patients aspirate, and thus the article suggested distributing toothbrushes/toothpaste, educating patients, involving dentists, and distributing healthy food.

The remainder of the articles (four articles, 36%) took aim at the impact the mass casualty incident has on healthcare workers over time. Some discussed medical morbidity, but all discussed psychosocial distress from social distancing-associated social isolation, increased work, stigmatization of healthcare workers during infectious disease outbreaks, and the fear of contracting the disease and/or spreading it to family. For example, a study during the SARS epidemic found that two-thirds of the hospital staff reported SARS-related concerns for their own or their family's health (Nickell et al., 2004). More alarmingly, 29% scored above the threshold point on the GHQ-12, indicating probable emotional distress, social dysfunction, anxiety, or loss of confidence. The rate among nurses was even higher at 45%. Such obstacles threaten staff absenteeism and dysfunction, thus challenging the sustainability of post-acute disaster response. Therefore, early and aggressive campaigns to boost morale, treat depressive symptoms, and foster social connections are important. A second article suggested educating staff that they are at risk for symptoms of depression/anxiety, normalizing seeking psychotherapy/pharmaceutical treatment, proactively creating phone/video chat networks, and providing financial support for those in quarantine (Johal, 2009).

Disaster preparation: Supply, staffing, and capacity

Fourteen articles (10%) addressed supply, staffing, and capacity concerns in disaster planning. The largest portion of this group (five articles, 36%) discussed surge capacity—the ability of a medical facility to care for the "surge" of new patients in the event of a mass casualty incident. To minimize the surge, papers described methods to facilitate interhospital communication of key data—supplies, manpower, and the number of open hospital beds—in the event of a disaster to distribute supplies and staff to meet patient needs (Tadmor et al., 2006). Similarly, health provider systems can work with the media to supply the public with instructive information to deter panic and control patient flow; mitigating unequal burden between hospitals (Tadmor et al., 2006). In response to the surge, the articles outlined various means to redistributing patient burden, such as discharging stable patients home early or to subacute/short-term rehabilitation facilities and using typically nonclinical space for patient care. Some took it a step further, discussing more proactive measures, such as planning with the region's outpatient community health centers, closed hospitals, or retirement homes to take advantage of their space for reserve capabilities (Koh et al., 2006; Phillips, 2006).

Another portion of the articles (four articles, 29%) discussed means of incidence control. For infectious disease or chemical outbreaks, articles advocated for mass vaccination/prophylaxis and PPE for medical providers. They highlighted the lack of and need for improved PPE for first responders such as EMT/paramedics in the event of a chemical/nuclear/biological disaster (Migl & Powell, 2010; Phelps, 2007).

Some of the articles (three articles, 21%) discussed means to secure additional medical supplies, discussing strategic stockpiling and formulas to calculate supply needs to better inform suppliers in the early response. For example, one article formulated the blood needs from the number of casualties in a mass casualty incident (Beekley et al., 2009).

The remainder of the articles (two articles, 14%) discussed staffing, highlighting systems to credential out of hospital clinician volunteers rapidly and an app that calls/verifies reinforcement without sacrificing critical manpower. For example, one article created an app that circumvents a phone tree and provides the institution with real-time provider responses and estimated times of arrival (K. Tanaka et al., 2017). The other article supported advanced provider credentialing in a region so that hospitals can accept volunteers as needed to assist in post-disaster care (Schultz & Stratton, 2007).

DISCUSSION

Disaster preparation

It is clear that healthcare provider systems around the world differ in their approach to disaster preparation, targeting an array of simulation and training, formal protocols, supplies, staffing, and capacity. Hospital incident command system leaders can consider implementing a hierarchy of engineering controls, administrative/work practice controls, and PPE with the needs of all staff and at-risk patients kept in mind. Additionally, hospital system leadership can consider creating stockpiles that are intended to last at least five days, establishing memorandums of understanding between hospitals/departments and local public health agencies, writing evacuation protocols, defining staff attendance protocols during disasters, training of staff outside of the Emergency Department (Accident and Emergency) to assist during disasters, and including all levels of providers in the protocol-making process.

In terms of the literature, which is saturated with needs assessments, further research is needed on disaster preparation. A specific contribution to the literature would be to examine the effectiveness of preparation activities such as disaster drills, computerized scenarios, simulation, and tabletop exercises. Hospitals/departments could more rigorously evaluate their drill efforts, monitoring their training against the following outcomes measures: Time to first provider contact, time to laboratory/radiological study, time to diagnosis, time to treatment, length of stay in department/hospital, rates of over-triage and under-triage, length of time until backup staff called/arrived, appropriateness of decisions made by hospital incident command, and so forth. One systematic review by Williams et al. (2008) called for studies with better scientific rigor and objective measures, ideally randomized controlled trials involving control groups of untrained individuals. Though it seems counterintuitive to abstain from training a portion of the workforce, they argue, "control groups could receive training once the studied intervention is shown to be effective." Through studies of greater rigor, preparation work can be more targeted, evidence-based, and efficient use of resources.

Disaster response

As other hospital systems, departments, and providers plan their disaster response disaster, they can learn from their colleagues' lessons learned in Figure 4 to prevent similar mistakes in the future. Important considerations for future disaster response would be for providers to incorporate satellite/radio communication when telecommunications are disrupted, initiate crowd control and triage outside of the ED, institute clear demarcation of hospital incident command system leadership, and organize volunteer manpower from outside departments/institutions.

Additionally, more quantitative data is needed in the literature. This study was initially designed with the intention of extracting quantitative outcome data from articles to present a robust argument of which disaster preparation interventions work, but rarely do articles publish quantitative data on disaster response interventions. Even fewer examine patient-centered outcomes, such as mortality data (12 articles, 9%).

This lack of outcome data is a major limitation of the individual articles examined, as well as this review article, which was based on qualitative trends. Thus, we encourage the collection and presentation of quantitative measurement in clinical disaster response. Aside from mortality and morbidity, it would be important to include the following measures: Number of patients over time (surge), number of patients by chief complaint, average length of stay, hospital capacity, bed occupancy over time, days of lost work, days of lost services. Systems could also use published Utstein-style templates for publishing uniform data following acute response (Debacker et al., 2012). Through comparison of measurable outcomes, future recommendations can be evidence-based.

Disaster sustainability and recovery

In terms of disaster sustainability and recovery, hospital systems should plan for the repercussions of infrastructure failure following the acute disaster, such as chronic disease exacerbation and new acute infection. Hospital system leadership can consider incorporating technology, creating regional provider partnerships, and utilizing the media to equilibrate the supply and staffing strain in a region during a disaster. Additionally, as medical staff are vulnerable to psychological strain, particularly during infectious disease outbreaks, their psychological needs should be addressed early and aggressively. As relatively few articles in the literature focused on disaster recovery, future contributions about this phase are warranted.

Limitations

Quantitative assessment and meta-analysis using PRISMA guidelines was unable to be pursued as anticipated due to the subjective nature of current literature. The qualitative analysis that ensued is limited by its dependence upon investigator designation of identified themes. The authors attempted to mitigate potential resulting bias by quantifying proportions of major trends in the literature—first the proportions of articles responding to disasters and those planning for them and subsequently quantifying both common lessons learned and different areas of disaster planning focus.

The available data was contextual to the events with which they were associated, and conclusions not prospectively tested. Consequently, the developments and lessons learned that were common in the articles are not necessarily generalizable. For example, the feasibility of stockpiling is limited by storage capacity, the expense of storage, obsolescence, support of local or national governments, and so forth.

CONCLUSIONS

In summary, our review found the following:

- The literature is saturated with needs assessments for disaster training and primary reports following disasters. More research addressing innovation in hospital disaster simulation, protocols, post-acute response and supply, and staffing is warranted.
- More literature is needed documenting the successes and failures of medical provider disaster response in Europe, S. America, and Africa.
- The majority of articles were reactive, rather than proactive. Expansion of articles delineating efficacy-tested disaster preparation work is warranted for future evidence-based practice.
- Relatively few articles have been written on infectious disease outbreaks in the context of provider and hospital system emergency response.
- More quantitative research is needed, particularly showing mortality and morbidity outcomes from disaster interventions at the provider and hospital system level.
- Common shortcomings in hospital disaster plans are telecommunication failure, plans for surge capacity, insufficient stockpiles, coordination with other hospitals/disaster responders, and staff knowledge of disaster protocols.
- Hospital Incident Command Systems can consider the hierarchy of controls including engineering controls and administrative/work practices when designing disaster protocols controls. Infection prevention and control needs, and those controls that apply to all staff and particularly at-risk patients need special attention.
- Hospital system leadership should plan for the repercussions of disruptions in usual care during the disaster, such as chronic disease exacerbation and new acute infections during recovery.
- Disaster plans can incorporate technology, regional provider partnerships, and the media to equilibrate the supply and staffing strain in a region during a disaster.
- Healthcare providers and staff are vulnerable to psychological strain, particularly during infectious disease outbreaks, and this should be addressed early and aggressively.

As hospitals learn from the COVID-19 experience as well as other future disasters, they will hopefully start filling in these blanks with more targeted and actionable contributions to the literature.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of the research reported.

ETHICS STATEMENT

The authors declare that human ethics approval was not needed for this study.

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