JEM

Are local offices of emergency management prepared for people with disabilities? Results from the FEMA Region 9 Survey

Robyn R. Gershon, MHS, DrPH
Michelle A. Muska, EMT, MPH
Qi Zhi, MPH
Lewis E. Kraus, MPH, MCP

ABSTRACT

Objective: *To assess disaster planning of local Offices of Emergency Management (OEM) with respect to people with disabilities (PWD).*

Design: *A cross-sectional study of local OEM from Federal Emergency Management Agency (FEMA) Region 9 (N = 61) was conducted using an internet-based survey. The primary outcome was the adoption of emergency management recommendations by the Department of Justice (DOJ) and FEMA in applying Title II of the Americans with Disabilities Act (ADA).*

Results: *OEM implementation of ADA requirements was generally suboptimal. While 63 percent reported that plans addressed the needs of PWD, only 41 percent reported detailed operating procedures for PWD. Training of staff to ensure that they were knowledgeable on the ADA requirements for inclusivity was rarely conducted. While accessible shelters and transportation were often identified, accessible communication strategies, including emergency notifications, were often lacking; only 28 percent of OEMs reported availability of sign language interpreters at shelters. Shelters often allowed service animal access (62 percent), but fewer allowed access to personal assistants (39 percent). Engagement of the disability community, from plan development to community drills, was uncommon. While more than half (59 percent) of OEM felt clear about their responsibilities in providing equal access to PWD, only 23 percent reported having qualified staff and other resources necessary in order to meet those responsibilities. Participants cited the need for more training on the ADA requirements in order to better meet the needs of PWD.*

Conclusion: *Strategies for improvement to assure inclusiveness of PWD in all phases of emergency management are needed.*

Key words: disaster planning, office of emergency management (OEM), people with disabilities (PWD), ADA

INTRODUCTION

People with disabilities (PWD) are disproportionately affected by disasters and emergencies, with evidence suggesting they may have as much as double the risk of disabling injury or death compared to people without disabilities.[1] If they survive, they are less likely to receive benefits and to recover and return to their predisaster living conditions. These disparities are not only incongruent with our national values—they are also illegal under our antidiscrimination laws. Title II of the 1990 Americans with Disabilities Act (ADA),[2] Amendments Act (ADAAA) of 2008,[3] with additional guidance from the Federal Emergency Management Agency (FEMA)[4] stipulate the inclusion of people with functional and access needs, including PWD, in *all* aspects of jurisdictional preparedness plans and services. Despite extensive guidance on ensuring the inclusivity of PWD in all disaster planning—morbidity and mortality disparities continue to documented.

The key agencies responsible for ensuring accessibility and inclusion of PWD in disaster management planning, response, and recovery are local Offices of Emergency Management (OEMs). Situated within local governments, they are required to ensure that the needs of PWD and other access and functional

DOI:10.5055/jem.0506

needs are considered in every phase of emergency management. While many different governmental agencies (with assistance from nongovernmental and private sector entities) play important roles in disaster management in the United States, the local OEMs might arguably be seen as having the greatest obligation and opportunity for ensuring full accessibility of PWD in all aspects of disaster planning and response. However, the knowledge and capabilities of local OEMs with respect to inclusiveness of PWD are largely unknown and mainly anecdotal. The purpose of this study, therefore, was twofold; first, to develop an assessment tool to measure OEMs' capabilities in this regard, and second, to use this measure to assess knowledge and capabilities of local OEM with respect to disaster planning for PWD. The ultimate goal was to identify strategies that might improve accessibility and inclusivity of PWD in all phases of disaster management, thereby reducing the risk of adverse disaster-related outcomes in this population.

Disasters in the US

The United States is one of the top five nations in terms of frequency and severity of both natural and man-made disaster events. Powerful weather and climate-related disasters are occurring more frequently and with greater intensity. Over the past few years we have seen a dramatic increase in highly disruptive, large-scale weather-related events, with extraordinarily large numbers of people evacuated and displaced, and extremely high costs associated with response and infrastructure damages. Some recent notable weather event trends include, for example, 134 major Presidential Disaster declarations in 2017 that required federal assets, including Hurricanes Maria in Puerto Rico, Hurricane Irma in the Florida Keys, and Hurricane Harvey, which resulted in severe flooding of Houston and parts of Southeast Texas.[5] These three deadly hurricanes alone resulted in over 28M people evacuated and/or displaced from their homes, 3,000 deaths and roughly $400B in damages.[6] In 2018, there were 124 major Presidential Disaster declarations, including Hurricane Michael in Florida, wildfires in California, and widespread and severe flooding in the Carolinas.[5] The 2018 disasters resulted in hundreds of deaths and over $306B in damages and several million people evacuated.[7] In 2019, there were 101 Presidential Disaster declarations, Dorian (Florida, South Carolina and North Carolina).[5] The 2018 and 2019 wildfires in California were particularly destructive, leading to multiple deaths in civilians and firefighters and the evacuation of thousands of people. The combined cost for these events are staggering; the National Centers for Environmental Information (NCEI) has calculated that since 1980 there have been 254 weather and climate disasters each with one billion dollars (including adjustment to 2019 dollars) or more in damages/costs, for a total cost of over $1.7 trillion.[7] Every FEMA region and nearly every state has been impacted by these large-scale events. Unfortunately, due to a number of global and planetary trends driving climatological and meteorological instability, we will likely continue to experience these extreme events in the foreseeable future. This underscores the critical role of disaster management in helping to prepare *all* Americans as part of the government's long-term goal of building a "culture of preparedness."[8]

Personal preparedness of community members, including PWD

These disaster trends in the US must also be considered in relation to the limited data we have on personal preparedness of community members in general, and preparedness of PWD, in particular. FEMA now urges all citizens to be prepared to manage on their own for a 72-hour period.[9] Yet, the few studies that have assessed the general public's disaster planning concluded that *less than half* of the general population has even the most rudimentary elements in place for disaster preparedness.[10] For example, from the most recent (2018) annual FEMA Household Preparedness Survey and Report ("Preparedness in America"), only 49 percent had made an emergency (family) plan and 11 percent did not intend to take any steps toward preparedness in the coming year.[11] FEMA reports that cost and not knowing how to prepare were key barriers to preparedness in the general public.

With respect to PWD, in the 2014 FEMA Household Preparedness Survey, results indicate that they are no more likely to be prepared than the general public.[12] Some studies indicate that they might actually be *less likely* to be prepared.[13,14] In a study published in 2013 on a national sample of 262 disabled people receiving personal assistance, serious planning deficiencies were found.[15] For example, the mean score on a seven-item preparedness checklist was only 2.3 (range 0-7); 35 percent reported that they had prepared an evacuation plan, 28 percent reported that they had prepared a "go-bag," and only 26 percent had made back-up plans if their personal assistant could not report to duty. In a more recent qualitative study of elderly homecare patients receiving homecare assistance, Gershon et al. similarly found low levels of planning for back-up care, with 38 percent of participants reporting that they had made emergency back-up plans for their caregivers and less than half (44 percent) reporting plans for back-up power *even though they relied on powered equipment to survive*.[16] Key barriers identified in this study included lack of self-efficacy (lack of resources, no family or friends nearby); lack of risk relevance to them (many were fatalistic, as reported by one participant: "*I've lived a full life, actually, I'm ready to go…*"); sense of community was low ("*nobody cares…*"); and lack of trust in authorities ("*You can't depend on the police, fire, the army, or national guard*." "*You can't depend on the city or county*.")

Evidence suggests that PWD have an increased risk of disaster-related morbidity, although there is no national tracking of this information and studies on this are sparse. In a 2018 publication by Stough and Kelman, the authors concluded that compared to people without disabilities, PWD die at a higher rate, often lose their homes or have high property damage, are more likely to incur injuries, experience more health-related complications, receive less assistance from emergency personnel and volunteers, and take longer to recover.[1] The increased risk of death or injury may be related, in part, to unwillingness or inability of PWD to evacuate when indicated; a study of hurricane evacuation experiences by Van Willigan et al. found that PWD and their families did not evacuate their homes due to lack of accessible transportation and because they did not want to evacuate without their wheelchairs.[17] In Hurricane Maria, it is estimated that one-third of the fatalities were due to interrupted care among those with access and functional needs.[18]

Lack of individual and family preparedness needs to be considered in the context of the size of the population at potential risk. The United States has a very large population (roughly 20 percent, 50 million US adults) of PWD.[19] This population is also rapidly growing as a function of the rapidly aging US population. More than one third of all people over 65 years of age currently report one or more disabilities,[20] and by 2050, 88 million Americans will be age 65 years and older.[21] The perfect storm of large numbers of largely unprepared disabled people, combined with the increasing threat of disaster events, highlights the critical role that OEMs need to play in ensuring the safety and health of PWD during times of crisis.

Local OEM

Throughout the United States, there are hundreds of local OEMs, varying in size from upward of 100 employees or more to offices with only one or two employees. OEMs' responsibilities vary depending on local ordinances. In general, however, because disasters always start at the local level, the local OEMs in the affected community are typically one of the first agencies, along with local first responders, to be involved in any disaster event. With assistance from state and federal authorities in emergency management, local OEMs are trained to meet their key obligations. Their most important duty is to "protect and preserve the safety" of all the jurisdiction's community members.[22] This is accomplished by addressing these key responsibilities: Development of the Jurisdiction's Emergency Plan; Coordination of Efforts (by developing and maintaining response partner ties, typically by developing and facilitating exercises and drills); Raising Community Awareness (by involving community members in volunteer activities); Emergency Notification (to the public and to the media); Activation of the Emergency Operations Center (EOC) and the Comprehensive Emergency

Management Plan; Notification of the State (Level) Emergency Management Agency (and any entities with whom they have mutual-aid agreements in place); Proclaiming a Local State of Emergency (to authorize the use of local assets and expenditure of local funds); and Requesting the State Emergency Management Agency to Provide State and/or Federal Assistance (when local capacity is overwhelmed by the event).

Emergency planning to assure the needs of PWD are met and in compliance with ADA requirements is also OEMs' responsibility, with support provided by local jurisdictional services. Public entities with 50 or more employees are *required* to designate at least one responsible employee to coordinate ADA compliance within the jurisdiction. Although the ADA does not refer to this person as an "ADA Coordinator," this term is commonly used in state and local governments across the country, and local OEMs may be able to obtain assistance from the jurisdiction's ADA Coordinator in order to meet the emergency management planning and response needs of PWD. Even with assistance and guidance from a local ADA Coordinator, OEMs' ability to meet their responsibilities in general, and the ADA requirements in particular, may vary greatly. Some states require that OEMs directors have advanced training and certification in all aspects of emergency management, while other states may have much less stringent requirements. Information on how well local OEMs are meeting their responsibilities with respect to ADA requirements is extremely limited.

MATERIALS AND METHODS

Study design and survey development

A cross-sectional, anonymous survey was conducted in late 2018. The survey was developed through a five-step process. In the first step, national documents, such as the ADA Title II Checklist, were thoroughly reviewed.[23] In the second step, a scan of the literature on disabilities and disaster planning was conducted, and relevant articles, webinars, preparedness toolkits, guidance documents, and checklists for PWD that were developed by various agencies and disability specialists and available on the internet were obtained and reviewed.[24-31]

Based on this extensive review, the third step involved the identification of key thematic topics (based, in part, on the key responsibilities of OEMs) to address *disability inclusion domains*. These thematic topics were organized into six distinct domains that related to disability inclusion capabilities: (1) emergency plan elements; (2) response operational capabilities, including transportation and sheltering; (3) pre-existing emergency coordination with planning and resource partners; (4) emergency notification and communications; (5) disaster drills and exercises; and (6) training and monitoring of staff and volunteers of local OEMs.

In the fourth step, we prepared draft survey items for each domain, which were then reviewed and assessed by several nationally recognized subject experts and key informants. Our objective at this stage was to obtain consensus on the content validity of these new measures.

In the fifth and final step, a draft computerized version of the final instrument was pretested by eight representatives of the target population (OEM staff and Directors outside of FEMA Region 9). This allowed us to assess face validity of the measures as well as readability and length of time for completion. A copy of the final OEM survey and codebook are available by contacting the corresponding author.

The final survey, written in English, included 40 items (and subitems) prepared at a 14.5 grade reading level for ease of completion (length of time to complete ranged from 15-20 minutes). An indirect structural projective approach was utilized in wording of some questions in order to avoid socially desirable responses.[32] Most items used "yes," "no," "don't know," and "not-applicable" response categories or discreet categorical responses. The questionnaire also included items that addressed OEMs organizational characteristics, including jurisdiction population, previous disaster history (in the past five years), staff qualifications, and perceived qualifications of the agency in meeting the ADA requirements for inclusiveness. One item was included that addressed resources OEMs needed in order to be improve inclusiveness.

The self-administered survey was hosted on an SSL-secured platform, Qualtrics.[33] All survey

participants were assigned a unique code number and no identifying information was collected. Participants were adult professionals working in OEMs, typically serving as the Directors, in Federal Region 9, including Arizona, California, Hawaii, Nevada, Guam, American Samoa, and the Commonwealth of Northern Mariana Islands. The Region is very culturally diverse and has over 47M people in almost 400K square miles. The most common disaster events in the region include hurricanes, typhoons and flood threats, landslides, earthquakes, and wildfires.

Recruitment and protection of human subjects

We used a multimodal purposive recruitment strategy to identify a convenience sample of eligible participants, including available lists of OEMs, snowball sampling, presurvey announcements through state OEMs and disability organizations, and website announcements (including the Pacific ADA Center, disaster researchers and disaster management professionals, emergency management, etc.).

At the start of each survey, an introductory page provided information on the purpose of the study. All study procedures had prior review and exemption by the NYU Office of Human Subjects Protection. No incentives for participation were provided.

Survey measures

The survey included items that addressed each of the disability inclusion domains, including, for example, items on OEMs written plans that addressed the needs and inclusiveness of PWD, and whether or not they had been prepared with the input of PWD, ADA coordinators, and representatives of disability organizations; planning, drills, and exercises, including after-action reports, that included (and made accessible) to PWD; operating procedures that addressed the needs of PWD; training and monitoring of staff and volunteers to ensure that they appropriately addressed the needs of PWD; planning with ADA Coordinators and local response partners; evacuation plans for PWD; sheltering plans that were in compliance with ADA requirements, and policies that allowed for personal assistants and service animals to accompany PWD to shelter locations; accessibility of disaster communications, including emergency notifications and communication at shelters for PWD; coordination with local businesses to assure safety of workers and visitors with disabilities during disasters; and recovery activities, including access to information on benefits for PWD. One item on the perception of how well the OEMs were meeting their responsibilities with respect to PWD was also included. Additionally, items on organizational characteristics (location, jurisdictional size, OEMs staffing and certification, prior disaster experience, training gaps, and training preferences) were included as well.

Analysis

After checks for missing values and the validity of responses and other data editing procedures were completed, descriptive analyses were performed to describe organizational characteristics and to characterize the distribution of variables. Based on the descriptive analysis, factor analysis was conducted to identify variables that interrelated and could be used to create simple-to-use measures describing OEM disaster preparedness for PWD. Internal consistency of measures was then examined by calculating Cronbach's alpha. Alphas above 0.70 were deemed acceptable.[34] Finally, matrix correlational analysis was conducted to review significant relationships between measures and between key variables and the measures. All analyses were performed using SAS 9.2 (SAS Institute, Inc., Cary, North Carolina).[35]

RESULTS

Organizational characteristics

A total of 61 completed surveys were obtained. More than half of the sample came from California, followed by Arizona, Nevada, Hawaii, and the Pacific Islands. Most respondents worked in jurisdictions with an estimated 100,000 to 500,000 residents, although 13 percent reported jurisdictional size of 1,000-25,000. Most responding OEM reported a small staff number, generally comprised of only themselves or a staff of 2-5 people. The most commonly reported certifications held by OEM included: State Emergency Operations

Certification (34 percent), International Association of Emergency Managers (Certified Managers) (23 percent), International Association of Emergency Managers (Associate Emergency Managers) (11 percent), FEMA Training Courses (7 percent), and other (9 percent); 16 percent reported that no certifications had been obtained. Nearly, half (41 percent) reported a past history of a large-scale disaster event (ie, one that required mass evacuation, shelter-in-place, or mass fatalities) in the last 5 years. The most commonly reported disaster events were wildfires, severe flooding, severe wind, critical infrastructure damage, and excessive heat.

Preparedness for PWD, frequencies

When asked if local OEMs have access to estimates of the number of PWD and access and functional needs within their jurisdiction, the majority answered "no" (57 percent). Even when these estimates were available, they were not consistently used in planning for shelter-in-place needs for PWD (emergency power, medications, and medical supplies), or for planning for accessible transportation or accessible shelters. Only 41 percent reported up-to-date lists of local agencies and caregiver groups that provide resources to PWD. The preparation of written disaster plans (or annexes) that addressed the needs of PWD was reported by 63 percent, with less than half (46 percent) of those reporting help from disability organizations or PWD in preparing the plan. Only 41 percent had plans that included detailed operating procedures that specifically state how they will address the needs of PWD. A low proportion (36 percent) reported the availability of an ADA Coordinator in their jurisdiction, but if they were available they were typically involved in the plan preparation and planning in general.

Roughly half (51 percent) the sample reported that training of staff/volunteers on the plan was conducted. However, training of staff/volunteers on assuring inclusiveness of PWD was particularly substandard; for example, training staff on identifying needs of PWD (31 percent), meeting those needs (39 percent), and knowing the requirements under the ADA (26 percent) were all rarely provided.

Warning notifications for PWD were not routinely tested for PWD; only 34 percent reported testing notifications for people with blindness/low vision, 41 percent for people with deafness/hard of hearing, 16 percent for people with cognitive impairments, and only 11 percent for people with mental health impairments. Few OEMs (18 percent) reminded local television stations to have qualified Sign Language interpreters when providing emergency information.

In terms of evacuation planning, approximately half (52 percent) had identified accessible transportation, whereas 69 percent had pre-identified accessible shelters. However, only 34 percent of jurisdictions had memoranda of understanding (MOU) for accessible transportation in place. Accessibility of the shelters was variable; 70 percent reported shelters with ramps, 38 percent had wheelchair-accessible bathrooms, 56 percent had barrier-free areas to enable wheelchair accessibility, and only 18 percent had shelters that provided alternative forms of communication (Braille, audiotape) to facilitate communications for some PWD.

Less than half of the shelters were reported to have power generators (46 percent), refrigerators for medication (49 percent), and oxygen availability (23 percent). Policies that permitted personal assistants' access in shelters so that they could visit and do tasks for their client was reported by 39 percent, although shelter policies that allowed for service animal access was much higher (62 percent). With respect to medical shelters, some jurisdictions continued to shelter PWD in medical shelters, even if they did not have a medical condition that required this (18 percent).

Planning with local employers for emergency situations that might require PWD to shelter at work was rarely reported. Only 15 percent stated that such planning took place, and planning with local employers for PWD, including visitors, who might need extra assistance in evacuation, was similarly only reported by 15 percent.

Planning and exercises that involved PWD or their representatives was lacking, only 33 percent reported drills that actively involved PWD.

Additionally, consideration of the accessibility needs of PWD were rarely taken into account by providing, for instance, accessible transportation to the drill (28 percent), and sign language interpreters at the drills (21 percent). In contrast, planning with local response partners was frequently reported. OEMs' planning was most likely to occur with local first responders, health departments, and with local Red Cross or other nongovernmental agencies.

During recovery, less than half (44 percent) of OEMs reportedly helped PWD obtain benefits information (38 percent), or made this possible through the availability of accessible equipment to help them obtain such information (25 percent). Only 21 percent involved PWD in the preparation of after-action reports, and similarly, only 21 percent engaged PWD in post-disaster mitigation planning.

While more than half (59 percent) of the participants felt generally clear about the roles and responsibilities of OEMs in terms of providing equal access to PWD, only 23 percent felt that they had qualified staff and other resources to fulfill their responsibilities under the ADA. An open-ended question that asked participants to identify the resources that OEMs felt would help them fulfil their responsibilities under ADA included more training of staff and better outreach to PWD in their communities. The full list of resources needed is shown in Table 1.

Table 1. Resources that local OEMs reported that they need in order to fulfill their responsibilities under the ADA

Training on ADA requirements readily available for staff
Better community outreach for PWD and access and functional needs
Drills involving PWD and access and functional needs
Better community communication systems for PWD and access and functional needs
Planning on ADA requirements with local planning partners (including third party entities, eg, Red Cross)
Back-up power sources for PWD and access and functional needs
Accessible transportation for PWD and access and functional needs (for evacuation purposes)
Outreach to local businesses (large and small) regarding their planning for PWD and access and functional needs in disasters
Guidance from FEMA on ADA requirements
Shelters identified that can accommodate PWD and access and functional needs

Training modality preferences for additional education on the accessibility needs of PWD included webinars, on-line courses, and to a lesser degree, 2-week long training programs at the Federal Emergency Management Institute. Most would prefer that this type of training be led by their own state officials in emergency management, or by FEMA, and to a lesser degree, by disability organizations or the Red Cross.

Factor analysis results (measures)

With the goal of developing an easy to use rapid assessment tool, factor analyses and reliability testing were conducted. Using this approach, two study measures were identified. The first, shown in Table 2, referred to as "*emergency planning for PWD,"* is comprised of 11-items. The mean score for this measure was 4.91 (SD = 3.10), range = 0-11.), ($\alpha = 0.91$). The second, shown in Table 3, is referred to as "*Emergency Coordination,"* and is comprised of six-items that measure agency coordination with response partners. The mean score for this measure was 3.67 (SD = 2.72), range 0-6, ($\alpha = 0.94$). If these mean scores were used as a "test," then the average score on emergency planning for PWD would be 45 percent, and the average score for the Emergency Coordination would be 61 percent.

Correlations

To investigate the relationship between important variables and these two new measures, we conducted Pearson correlation analysis between *emergency planning for PWD, emergency coordination*, and certain key variables, as shown in Table 4. The results show a significant direct positive relationship between the two study measures: emergency planning for PWD

Table 2. Factor analysis and reliability of study measures		
Emergency planning for PWD items	**Factor analysis**	**Reliability (alpha)**
1. Involve disability organizations or PWD and those with access and functional needs in the preparation of the Plan	0.97667	0.893173
2. Involve local ADA coordinators in plan preparation	0.97667	0.893173
3. Prepare written plans with detailed operating procedures (ie, the specific duties that the OEMs are responsible for carrying out) that address the needs of PWD and those with access	0.75155	0.902132
4. Consider the needs of PWD and those with access and functional needs	0.73635	0.907529
5. Identified accessible transportation vehicles for evacuation of PWD and those with access and functional needs	0.73635	0.907529
6. Pre-identified accessible shelters for use during disaster events	0.77812	0.911826
7. Shelters ensure that shelter staff and volunteers are trained and monitored so that they can provide safe, appropriate assistance with activities of daily living (eg, eating, dressing, personal hygiene, transferring to and from wheelchairs), if needed	0.97667	0.906764
8. Consider the needs of PWD and those with access and functional needs who may have to shelter-in-place at work if they cannot evacuate (power, communications, medications or medical supplies, food, water, etc.)	0.75155	0.91547
9. Hold disaster drills and exercises that actively involve PWD and access and functional needs	0.97667	0.898571
10. Typically assist PWD and those with access and functional needs by helping them obtain information regarding benefit programs for disaster survivors they may be eligible for	0.77812	0.912037
11. Work with your local ADA Coordinator on emergency planning	0.97667	0.905012
Score overall	—	0. 912956

Table 3. Factor analysis and reliability of study measures		
Emergency Coordination with other Entities in the Jurisdiction		
Item	**Factor analysis**	**Reliability**
1. First responders	0.86866	0.922001
2. Local health department	0.90024	0.917584
3. Hospitals and other healthcare facilities	0.78669	0.937426
4. Other governmental agencies	0.83805	0.929069
5. Utilities and other mass infrastructure entities	0.83772	0.931808
6. Nongovernmental agencies (eg, Red Cross)	0.91961	0.91231
Score overall	—	0.936931

and emergency coordination ($r = 0.55$, $p < 0.001$). We also noted a significant correlation between emergency planning for PWD and several training variables: "Train all OEM staff/volunteers on the Plan" ($r = 0.41$; $p < 0.01$); "Train all OEM staff/volunteers on identifying the needs of PWD and those with access and functional needs" ($r = 0.52$; $p < 0.01$); "Train all OEM staff/volunteers on how to meet the needs of PWD and those with access and functional Needs" ($r = 0.66$; $p < 0.001$); and "Train all OEM staff/volunteers on the requirements under the ADA" ($r = 0.53$; $p < 0.001$).

We also identified significant relationships between the *emergency planning* measure and certain other variables, as noted in Table 4, including: "OEM managers clear about their role and responsibilities" ($r = 0.43$; $p < 0.01$); "Having qualified staff and other resources to fulfill responsibilities under the ADA"

Table 4. Correlation matrix of study measures and key variables										
	1	2	3	4	5	6	7	8	9	10
1. Planning measure	1									
p-value										
2. Collaboration measure	0.548	1								
p-value	<.0001									
3. Variable 1	0.4117	0.08756	1							
p-value	0.005	0.5674								
4. Variable 2	0.521	–0.04234	0.60279	1						
p-value	0.0002	0.78	<.0001							
5. Variable 3	0.6599	0.16653	0.39036	0.7258	1					
p-value	<.0001	0.2528	0.0088	<.0001						
6. Variable 4	0.5311	–0.02464	0.35538	0.57333	0.49237	1				
p-value	0.0004	0.8784	0.0286	0.0001	0.0012					
7. Variable 5	0.4258	0.3659	0.12932	0.12365	0.11401	0.2354	1			
p-value	0.0044	0.0158	0.4522	0.4725	0.4895	0.1802				
8. Variable 6	0.476	0.15345	0.26651	0.59091	0.52048	0.71292	0.24983	1		
p-value	0.0022	0.351	0.1338	0.0003	0.0011	<.0001	0.1478			
9. Variable 7	0.0633	–0.12364	–0.25062	–0.09335	–0.11158	–0.04352	0.08209	–0.0376	1	
p-value	0.6905	0.4353	0.1465	0.5938	0.5048	0.8162	0.6291	0.8354		
10. Variable 8	0.3507	0.15729	0.18577	0.24831	0.28604	0.1177	0.19254	0.31985	0.04545	1
p-value	0.0156	0.291	0.2641	0.1328	0.0663	0.5074	0.2219	0.0503	0.775	

Items used in the Matrix above

1. Planning measure – Emergency Planning for PWD
2. Coordination measure - Emergency Coordination with other Entities in the Jurisdiction
3. Variable 1 –Train all OEM staff/volunteers on the Plan
4. Variable 2 – Train all OEM staff/volunteers on identifying the disaster needs of PWD and those with Access and Functional Needs
5. Variable 3 – Train OEM staff/volunteers on how to meet the needs of PWD and those with Access and Functional Needs
6. Variable 4 – Train all OEM staff/volunteers on the requirements under the ADA
7. Variable 5 – OEM managers are generally clear about the roles and responsibilities of other disaster planning entities within their local jurisdictions
8. Variable 6 – OEMs typically have the qualified staff and other resources to fulfill their responsibilities under the ADA
9. Variable 7 – Jurisdiction has an ADA Coordinator
10. Variable 8 – In the past 5 years, local jurisdiction experienced a disaster event (ie, one that required either mass evacuation, shelter in place, or resulted in mass casualties or mass fatalities)

The Red color denotes the Statistically significant findings.

($r = 0.48$; $p < 0.01$); and "Experienced a disaster event in the past 5 years" ($r = 0.35$; $p < 0.05$). A significant correlation was also observed between emergency coordination and the item on perceived efficacy; "OEM managers clear about their role and responsibilities" ($r = 0.37$; $p < 0.05$). No other significant results were found between key variables and the two measures.

DISCUSSION

To the best of our knowledge, this is the first study to explore OEMs ability to address the needs and assure inclusivity of PWD in their emergency management planning. Though the sample was small, these findings suggest important areas requiring further exploration. First, we noted suboptimal responses in all six disability inclusion domains. Particularly, low scores were noted for the lack of *detailed plan elements* that would help address the needs of PWD. This is referring to the "concept of operations" (CONOPS)—the "who, what, where, how" details of the plan; in essence, how key elements of the plan will be put into operation. Without these written details, it is hard to see how plans can be quickly made operational. Excellent guidance on preparing CONOPS is provided by FEMA.[36] Another area highlighting this lack of details, was the low scores related to questions on MOUs for accessible transportation for evacuation; these must be in place beforehand to help ensure availability. We noted one domain where the responses were generally more positive; pre-existing emergency coordination with response partners was quite high with certain partners, such as the local first responders and local health department. But rarely did planning involve other natural partners for OEMs, specifically, planning with local faith-based organizations and the business sector was rare. For example, engagement with the faith-based community has been shown to be particularly helpful in numerous ways during and immediately following a disaster event, and well trained faith-based volunteers are available to assist. It is recommended that OEMs reach out to build relationships with the leading faith-based organizations active in disaster relief[37] so that they can avail themselves of this assistance, if needed. With respect to engagement with local businesses in terms of planning for staff and visitors with disabilities, this is also highly recommended. With about 56 percent (33M) PWD in the workforce, it is prudent to ensure local businesses are prepared to provide additional assistance for these individuals during disasters if required.

Responses to items addressing accessible communications indicated that improvements here may be necessary. We noticed that while OEMs often cited the use of social media and TV captioning for emergency notifications, the availability of sign language interpreters at shelters or drills was often lacking. Community-wide drills, in particular, need a proactive approach in order to support the full participation of PWD.

Of particular concern was the general pattern of disengagement with members of the disability community, even in plan preparation. This represents a missed opportunity for both obtaining valuable insights from individuals most likely to have unique and important perspectives to share and also for facilitating the transfer of knowledge between PWD and OEMs. There was also limited engagement with one of the jurisdiction's key resources in disability inclusion—namely, the ADA Coordinator. Limited input from members of the disability community and specialists in disability inclusion prevents access to their knowledge and first hand experiences. In 2011, Norwood et al. published "Promising Practices for Evacuating People with Disabilities," based on their survey of 35 key stakeholders, including providers of services to persons with disabilities and emergency managers.[38] One of Norwood et al. recommendations was to have someone with a disability background serve on the emergency operations center. Disability organizations, advocacy groups, and disability specialists have called for greater engagement of PWD and their advocates as a way to ensure greater inclusivity.[39] Our findings are strongly supportive of this.

For example, in terms of the involvement of ADA Coordinator, we noted that these knowledgeable individuals were frequently not engaged in preparing (and updating) of the emergency plan. The ADA Coordinators also have valuable information to provide in terms of evacuation planning, sheltering operations, and accessible notifications and

communications. They could, for example, help coordinate with local television stations to ensure sign language interpreters are available for all emergency notifications.

Linking in with the local disability community is relatively easy; in FEMA Region 9, it is as simple as contacting the Pacific ADA Center for this as well as a wealth of other information on the disability community, including estimates of numbers of PWD in the local jurisdiction.[40] Every FEMA region has an ADA Center that can be contacted for this type of information.[41]

In this study, we were able to identify two new measures, "emergency planning for PWD" and "emergency coordination." These were significantly correlated with each other and may be useful to local OEMs as a quick assessment tool of both of these constructs. The 11-item emergency planning for PWD measure could be used, for example, as a simple checklist, with "yes"/"no" responses. This can serve as an internal quality assessment tool that OEMs might use to check how well they are meeting the needs of PWD in their jurisdiction. The scores could then be benchmarked against the scores we obtained here.

Because our study was cross sectional in design, we cannot know if OEMs that have well developed planning are more likely to be well coordinated with their response partners, or vice versa. Highly developed planning must involve close coordination with partners; therefore, these findings are not surprising. We also noted that the experience of a major disaster in the recent past correlated with higher emergency planning for PWD scores. Again, this is not unexpected, as the experience alone can lead to the identification of shortcomings in planning, which can then lead to improvements.

In addition to calls for greater inclusiveness of PWD in all phases of disaster management, there have been numerous recommendations, guidelines, guidance documents, checklist, management tools educational initiatives, etc., developed and disseminated over the past few decades. Yet, as we have seen as recently as disaster events in 2019 and, even more recently, as of this writing in May, 2020 with respect to our experience thus far with COVID-19, planning, mitigation, and response disparities still remain. The question remains as to why the many excellent sources of guidance are either not being adopted by OEMs or, if adopted, why they are not being effective at local levels. Lack of initiative may not be the problem; a survey by Malone in 2018 on OEM's public service motivations indicates that county-level OEMs have high levels of motivation to provide high quality public service.[42] Some additional insight on this is provided in a 2011 paper by Sherry and Harkins,[43] which includes a good discussion on the barriers to OEM adoption of best practices for ensuring inclusivity. They argue that there is "*continuing confusion over the type and nature of services that are legally required under the ADA.*" They also cite "the perception" that the federal guidelines are unrealistic. The authors recommend that emergency managers use the guidelines more as an *interactive tool* rather than a compliance document to better understand and meet the needs of PWD.[43] In our study, nearly a decade since after Sherry and Hawkins identified "lingering confusion" on what exactly is needed for inclusivity in planning, our results suggest that confusion may still persist, in spite of many years of thoughtful and easily accessible guidance available, including the ADA Checklist prepared by the DOJ,[25] and the existence of a federally funded regional training network on the ADA (the ADA National Network).[44]

More research is needed to understand how best to close the gap between availability of information and actual implementation of it.

These gaps not only result in increased morbidity and mortality among PWD, they also result in lawsuits. As noted earlier, compliance with Title II of the ADA for inclusive emergency management is the law. Two high profile lawsuits have highlighted the potential threat for jurisdictions who were not adequately prepared for PWD. In New York City, a federal judge ruled that the city violated the rights of nearly 1 million residents with disabilities by failure to accommodate their needs during emergencies.[45] While this ruling first arose as a result of a 2011 class action lawsuit following Tropical Strom Irene, the "stranding" of PWD for extended periods after the 2015 Hurricane Sandy led the judge to find that the

city's "benign neglect" of the needs of PWD violated the ADA. In particular, the judge stated that NYC had "failed to plan appropriately for disabled persons within New York City who are especially vulnerable during disasters."[46] This finding was underscored in a 2015 note published in the Yale Law Review, in which Weigben argued that PWD have a "right to be rescued." He further stated that "they have a legal right to have their unique needs accounted for and addressed in emergency planning."[47]

In another landmark lawsuit filed against the City and County of Los Angeles for failure to include PWD in disaster planning, the plaintiffs stated that their federal civil rights were violated due to inadequate planning.[48] In particular, the plaintiffs cited several failures, including, "failure to ensure that emergency evacuation and transportation plans include accessible transportation"; "failure to ensure that emergency notification plans include accessible forms of notification"; and "failure to ensure accessible emergency shelters." The US District Court found in their favor, stating that "Los Angeles did not have a plan to notify and evacuate the disabled or provide them with transportation and shelter in a disaster." "Because of the city's failure to address their unique needs, individuals with disabilities are disproportionately vulnerable to harm in the event of an emergency or disaster." The judge also cited the city's own 2008 report from the Department on Disability, which stated that PWD are "at-risk for suffering and death in disproportionate numbers."[49]

Although attorneys for the City of LA argued that the American Red Cross and PWD themselves should carry some of the burden of responsibility, this argument did not succeed. The judge ordered the City of Los Angeles to hire nationally recognized independent experts to review and revise the City's emergency plans to address the safety of PWD.[50]

Adherence to Title II of the ADA should not be driven by the threat of lawsuits, but by the ethical obligation for fair and equal treatment of all individuals, regardless of their functional needs. Roth, Kruger, and others have written eloquently on the need for disability-inclusive emergency management in order to ensure "resilient, inclusive, and equitable societies."[51,52]

Limitations

We were able to note in our survey that many potential participants (approximately 150 individuals) stopped completing the survey after just a few items. We cannot know the reasons why this occurred, however, it is not unreasonable to assume that "drop-out" participants did not have the information to continue on with the survey. There might also have been drop-out because the participant felt their responses might reflect badly on their preparedness (social desirability bias) or lack thereof. The survey itself might have highlighted deficiencies in their current inclusion practices, and so many might have opted to discontinue. If this was the case, then the results presented here might seriously overestimate the actual response frequencies (ie, they might be lower).

We were also limited in our ability to compare participants based on certain characteristics, such as amount of funding available for emergency planning for PWD, or by geographic location (eg, urban versus rural location) because we did not collect information on this. A recent study by Vick et al. found differences in disaster preparedness between upstate (more rural) versus downstate (more urban) hospitals across New York.[53] Geographic differences included greater upstate engagement in cooperative planning with certain partners compared to downstate hospitals. This would be of interest to explore in further studies of OEM.

Another important limitation in our study was the lack of a representative sample. This precludes our ability to generalize these findings to all OEMs throughout FEMA Region 9 or the rest of the United States. Additional studies, preferably national, with much more robust sampling are needed. This was also a cross-sectional design study, therefore causality, as noted earlier, cannot be ascertained. In spite of these important limitations, this study does provide information that was not previously available.

CONCLUSION

This report highlights the fact that important jurisdictional emergency planning gaps exist related to PWD, even though extensive guidance has been provided by DOJ and many other agencies, organizations, and advocates. Knowledge of the ADA, coordination

with the jurisdictional ADA Coordinator, and utilization of available training and resources to ensure accessibility and inclusion of PWD was suboptimal. The findings from this study suggest the need to replicate this research to assess and document disaster planning for PWD in all FEMA Regions, as well as the need for systems-level, or multilevel assessments of the factors that may be presenting barriers to adoption of best practices. Policy development and program implementation must address disparities in accessibility and inclusiveness in emergency management programs to ensure full participation and protection of all Americans.

ACKNOWLEDGMENT

The authors gratefully acknowledge and thank Marcie Roth, June Isaacson Kailes, and Erica C. Jones for community input, and Roxann Crawford FEMA Region 9 Disability Integration Specialist, and L. Vance Taylor Director of Access and Functional Needs Office in the State of California for their expert advice and assistance in the development of the study questionnaire. We also are grateful for the FEMA Region 2 volunteers for their help in pilot testing. We also greatly appreciate the assistance of Avery Dorgon and Patty Medina for their help on conducting literature searches and preparation of the references. Finally, a special thank you to the anonymous participants in the survey. Their candid responses provided valuable insights on this issue.

Funding for this study was provided by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR) in the Administration on Community Living, US Department of Health and Human Service (DHHS).

Robyn R. Gershon, MHS, DrPH, Professor, School of Global Public Health, New York University, New York.

Michelle A. Muska, EMT, MPH, Research Coordinator, School of Global Public Health, New York University, New York.

Qi Zhi, MPH, Nursing Student, School of Nursing and Dental Hygiene, University of Hawaii at Manoa, Honolulu, Hawaii.

Lewis E. Kraus, MPH, MCP, Co-Director, Center on Disability at Public Health Institute and the Pacific ADA Center, Oakland, California.

REFERENCES

1. Stough LM, Kelman I (2nd eds.): People with disabilities and disasters. In Rodriguez H, Trainor J, Donner W, eds. *Handbook of Disaster Research*. Cham, Switzerland: Springer; 2018: 225-242.
2. Americans With Disabilities Act of 1990: Pub. L. 101-336. 26 July 1990. 104 Stat. 328. Available at *https://www.dol.gov/general/topic/disability/ada*. Accessed August 7, 2020.
3. Department of Justice, Office of the Attorney General: ADA 1990 ACT, Title II. 28 CFR Parts 35 and 36, AG Order No. 3702-2016, RIN 1190–AA59. Amendment of Americans with Disabilities Act Title II and Title III Regulations to Implement ADA Amendments Act of 2008, Final Rule. Available at *https://www.ada.gov/regs2016/final_rule_adaaa.html*. Accessed March 10, 2020.
4. FEMA: Emergency Management Institute: Post-Katrina Emergency Management Reform Act of 2006. Available at *https://www.doi.gov/sites/doi.gov/files/uploads/Post_Katrina_Emergency_Management_Reform_Act_pdf.pdf*. Accessed March 10, 2020.
5. FEMA: Disaster declarations by year. Available at *https://www.fema.gov/disasters/year*. Accessed March 10, 2020.
6. Smith AB: 2017 US Billion-dollar weather and climate disasters: A historic year in context. Available at *https://www.climate.gov/news-features/blogs/beyond-data/2017-us-billion-dollar-weather-and-climate-disasters-historic-year*. Accessed March 10, 2020.
7. NOAA National Centers for Environmental Information (NCEI): US billion-dollar weather and climate disasters. 2020. Available at *https://www.ncdc.noaa.gov/billions/*. Accessed March 10, 2020.
8. Long B: A new vision for emergency management. Available at *https://www.fema.gov/blog/2018-03-15/new-vision-emergency-management*. Accessed March 10, 2020.
9. FEMA: Building a supply kit for your family. Available at *https://www.fema.gov/disaster/4085/updates/building-supply-kit-your-family*. Accessed March 10, 2020.
10. National Center for Disaster Preparedness: The American Preparedness Project: Resilient children/resilient communities report. Available at *https://ncdp.columbia.edu/library/conferencesevents/rcrc-initiative-national-opinion-survey-data-release/*. Accessed March 10, 2020.
11. FEMA: National household survey results: Preparedness in America. 2018. Available at *https://community.fema.gov/story/FEMA-Releases-2018-National-Household-Survey-Results-on-Individual-and-Community-Preparedness?lang=en_US*. Accessed March 10, 2020.
12. FEMA: National preparedness report. 2014. Available at *https://www.fema.gov/media-library-data/1409688068371-d71247cabc52a55de78305a4462d0e1a/2014_NPR_FINAL_082914_508v11.pdf*. Accessed March 10, 2020.
13. Eisenman DP, Zhou Q, Ong M, et al.: Variations in disaster preparedness by mental health, perceived general health, and disability status. *Disaster Med Public Health Prep*. 2009; 3(1): 33-41.
14. Smith DL, Notaro SJ: Personal emergency preparedness for people with disabilities from the 2006-2007 behavioral risk factor surveillance system. *Disabil Health J.* 2009; 2(2): 86-94.
15. Gershon RR, Kraus LE, Raveis VH, et al.: Emergency preparedness in a sample of persons with disabilities. *Am J Disaster Med.* 2013; 8(1): 35-47.
16. Gershon RR, Portocolone E, Nwankwo E, et al.: Psychosocial influences on disaster preparedness in San Francisco recipients of home care. *J Urban Health*. 2017; 94(5): 606-618.
17. Van Willigen M, Edwards T, Edwards, B, et al.: Riding out the storm: Experiences of the physically disabled during Hurricanes Bonnie, Dennis, and Floyd. *Nat Hazards Rev*. 2002; 3(3): 98-106. Available at *https://ascelibrary.org/doi/10.1061/%28ASCE%291527-6988%282002%293%3A3%2898%29*. Accessed March 10, 2020.
18. Kishore N, Marques D, Mahmus A, et al.: Mortality in Puerto Rico after hurricane Maria. *N Engl J Med.* 2018; 379(17): 162-170.
19. Kraus LE, Lauer E, Coleman R, et al.: 2017 Disability statistics annual report. Durham, New Hampshire: University of New Hampshire, 2018. Available at *https://disabilitycompendium.org/sites/default/files/user-uploads/2017_AnnualReport_2017_FINAL.pdf*. Accessed March 10, 2020.
20. Centers for Disease Control and Prevention: Disability and health data system (DHDS): Disability impacts all of us. Available at *https://www.cdc.gov/ncbddd/disabilityandhealth/infographic-disability-impacts-all.html*. Accessed March 10, 2020.

21. United States Census Bureau: 2017 national population projections tables: Main Series. Available at *https://www.census.gov/data/tables/2017/demo/popproj/2017-summary-tables.html*. Accessed March 10, 2020.
22. FEMA: Overview of local, state, and federal responses to a disaster. Available at *https://training.fema.gov/emiweb/downloads/is208sdmunit3.pdf*. Accessed March 10, 2020.
23. US Department of Justice: Title II checklist. In *ADA Best Practices Toolkit for State and Local Governments*. Chapter 7 Addendum 1. Available at *https://www.ada.gov/pcatoolkit/toolkitmain.htm*. Accessed March 10, 2020.
24. Gerk K: ADA National Network Learning Session: Innovative ideas for ensuring your emergency operations plans are inclusive for the whole community (Webinar). Pacific ADA Center. 2017. Available at *http://adapresentations.org/archives/stream.php?id=133*. Accessed March 10, 2020.
25. ADA best practices tool kit for state and local governments. *Chapter 7 Addendum 1: Title II Checklist (Emergency Management)*. Available at *https://www.ada.gov/pcatoolkit/chap7emergencymgmtadd1.htm*. Accessed March 10, 2020.
26. American Red Cross: Cal EMA: Disaster Preparedness Event Toolkit. Available at *https://www.redcross.org/content/dam/redcross/atg/Chapters/Division_2_-_Media/Bay_Area/Bay_Area_-_PDFs/Preparedness_Event_Toolkit.pdf*. Accessed March 10, 2020.
27. FEMA: Preparing for people with disabilities and other special needs. 2004. Available at *https://www.fema.gov/media-library-data/20130726-1445-20490-6732/fema_476.pdf*. Accessed March 10, 2020.
28. Kailes JI (ed.): *Emergency evacuation preparedness: Taking responsibility for your safety: A guide for people with disabilities and other activity limitations*. Pomona, California: Center for Disability Issues and the Health Professionals, Western University of Health Sciences, 2002.
29. Massachusetts Emergency Management Agency: Emergency planning for people with disabilities and others with access and functional needs. Available at *https://www.mass.gov/files/documents/2019/08/12/2019%20MEMA%20AFN%20Resource%20Guide.pdf*. Accessed March 10, 2020.
30. Kraus LE, Butler K, Kugilowski E, et al.: Perspectives of building of occupants with mobility impairments on fire evacuation and elevators. Webinar Series: Emergency Management and Preparedness—Inclusion of People with Disabilities, 2006. Pacific ADA Center. Available at *http://adapresentations.org/webinar.php?id=122*. Accessed March 10, 2020.
31. Mace SE, Doyle CJ, Askew K, et al.: Planning considerations for persons with access and functional needs in a disaster—Part 2: Evacuation and sheltering. *Am J Disaster Med.* 2018; 13(3): 195-206.
32. Kaye HS, Jans LH, and Jones EC: Why don't employers hire and retain workers with disabilities? *J.Occup Rehabil.* 2011; 21(40): 526-536.
33. Qualtrics: *Qualtrics (2019 version)*: Provo, Utah: Qualtrics. Available at *http://www.qualtrics.com*. Accessed on March 10, 2020.
34. Nunnally J, Bernstein I: *Psychometric theory.* 3rd ed. New York: McGraw-Hill; 1994.
35. SAS Institute, Inc.: *SAS software (Version 9.2)* 2018. Carry, North Carolina: SAS System, SAS Institute.
36. FEMA: Evacuee support concept of operations template. 2009. Available at *https://www.fema.gov/pdf/emergency/disasterhousing/evacuee_support_conops_template.pdf*. Accessed March 10, 2020.
37. NVOAD: National Voluntary Organizations Active in Disaster Relief (VOAD). Available at *https://www.nvoad.org/*. Accessed March 10, 2020.
38. Norwood F, Gerber BJ, Zakour M: Promising practices for evacuating people with disabilities: Evacuation study for people with disabilities. Washington D.C.: Inclusion Research Institute. 2011. Available at *https://www.caloes.ca.gov/AccessFunctionalNeedsSite/Documents/Promising%20Practices%20for%20Evacuating%20People%20with%20Disabilities%201-21-2011.pdf*. Accessed March 10, 2020.
39. Freiden L: The impact of hurricanes Katrina and Rita on people with disabilities: A look back and remaining challenges. Available at *https://www.ncd.gov/publications/2006/Aug072006*. Accessed March 10, 2020.
40. Pacific ADA Center (Region 9): Available at *https://www.adapacific.org/*. Accessed March 10, 2020.
41. The ADA National Network: Contact your region. Available at *https://adata.org/find-your-region*. Accessed May 17, 2020.
42. Malone M: Public service motivation of county-level emergency managers. *J Emerg Manag.* 2018; 6(6): 387-395.
43. Sherry N, Harkins AM: Leveling the emergency preparedness playing field. *J Emerg Manag.* 2011; 9(6): 11–16.
44. ADA National Network: Available at *https://adata.org/national-network*. Accessed March 10, 2020.
45. Santora M, Weiser B: Court says New York neglected disabled in emergencies. *New York Times*. 2013. Available at *https://www.nytimes.com/2013/11/08/nyregion/new-yorks-emergency-plans-violate-disabilities-act-judge-says.html*. Accessed March 10, 2020.
46. Taylor B: The development of emergency planning for people with disabilities though ADA litigation: Pacific ADA Center. *John Marshall Law Rev*. 2018; 51(4): 819. Available at *https://www.adapacific.org/assets/documents/emergency-preparedness-litigation-legal-brief-2-2018.pdf*. Accessed March 10, 2020.
47. Weibgen A: The right to be rescued: Disability justice in an age of disaster. *Yale Law J.* 2015; 124(7): 2202-2679.
48. Ability Magazine: Landmark lawsuit against Los Angeles for failure to include PWDs in disaster planning. Available at *https://abilitymagazine.com/news_Disaster.html*. Accessed March 10, 2020.
49. National Association for County and City Health Officials: New legal precedent for inclusive planning, preparedness, and response. Available at *https://nacchopreparedness.org/new-legal-precedent-for-inclusive-planning-preparedness-and-response/*. Accessed March 10, 2020.
50. Disability Rights Advocates: City of Los Angeles ordered to hire experts to revise emergency plans to address needs of people with disabilities. Available at *https://dralegal.org/press/city-of-los-angeles-ordered-to-hire-experts-to-revise-emergency-plans-to-address-needs-of-people-with-disabilities/*. Accessed March 10, 2020.
51. Roth M: A resilient community is one that includes and protects everyone. *Bull Atomic Sci.* 2018; 74(2): 91-94.
52. Kruger J, Hinton CF, Sinclair HB, et al.: Enhancing individual and community disaster preparedness: Individuals with disabilities and others with access and functional needs. *Disabil Health J.* 2018; 11(2): 170-173.
53. Vick DJ, Wilson AB, Fisher M, et al.: Comparison of disaster preparedness between Upstate and Downstate community hospitals in New York. *J Emerg Manag*. 2018; 16(6): 365-376.