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Psychosocial Influences on Disaster Preparedness in San Francisco Recipients of Home Care

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Abstract Disasters disproportionately impact certain segments of the population, including children, pregnant women, people living with disabilities and chronic conditions and those who are underserved and under-

resourced. One of the most vulnerable groups includes the community-dwelling elderly. Post-disaster analyses indicate that these individuals have higher risk of disaster-related morbidity and mortality. They also have suboptimal levels of disaster preparedness in terms of their ability to shelter-in-place or evacuate to a shelter. The reasons for this have not been well characterized, although impaired health, financial limitations, and social isolation are believed to act as barriers to preparedness as well as to adaptability to changes in the environment both during and in the immediate aftermath of disasters. In order to identify strategies that address barriers to preparedness, we recently conducted a qualitative study of 50 elderly home care recipients living in San Francisco. Data were collected during in-home, in-person interviews using a semi-structured interview guide that included psychosocial constructs based on the social cognitive preparedness model and a new 13-item preparedness checklist. The mean preparedness score was 4.74 (max 13, range 1–11, SD. 2.11). Over 60 % of the participants reported that they had not made back-up plans for caregiver assistance during times of crisis, 74 % had not made plans for transportation to a shelter, 56 % lacked a back-up plan for electrical equipment in case of power outages, and 44 % had not prepared an emergency contacts list—the most basic element of preparedness. Impairments, disabilities, and resource limitations served as barriers to preparedness. Cognitive processes that underlie motivation and intentions for preparedness behaviors were lacking. There were limitations with respect to critical awareness of hazards (saliency), self-efficacy, outcome expectancy,

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and perceived responsibility. There was also a lack of trust in response agencies and authorities and a limited sense of community. Participants wanted to be prepared and welcomed training, but physical limitations kept many of them home bound. Training of home care aides, the provision of needed resources, and improved community outreach may be helpful in improving disaster outcomes in this vulnerable segment of the population.

Keywords Disaster preparedness · Home care · Psychosocial

Introduction

Over the last 20 years, the incidence of natural disasters has doubled worldwide, attributed in part to climate change, higher coastal and urban population growth, and increased global transmission of infectious diseases [1]. In the USA, one of the top five countries in terms of natural disaster occurrences, there are approximately 125 natural disasters annually. In 2015, the magnitude of 47 of these events was so great that local and state resources were overwhelmed and federal response assistance was required. These “Presidential Declared Disasters” resulted in over 300 deaths, the evacuation and displacement of millions of Americans, and over \$10 billion in damages [2]. Roughly 12 % of the households affected by these “declared” disasters were the elderly, and more than 50 % were low income [2]. In the future, climate change models predict a sharp increase in certain types of disasters in the USA, including floods, severe weather, drought, and wildfires [3, 4]. In high-density urban coastal communities, flooding is expected to be particularly disastrous.

Large-scale disasters often result in heavy structural damage and key infrastructure disruption. Power outages may result, sometimes for extended periods. Transportation is generally significantly affected and there may be a need to evacuate to a shelter or to shelter-in-place (at home). Although the emergency response system in the USA is robust, the best possible outcomes result when community residents are prepared—and willing and able to comply with emergency instructions [5]. To that end, personal preparedness is strongly recommended [6]; as the Federal Emergency Management Agency (FEMA) notes on their web pages, “*When disaster strikes, you may have to be able to survive on your own for 72 h or more without access to power,*

food, or transportation. Local officials and relief workers will be on the scene after a disaster; but they cannot reach everyone immediately. You could get help in hours or it might take days [7].”

Even though personal preparedness is a high national priority, surveys have found that the general population is suboptimally prepared [8], and this is true even for the most vulnerable members of the community. Across a wide range of disaster types, including both natural and man-made events, vulnerable populations, such as the elderly, have higher morbidity and mortality rates in comparison to the general population [9–17]. The elderly’s increased risk is likely due to a higher prevalence of functional limitations and disabilities, including cognitive impairment [18]. These vulnerabilities may hinder planning and may make rapid evacuation difficult or even impossible for some people. Further, because many elderly have multiple chronic conditions, anything that can affect continuity of care may be harmful to their health [19]. A lack of social resources may also serve as a barrier to preparedness planning for older adults. While the trend in the USA is for the elderly to stay in their own homes, this may result in what has been referred to as “the myth of independence [20].” Although maintaining a sense of autonomy may be the objective, this trend, unfortunately, may result in extreme isolation [21]. In the USA, nearly 40 % of community-dwelling elderly aged 75 years and older live alone and thus may not have a support system in place to help them prepare or respond to disaster events [22]. Elderly women, living longer than men and burdened with greater morbidity, are especially affected by the lessened social integration and limited social contact commonly experienced with aging [23].

The elderly population is very large and rapidly increasing. By 2050, the number of people in the USA aged 65 and older will double in size, to 80 million, with nearly 25 % (20 million) being 85 years of age or older [24]. During natural disaster events, many elderly, especially the “frail elderly,” defined not so much by age as their need for substantial assistance [14], may be highly sensitive to disruptions in their daily life caused by disasters and resultant sequelae. Many frail elderly are recipients of home care services. Today, nearly 12 million elderly people receive home care services, and by 2030, that number is expected to nearly triple—to 34 million [25]. Numerous procedures formerly delivered in the in-patient setting (e.g., dialysis, chemotherapy, tracheotomy care, and infusion therapy) are now conducted in the home care setting [26]. Not surprisingly,

many home care recipients are highly dependent on their home care provider, who serves as their lifeline of support by providing meals, assistance with activities of daily living, and healthcare services.

The most effective way to ensure the best possible outcomes for all members of the community, including the vulnerable elderly, is through disaster preparedness. Numerous studies have documented the importance of disaster preparedness on the response and recovery phases of disasters. Preparedness gaps were identified after the 2001 World Trade Center disaster, the 2001–2002 anthrax attacks, 2005 Hurricane Katrina, and 2012 Superstorm Sandy [27–30], and efforts on addressing these gaps were made, especially in the public health and healthcare sectors. But, not all segments of the health system were equally targeted for preparedness improvements. Home care, in particular, has lagged in resources and focus. Although data are sparse, there is evidence that home care recipients are under-prepared [31–33]. Studies indicate that in addition to health and functional limitations, a wide range of other factors may account for this, including lack of institutional support, and inadequate resources to purchase and stockpile food, water, medical supplies, and medications. We know from other studies [34, 35] that psychosocial factors, such as hazard awareness and self-efficacy, are important correlates of preparedness in the general public, but the influence of these factors on preparedness in home care recipients is unknown.

This qualitative study was therefore designed to explore the role of psychosocial factors on disaster preparedness in elderly home care recipients living in San Francisco.

Methods

Sample and Recruitment

A purposive sample of 50 study participants receiving home care was recruited at a conference sponsored by the San Francisco In-Home Support Services (IHSS), held in

February 2014. Conference attendees included San Francisco home care providers and recipients and family members. Additional recruitment also occurred at various senior and community centers located throughout San Francisco. Eligibility for participation in the study included the following: age 65 years and older, San Francisco residence, ability to complete the interview in English or Chinese (Mandarin or Cantonese), enrollment in home care services, and intact cognition.

Measures

Psychosocial constructs were based on an adaptation of the social-cognitive preparedness model (see Fig. 1), one of the few disaster preparedness models that explicitly focus on psychosocial factors [36]. This behavioral model delineates the developmental processes and motivating factors that culminate in disaster preparedness. In addition to open-ended questions targeting these constructs, the interview guide included a number of items (e.g., “How concerned/worried are you about disasters?” and “How important is it for you to be prepared?”) that used Likert-type scale response categories. A 13-item emergency preparedness checklist, based on FEMA recommendations [6], was also developed for this study (response choices were “yes,” “no,” “not sure,” or “non-applicable”). Additionally, data were collected on sociodemographic characteristics (e.g., age, income, gender, race/ethnicity, and education), as well as health and functional status, home care services, and social support and community engagement. Interviewers rated the participants’ functional impairment status using the Karnofsky Patient Performance Rating scale [37].

Setting and Data Collection

Interviews were conducted in 2014 at participants’ residence, generally in teams of two trained researchers. A bilingual (English-Chinese) research team member conducted the interviews with Chinese-speaking participants. Upon arrival at the home, research team members reviewed

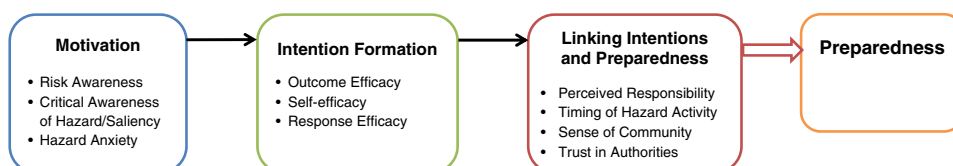


Fig. 1 Study social-cognitive model

the informed consent procedures, obtained signed informed consent, and assessed the participant for cognitive impairment using the Mini-Cognitive Test [38]. Two participants were deemed cognitively impaired and ineligible for study participation, although they still received study incentives. All interviews were recorded for later transcription. On average, interviews were 1.5–2 h in length. Upon completion of the interview, participants received a \$25 VISA gift card, and an emergency “go-bag” that contained emergency preparedness brochures from the Federal Emergency Management Agency (FEMA) and the San Francisco Department of Emergency Management, and disaster preparedness supplies (e.g., flashlight, whistle, batteries, weekly pill box, first aid kit, emergency phone contact form, medical records form, prescription medications form, and other useful items). All study procedures received prior approval from the University of California, San Francisco Committee on Human (CHR no. 12-091045). Copies of the interview guide are available by contacting the corresponding author.

Data Analysis

Qualitative Data

The recorded interviews were professionally transcribed. Thematic analysis was conducted to confirm and expand upon the themes suggested by the social-cognitive preparedness model [36] and to identify emergent ones [39]. The transcripts were double-coded by two members of the research team working independently. Any inconsistencies in the coding were mutually resolved.

Quantitative Data

Responses to the quantitative portion of the interview guide were input into SPSS [40] and analyzed using descriptive statistics.

Results

Quantitative Results

Participant Characteristics

The average age of the participants ($N = 50$) was 68 years with a range of 65–93 years. Almost equal numbers of men and women were interviewed. Most (48 %) were

white, 26 % were Asian or Pacific Islander, and 6 % were Hispanic. The majority of participants (66 %) lived alone. A large proportion (82 %) of participants reported having adult children, but most did not live nearby. Participants' annual self-reported incomes were very low; 80 % reported a combined household income of \$20,000 or less, 30 % reported \$10,000 or less, and 10 % reported \$5000 or less.

Almost all participants (92 %) reported health conditions that affected their daily living activities; 41 % said their health or disability kept them home bound. Almost half (45 %) were receiving daily or live-in services, although more than half of the participants received 20 h of services or less per week. Please see Table 1 for more details on the participants' characteristics and home care assistance.

The majority (60 %) of participants self-rated their health status as “poor” or “fair”; only three people (6 %) rated their health as “very good.” Participants reported difficulty in taking care of their personal care needs (32 %), lifting (64 %), and walking upstairs (62 %). A large proportion of participants (76 %) had serious functional impairments. The use of medical equipment and supplies was common, including use of cane (104 %), walker (50 %), wheelchair (22 %), hospital bed (8 %), and oxygen tank (4 %). A very large percentage (104 %) wore eyeglasses, and 10 % reported needing supplies for incontinence. Health problems kept many (48 %) participants from socializing with friends and family. Chronic and debilitating pain (64 %) was frequently reported, and there were signs of depression; 11 % reported that in the past month, they had felt downhearted and blue “all the time” and “most of the time,” and 40 % reported these feelings “some of the time.”

Preparedness Checklist

Although a very high proportion of our sample (91 %) thought it was important to be prepared, and most (85 %) wanted to be prepared for disasters, data from the checklist indicate that most were under-prepared. The mean preparedness score was 4.74 ($SD = 2.11$, mode = 4.0, median = 4.5, range = 1–11, max = 13). As shown in Table 2, only 38 % had made plans for back-up care if their home care provider could not be with them during or immediately following a disaster, 56 % had prepared a list of emergency contacts, and 44 % had emergency back-up plans for their electrical equipment.

Table 1 Participant sociodemographic characteristics and home care assistance ($N = 50$)

		Number	Percent
Age	65–74	28	56
	75–84	13	26
	85–100	9	18
Gender	Female	30	60
	Male	20	40
Race	White	25	51
	Black/African American	9	18
	Asian or Pacific Islander	13	27
	Other	2	4
	Missing	1	
Ethnicity	Hispanic	3	7
	Non-Hispanic	38	93
	Missing	9	
Education level	Less than HS, HS, or GED	16	32
	Some college/associate/vocational degree	17	34
	College degree	8	16
	Post college/graduate school	9	18
Living situation	Living alone	32	64
	Living with home care aide	4	8
	Living with family members	11	22
	Living with roommate, tenant	3	6
Income level	\$5000 or less	5	10
	\$5001–\$10,000	13	28
	\$10,001–\$15,000	10	21
	\$15,001–\$20,000	9	19
	\$20,001–\$25,000	4	9
	\$25,001–\$50,000	4	9
	\$50,001–\$75,000	2	4
	Missing	3	
Number of days home care aide spends with you in a typical week	1–2 day(s)	6	12
	3–4 days	13	27
	5–6 days	8	16
	Daily (7 days)	15	31
	Lives with participant	7	14
	Missing	1	
Number of hours home care aide spends with you in a typical week	1 to 10 h	11	22
	11 to 20 h	15	30
	21 to 40 h	13	26
	More than 40 h	11	22
Length of time you have been receiving home care assistance	Less than 1 year	6	12
	1 to less than 5 year(s)	17	34
	5 years or more	27	54
Self-rated overall health	Poor	13	26
	Fair	17	34
	Good	17	34
	Very Good	3	6

Table 2 Emergency preparedness checklist

		Number	Percent
Made an emergency contacts list with important names and phone numbers	Yes	28	56
	No	22	44
Made a plan for who would help you if your home care assistant could not be with you the during/immediately following a disaster	Yes	19	38
	No	31	62
Have a list prepared with the names of all the medications currently taking	Yes	36	73
	No	13	27
	Missing	1	
Have a plan for back-up power if the electricity falls during a disaster	Yes	4	44
	No	5	56
	Not applicable	41	
Have emergency supplies at home	Yes	37	77
	No	11	23
	Missing	2	
Have made an evacuation plan	Yes	26	53
	No	23	47
	Missing	1	
Have an easy to carry “go bag” with critical items	Yes	30	63
	No	18	37
	Missing	2	
Have an extra supply of medications you could take with you to a shelter	Yes	27	56
	No	21	44
	Missing	2	
Have a plan for transportation to a shelter if needed	Yes	13	26
	No	37	74
Have made a plan for your pet if you have to go to a shelter	Yes	6	60
	No	4	40
	Not applicable	40	
Have made plans for pet’s food during and after a disaster	Yes	7	70
	No	3	30
	Missing	40	
Know where the build exits are located	Yes	42	84
	No	8	16
Have people in the same building that could help if require evacuation and elevator is not working	Yes	9	19
	No	41	82

While a large proportion (73 %) had a list of all of the medications they were taking, only 56 % actually had extra medications on hand. Planning for their pet’s needs during emergencies was generally high; of the 10 participants who reported having a pet, 70 % had extra pet food supplies and 60 % had made plans for their pets if they personally had to be evacuated to a shelter.

Qualitative Results

As hypothesized by the social-cognitive preparedness model [36], a person’s engagement in disaster preparedness is a developmental process comprised of three phases. The process commences with the motivation phase, progresses through intention formation to the final phase that links intentions with preparedness.

Informed by this theoretical model, our results focus on each of these three phases of preparedness.

Motivation Phase

The social-cognitive preparedness model [36] posits that risk awareness, critical awareness of hazards, and hazard anxiety are required to motivate disaster preparedness behaviors. When these precursor factors are present in sufficient levels, individuals progress to the next developmental phase—formulation of intention.

Risk Awareness

The elderly home care recipients were aware of disaster risks with the vast majority acknowledging earthquake risk in San Francisco. Other types of disasters they mentioned included large-scale fires, terrorist attacks, and tsunami. Prior exposure to a major disaster did not necessarily contribute to stronger preparedness intent. Several participants who had not suffered any injuries or household damage during the 1989 6.9 magnitude Loma Prieta earthquake were not inclined to prepare for such an event. On the other hand, those who had experienced injuries, damage, and/or peri-event trauma were more likely to report taking preparedness steps. One person, with extensive planning in place, recalled memories still vivid after almost 30 years, “*It was like a horror movie, there were no lights on in the entire city except the fires burning in the Marina. People came out of the darkness and pounded on [my] car windows... please, please give us a ride they pleaded.*”

Critical Awareness of Hazard

An important motivator for disaster preparedness is the perception that the disaster is salient, relevant, and critical. The extent to which people think about hazards in comparison to many other forms of adversity that they may continually face can impact their motivation to prepare. For a number of the home care recipients, despite the acknowledged threat a major natural disaster could pose, the catastrophic impact of immediate and personal events in their lives were more salient sources of concern. As one participant remarked, “*A disaster for me was when I fell and fractured a vertebrae, now that’s a disaster.*” Some of the elderly home care recipients believed that they were nearing the end of their life and thus did not perceive a need to prepare for a future

disaster. As one individual explained, “*I’ve lived a full life and I think, actually, I’m ready to go whenever it’s time.*”

Hazard anxiety

Even though many of the home care recipients had concerns about a natural disaster affecting San Francisco (roughly one third reported feeling “quite a bit” and “extremely” concerned), many individuals found thinking about (and planning for) disasters very disturbing. As one person shared, “*I’m not going to lose sleep over it... Why [would] I want to raise my blood pressure and have a nervous breakdown and be worried about it?*” Generally, those who avoided thinking about disasters did not exhibit any preparedness intentions. Procrastination, a common behavioral response to perceived disaster risk, was also evident in the participants’ description of their preparedness intentions, “*I haven’t gone out and gotten the water yet... but I will next week.*” In some instances, recognition of this delaying tactic was attributed to other extenuating life circumstances, such as observed by one home care recipient, “*People like me, [disabled], ...sometimes we procrastinate a lot.*”

Intention Formulation Phase

In this phase of the preparedness planning process, the social-cognitive model specifies three cognitive variables that are integral to an individual’s intent to prepare. These variables include outcome efficacy, self-efficacy, and resource efficacy [36].

Outcome Efficacy

While most of the home care recipients believed that it was important to be prepared for disasters, many felt that no matter what they did to prepare, disasters were simply out of their control. This sentiment was summed up in the following comment, “*It’s God’s will. Nobody can stop it., that’s why we call it natural disasters.*”

Self-Efficacy

A number of participants believed that they already were adequately prepared. However, efforts were uneven, as one person noted, “*I do have a radio—I don’t have any batteries in it at the moment.*” Others were prepared in

spirit, as one person said, “*I am prepared mentally. As far as my supplies, I am not prepared.*” The process of preparing felt daunting to some participants as the following statement illustrates, “*I think you should be semi-prepared or whatever. I’ve had lists of things that you need to have on hand or should have on hand anyway, but God knows where they are in this mess.*” Feeling unprepared or unsure of whether they were prepared was also a source of concern for many. One participant commented, “*I’m very concerned because I don’t know where I stand.*” Another issue many home care recipients faced was a lack of information or guidance on preparedness planning. They simply did not know what to do or where to obtain information on preparedness. As one person observed, “*I don’t have anything prepared for a disaster. I’ve never met anyone that talks about it or plans for it. I’m just kind of trying to figure out my own plan here.*” The need for training in emergency preparedness came up quite often. As one participant noted, “*I think that they should have that kind of teaching going on at community centers, and senior residences, and parks, and rec places—they should have training in responding to emergencies.*”

Response Efficacy

Many of the home care recipients reported that they lacked the necessary resources for preparedness (extra supplies for sheltering-in-place or go-bag supplies for evacuation). As one person noted, “*We are seniors and we don’t have income. Preparing those items could be really difficult for us because we don’t have any extra money for that.*” Several people mentioned that since they lived in a very small apartment, even if they could afford to stockpile supplies, they simply had no space for them. Others felt that the steps needed to prepare were too drastic to do anything about, e.g., “*I would have to move out,*” and “*I would need to move to the first floor.*” Others noted that they wanted an extra back-up supply of medications but did not know how to acquire them.

Linking Intentions and Preparedness

In the final phase of the model, moderating factors such as perceived responsibility, timing of hazard activity, sense of community, and trust in authorities are theorized to moderate the relationship between preparatory intentions and actual preparation [36].

Perceived Responsibility

While most participants thought that they were at least partly responsible for their own preparedness, almost all were interested in obtaining assistance on preparing. As one person stated, “*If help was offered to me, I would take it, but I am 50 % responsible.*” Several participants explicitly stated that it was simply not their responsibility, as one person reported, “*I think other people should help if you are incapable of helping yourself.*” Another person expressed a similar sentiment, “*I can’t do those preparedness things; the government should help me.*”

Some participants thought that a family member might help them prepare, but surprisingly, few reported that their aide would help them to prepare or respond to the disaster. The reasons for this varied, as for instance, “*My caregiver would not necessarily be here during a disaster.*” Several people thought that their aide was either unfamiliar with the steps needed to prepare or not capable. As one person noted, “*My aide is 71 years old and can’t help me.*” Several participants also regarded building management as responsible for helping them prepare. One home care recipient remarked, “*It couldn’t be an individual to prepare because I’m quite sure – the [landlords], with multiple tenants and all, should make sure that what people need is available, like housing, clean food and water, and medical care.*”

Several participants did not think they had to be prepared because they thought that first responders would quickly respond to them, as one person noted, “*I think the police department and the social workers and the ambulance drivers—all have a plan.*”

Timing of Hazard Activity

While the home care recipients’ perception of disaster risk was generally accurate, their assessment of the timing of when a disaster might occur varied widely (year, months, days, imminently). One person noted, “*I heard that an earthquake will happen in San Francisco in 30 years.*” Another stated, “*In 6 months. I think we’re due for a good one.*” This uncertainty in the timing reduced the sense of urgency for some participants and contributed to their delays in implementing a preparedness plan. As one participant remarked, “*I worry, but I don’t think I can prepare for that, it’s such a long time away.*”

Sense of Community

Most participants reported a sense of social isolation, generally related to language and cultural barriers, although in some cases, due to age differences. Many who lived in what might be considered naturally occurring retirement communities mentioned that more young people were moving in, and that these new tenants tended not to mingle with anyone. One person remarked, “*I know some that I say hello to but, no, nobody wants to deal with an old lady.*” Quite a few participants described only the most cursory degree of social contact with others in their building, “*When I get on the elevator, they will say good morning and when they get off they will say good night. I mean, that’s enough for me.*” A lack of social engagement and friendliness generally characterized most of the participants’ social encounters with their building’s residents. As one participant observed, “*Well, the people in here are very hostile. They are not friendly at all. So, that’s the way they are, so I just accept it. I don’t bother with them.*” Still another person said, “*They don’t really care. I’ve been sick right in here, and no one came and knocked on the door...that’s just the way it is.*” However, some participants did feel connected to their community through involvement with local churches and community and senior centers. Involvement with these groups was associated with acquiring knowledge about disaster preparedness, as this is where some had received information and even go-bag supplies. Participants with mobility were more likely to report involvement with their building and their community. As stated by one participant who was still active, “*There’s a definite sense of belonging. I know people over in the other buildings. I know more of them in this building. As it is, we all kind of look out for each other anyway. We see who is doing well and who needs help and stuff and those not doing so good. There is a sense of community. I can’t really speak about it, but it’s there. The community is there.*”

Trust in Authorities

Confidence in the preparedness of local communities and response agencies varied. Many participants feared that a major disaster would result in chaos and panic, and they worried that the response authorities would be unable to keep things under control. One participant predicted, “*There’s going to be a big mess-up between*

the police and firemen, and communication would be a big problem.” Another participant voiced concern about the authorities’ ability to handle the crisis, “*You can’t depend on the police, fire, the army, or national guard. You can’t depend on the city or county.*” In contrast, a few participants, generally the ones who had attended community disaster trainings, felt confident that everything would be under control. As stated by one home care recipient who had attended several trainings, “*I think we have one of the best earthquake or disaster preparedness plans in shape here in San Francisco. I met the fire chief and the police chief. They have a very fine contingency plan with all the agencies, including the Red Cross, for any disaster.*”

Intentions to Comply with Disaster Response Plans

Home care recipients were asked what they intended to do if they were advised by disaster response authorities to shelter-in-place or evacuate to a shelter. The participants’ responses indicated that even when presented with a specific recommendation, without additional assistance, they would not be adequately prepared to comply.

Shelter-in-Place

Most of the home care recipients were familiar with the concept of shelter-in-place, as they had sometimes received warnings regarding this during hot spells (an infrequent, although increasing occurrence in San Francisco). In those prior events, their aide and importantly, the Meals on Wheels drivers, were still able to reach them. They did not have a clear understanding that in other types of events, sheltering-in-place (on their own) might involve their being alone—and for an extended period of time.

Evacuate to a Shelter

We also asked home care recipients about their ability to evacuate to a shelter, if needed. Most seemed willing to go to a shelter, although some participants expressed concern that they would be evacuated to a homeless shelter, and most had no idea of how they would be evacuated. One person said, “*I guess I would grab a stranger or whoever else is going to a shelter.*” Others said their aide should come and help them to evacuate, although one person did note, “*They might not be able*

to—because like in an earthquake, their house could've fallen down.” One participant, who had attended a Red Cross disaster seminar, said he would contact IHHS (agency) and ask them to send him an assistant, as he noted, “*They have on-call providers that just are there to help in emergency situations, whatever they might be. I'm sure that they would be able to find people who were able to help.*”

Discussion

We identified several preparedness barriers (e.g., lack of resources and infirmities, etc.) that would be expected in this population [31, 41, 42]. We also found that fatalism, helplessness, and social isolation impaired the predicted cognitive processes that drive initiation and maintenance of preparedness behaviors.

Motivation to prepare was generally not influenced by prior experience or knowledge of disasters (primarily earthquakes). While results are mixed, some studies on preparedness of disaster survivors have similarly shown that prior experience does not necessarily translate into current preparedness. In a recent study by Gargano et al., people who had been exposed to the World Trade Center (WTC) disaster had *lower* levels (18.8 %) of preparedness as compared to a national sample (25 %), although those with the greatest WTC exposure were most likely to have been prepared for Hurricane Sandy [43]. Motivation to prepare was also not influenced in our sample by the saliency of the disaster threat. Many more immediate and personal concerns took precedence over planning for something that may or may not occur. The uncertainty of when a disaster might occur was also a barrier to being prepared, as it was, “*such a long time away.*” Many thought they would probably be dead before the next disaster occurred. Also, many people in our sample were so anxious about disasters and their unpreparedness for them that planning was not possible, because, in the words of one participant, they were, “*too scared to even think about it.*”

Intentions to prepare could not be formed because of this type of avoidance and also because the participants in our sample did not think they could do anything that would change the ultimate outcome of a disaster. They also felt a lack of self-efficacy in terms of their ability to prepare. While most of this was related to physical and financial limitations, lack of self-efficacy was also related to lack of knowledge of what they needed to do in

order to be prepared. Given the cumulative disadvantages that can occur as people age, the resources needed for coping and adaptation to an adverse event, such as a disaster, are even more limited. Indeed the “environmental press [44],” i.e., the everyday strains that the elderly home care recipients in our sample were experiencing in their daily life, exceeded their personal competence and capacity to adapt to new demands. This severely limited their ability to independently engage in emergency preparedness planning and execution.

The link between intentions and preparedness was similarly constrained. Participants generally did not feel personal responsibility for being prepared, rather they thought that other people and agencies should help them prepare. Studies have shown that if a sense of personal responsibility is lacking, intentions to prepare will not result in preparedness behaviors [45]. Similarly, if sense of community and belonging is missing, preparedness will also be less likely to result [46]. The participants in our sample tended to feel estranged from both the community within their building and within their neighborhood. The sense of isolation among the elderly living in rapidly changing urban centers has been well documented [47–49]. In some degrading (though rapidly gentrifying) neighborhoods, isolation of elders may be exacerbated and contribute to their sense of disconnection. In contrast, participants who were mobile reported more positive social experiences and also had engaged in community disaster training. People who had attended trainings, even brief ones from local fire departments, were more likely to feel a greater sense of self-efficacy and also had a higher level of trust in the authorities' ability to manage a disaster event. These trainings also allayed their worst fears, as they were relieved to know that there actually was a plan in place.

Additionally, the dependency the home care recipients experienced as a result of their health and functional decline is a negative state, implying helplessness and powerlessness [50], and adversely impacts psychological coping capabilities, including perceived self-efficacy [51]. A sense of fatalism and helplessness was common in our sample. Burdened with poor health and dependency needs, limited social engagement, and high social isolation, the elderly home care recipients were demoralized, and this contributed to their loss of the will to live [51]; many were resigned to their death from whatever cause, even a disaster, and viewed it as occurring soon.

Our findings support the utility of Paton's social-cognitive preparedness model [36] in predicting actual

preparedness levels based on intentions. Results reported here are similar to those reported by Paton and colleagues in a study of influenza preparedness among community members; both studies found that if people feel that any efforts that they take to be prepared are futile, then preparedness steps are unlikely to be taken. Similarly, both studies found that community participation and trust in authorities was influential in terms of preparedness. Lack of self-efficacy (i.e., empowerment) was also found to be an important predictor of preparedness in both studies [34].

How might we best address this issue? Clearly, it is a challenge to reach out to this isolated population since many participants were unable to readily leave their homes without assistance. Community-based trainings may be feasible for some home care recipients, with the assistance of their aide or family member. It may also be possible to conduct informal community trainings in buildings that have a high concentration of elderly home care recipients.

Another approach may be to take advantage of the access home care recipients already have to home care providers. The aides can be trained to help home care recipients become better prepared. The training and materials needed for this type of targeted training should be provided through the combined efforts of all stakeholders (e.g., health departments, home care agencies, etc.). Numerous resources are available to provide guidance, including training curricular for home care providers [52], and other materials from the Department of Homeland Security and other agencies and organizations [53–56].

The main study limitation that needs to be acknowledged is the self-selection of participants into the study; this could have resulted in biases that limit generalizability of our findings. This study was also limited to a single geographic area. Further research focused on other parts of the country and with other potential disaster threats would be useful to confirm these findings.

Conclusion

In a 2014 New York Academy of Medicine report [57] on the elderly and disasters, a recommendation was made to develop community resilience as a way of improving disaster-related outcomes in this segment of our population. The report suggests that resources should be directed toward enhancing “communities’

social networks, connectedness, and integration of assets, long before disaster strikes.” Our findings underscore the importance of this recommendation, as the home care recipients in our study had greater trust, higher levels of preparedness, and a greater sense of shared responsibility when they had been engaged in local preparedness efforts. This type of engagement could also help lessen the sense of isolation for many of these elders. Improvements in preparedness for all members of the community will help lessen the burden on local responders, thereby improving overall community recovery and resiliency. Our findings suggest that integrated community-level disaster planning (with written plans and drills) that involves all key stakeholders, including representative home care recipients, aides, and agencies will ensure the best possible outcomes for this vulnerable population.

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