

**DISASTER MITIGATION AND MANAGEMENT WITH REFERENCE TO ELDERLY
POPULATION IN INDIA**

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Abstract

As the world's population grows and more individuals are living into their 70s, 80s, and 90s, those charged with managing people, resources, and medical care during and after an emergency, whether heat wave, flood, fire, earthquake, or other disaster, will face increasing challenges in addressing the needs of frail elderly people at such times.

It is essential to expose the factors affecting the frail elderly during and after an emergency and propose strategies to minimize the impact on this vulnerable group of people. It should be a primary goal of emergency management teams to support older people in an emergency, to minimize harm, and to help them maintain the highest possible level of health and functional capacity and to aid them in recovering from a disaster as quickly as possible. In this context, rapid response to a crisis must extend beyond the traditional emergency response personnel. In short "age-responsive" actions must be identified and integrated into risk assessments and disaster response plans in order to focus the problems that elderly people face during and after occurrence of a disaster. Past disasters can prove a source of information with reference to the response of the elderly in such events. Exploration of performance of rescue and relief activities with reference to elderly people can help yield measures to provide maximum possible assistance to this group of people after a natural disaster.

Keywords: Management, Elderly, Population, Rescue, Age-responsive

Introduction

The world's population is expanding with more individuals living beyond their sixth decade of life. These changing demographics present a challenge for emergency management professionals. While there is diversity among older adults worldwide, unique common factors influence the ability of the frail elderly to maintain their health and well-being when faced with a disaster. Numerous factors need to be considered when planning for emergency preparedness and the response needs of the frail elderly. It has been estimated that, during the 1998-2025 period, the world's elderly population (ages 65 and above) will more than double while the world's youth (population under age 15) will grow by 6 percent, and the number of children under age 5 will increase by less than 5 percent. As a result, world population will become progressively older during the coming decades. Because of population aging, elderly dependency ratios the ratio of the population ages 65 and over to the working age population (ages 15 to 64) will rise in every major world region during the next 25 years. And the world community as a whole will face an elderly support burden, nearly 50 percent larger in 2025 than in 1998. The number of people aged 65 and over will double as a proportion of the global population, from 7% in 2000 to 16% in 2050. By then, there will be more older people than children (aged 0–14 years) in the population for the first time in human history. These changing demographics present a challenge for emergency management professionals. It calls for identification of some of the common challenges that emergency management professional's face in planning to meet the needs of the frail elderly

during and after disasters. The strategies employed to minimize the impact of a disaster on this vulnerable group will have to be thought of in the present context.

Research Methods

Research design is a combination of descriptive and diagnostic research. In these observations, questionnaire surveys and interviews are included. Surveys have been conducted at different periods of time after the occurrence of the disaster. For structured and non-structured observations, both methods have been followed while many times disguised observations were made to discover natural behaviour of the group in question, since the elderly are found to be disturbed and annoyed if they know that they have been observed and they often behave in a stranger manner. Un-structured observation methods are used for recording the behaviour of elderly people in order to get rich qualitative data, while structured observation methods were selected to obtain specific information with flexibility as one can go for more or less structure in the observation process. Collected data includes verbatim notes or transcribed recordings of interviews or focus groups, jotted notes and more detailed field notes of observational research, a diary or chronological account, and the researcher's reflective notes made during the research. The data analysis occurred in two phases. The first phase consisted on matching the database entries with the original database basically performed to ensure data accuracy. The second phase consisted of analyzing the descriptive statistics to characterize the samples.

Research Hypothesis

Age responsive disaster mitigation and management can minimize the impact of a natural disaster with reference to elderly population in India.

1. Elderly Population

The most rapid rise in the elderly population is taking place in developing countries, where the increase in the number of people 65 and older is more than double the rate in developed nations. Last year, 313 million, or 62 percent, of the world's elderly lived in developing countries, a number that is projected to rise to more than 1 billion, 76 percent of the world's 65-and-over population. The total dependency ratio, which compares the size of the combined populations under age 15 and ages 65 and over to the working age population, will decline over the 1998-2025 period in the less developed countries and for the world as a whole, while rising in more developed nations. Figure 1 shows that in Europe, the old-age dependency ratio is projected to double to 54%. But, the most dramatic increase will take place in Japan, where the old-age dependency ratio is currently 35.1%. By 2050, it is expected to rise to 73.8% and India where it is expected to rise from 8.8% to 21%. The number that is projected to rise to more than 1 billion, 69 % percent of the world's 65-and-over. The challenges are similar in both developed and developing countries in the sense that with an aging society, caretaking will be a serious challenge for the society and the family. Changes in family structure and social organization will compound the problem of caring for the elderly in developing countries.

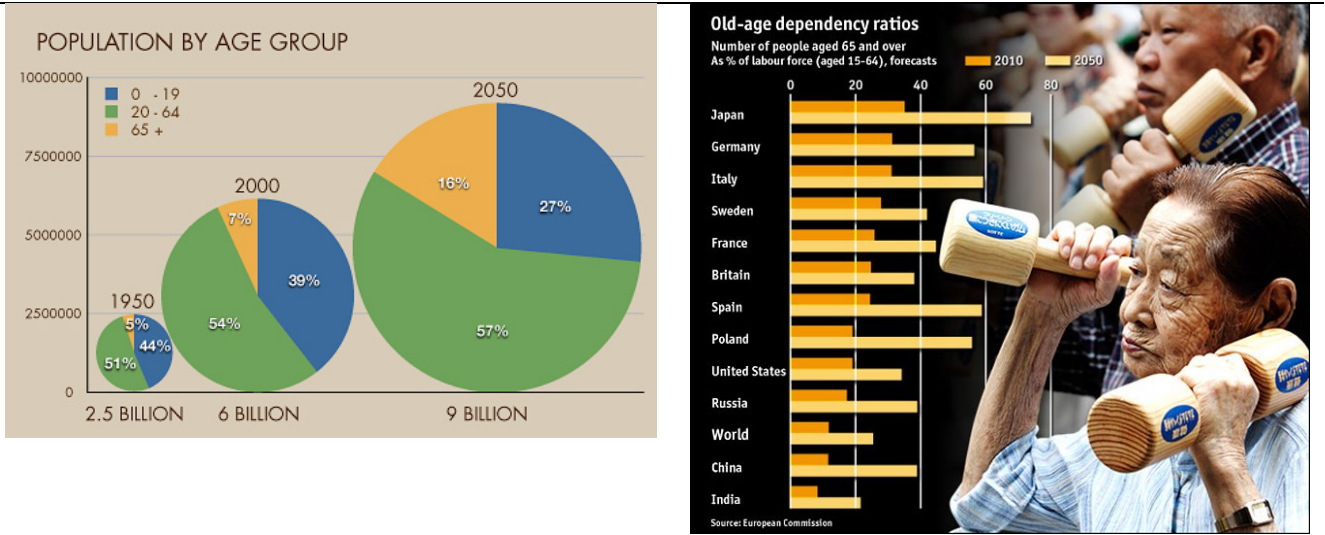


Fig.1. World Population by age group and old age dependency ratio

The extended family has been an extremely important part of maintaining the elderly in their homes. Because of the constraints and crises these countries have faced, extended family members have moved away, leaving the elderly more on their own.

2. Indian Scenario

When India got independence, the life expectancy at birth was around 30 years. In the last five decades, the life expectancy has doubled. The absolute number of elderly persons has more than tripled. By the year 2001, about 76 million elderly people, who would constitute 7.7 per cent of the country's population inhabited India. By 2020, over 700 million old people will be living. The economic, social and health status of the fast-growing elderly population poses a great challenge to all sectors. Studies conducted in India and other countries of the Region show that a majority of the elderly population are not in a position to lead an economically independent life after their retirement. In the absence of pension benefits, many old persons have to work for their livelihood until they are physically exhausted. On the other hand, the joint family system and family values are gradually eroding. We find that more than 12 per cent of the rural elderly males live alone in India. In developing countries, in India, around 11 per cent of its population will be 60 years and above.

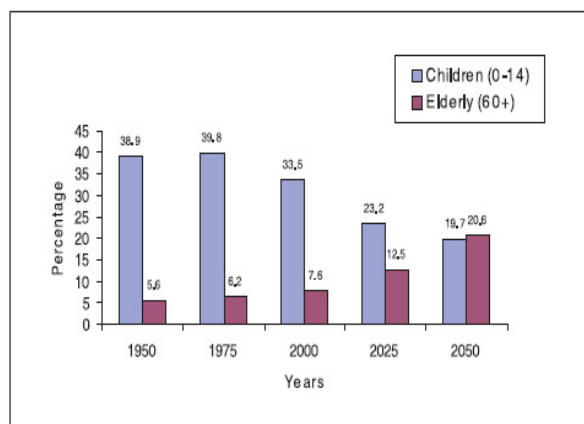


Fig.2. Elderly Population in India

3. Health Concerns

The number of the elderly living alone will increase with urbanization and migration of young people coupled with decreased cohesiveness in family bond. With regard to the health status, around 6 per cent of the aged in India are immobile due to various disabling conditions. Approximately 50 per cent of the elderly suffer from chronic diseases. Visual and hearing impairments are highly prevalent. At the same time, the availability of health services for the elderly is lacking. Knowledge among health workers on the specific needs of the elderly is also minimal. National health services are still preoccupied with the centuries-old scourge of communicable diseases, maternal and childcare, etc. Little attention is paid to the enormous needs of the elderly population.

Based on survey of Tsunami affected area of Cuddalore Tamilnadu predominant health problems were identified. The data had to be collected from various methods in absence of well-maintained record by medical teams. It is very difficult to make out the correct reason of a particular behaviour of victims, which may be because of possible physical and psychological disorders.

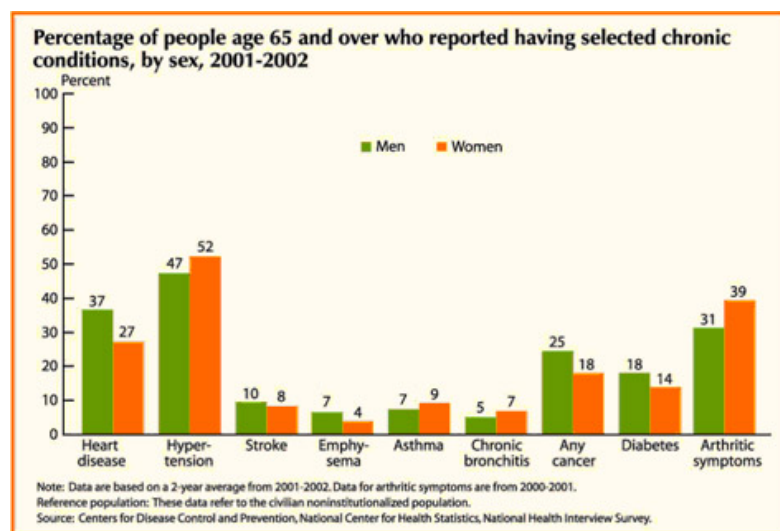


Fig.3. Health Status of Elderly Men and Women.

3.1 Physical Impairments

Frail elders and other vulnerable adults have physical and cognitive characteristics that necessitate a specialized disaster response strategy. They require varying degrees of assistance with activities of daily living, such as eating, dressing, bathing, grooming and toileting. Some are incontinent of bowel and/or bladder or have chronic physical conditions that require ongoing monitoring. Their chronic diseases are often managed by complicated treatment and medication regimens.

3.2 Cognitive Impairments

Cognitive decline may affect an elder's ability to express him or herself or process information. They may have difficulty articulating their needs and understanding problems and how to resolve them. One out of every six persons over age 65 years has dementia, which may range from mild memory loss and confusion to complete loss of orientation. Stroke victims and some elders with Parkinson's disease may also have cognitive impairment. This type of disorder is very common amongst victims, but most of the people 65 years of age and older, are largely affected by loss of orientation. Their condition is found to be more critical in a considerable number of hearing impaired elderly. A non-structured observation was made to record activity and movement pattern

of selected elderly person in order to identify major problem they face in such circumstances, particularly elderly people who are left alone after such an event. Highly confused elders may wander, have poor impulse control, or resist medical care or assistance with personal care tasks such as bathing or toileting. In some cases, confusion in elders results from an acute condition known as delirium, which requires immediate medical treatment. Depression may also affect an elder's memory as well as impair his or her ability to adequately respond to the challenges a disaster poses. It has been observed that there was a greater number of such victims in Sumatra Tsunami as compared to Bhuj earthquake.



Fig. 4. Reaction of an Elderly Man

3.3 Immobility

An elder person's immobility during and after the occurrence of a disaster posed a serious problem as observed in past events by the family members and the disaster management personnel. This phenomenon was found to be more present in Sumatra Tsunami than in the Bhuj earthquake as per information collected from rescue teams in both events. A structured observation was made to find out how elderly take advantage of relief measures provided for them by various agencies. In post emergency phase they were found unable to take advantage of facilities provided for them on their own. Physical decline associated with aging and chronic disease may affect an elder's mobility and require the use of assistive devices such as canes, walkers or wheelchairs. Elders may also need adaptive equipment such as bath bars, benches for showering or special toilet seats. Declining vision and hearing may require use of eyeglasses or hearing aids.



Fig. 5. Immobility

3.4 Elders Dietary Needs

Elders' dietary needs may differ from the general populations in terms of what is eaten and how it is served. Those with diabetes must avoid sugar, while those with hypertension may require low salt diets. Some elders will need their food chopped or pureed to ensure they can eat safely. Unavailability of special diet for elderly was highly felt by the author while working for relief and in emergency and post emergency phase.

Elders are at greater risk of dehydration and so they must have adequate fluid intake. In some cases, elders will forget or ignore their need for fluids and it will be necessary to remind them to drink fluids to avert dehydration. Even under normal circumstances the provision of care for frail elders requires the careful coordination of medical care, assistance with activities of daily living and social support to ensure their safety. The stress of a disaster increases elders' care needs. Disaster responses must address the unique characteristics of this population and strive to replicate the community-based coordinated care giving systems necessary for protecting their health and safety. This is accomplished in two ways: First, pre-disaster planning ensures that frail elders are evacuated with information on their medical histories, medications, needed adaptive devices, and an assessment of their ability to perform activities of daily living.



Fig. 6 Elders Dietary Needs

Second, disaster shelter planning ensures that frail elders are evacuated to shelter settings designed to accommodate their special needs.

4. Response of elderly in Disasters

Elderly people in general is a special population, likely to share similar characteristics or life experiences and likely to experience one or more widespread reactions in prolonged emergency. These manifestations may include depression, withdrawal, apathy, agitation and anger, irritability and suspicion, disorientation, confusion, memory loss, accelerated physical decline, and an increased number of somatic or bodily complaints (National Institute of Mental Health, 1983).

4.1 Sensory Deprivation

Older persons' sense of smell, touch, vision, and hearing are likely to be less acute than that of the general population causing potential difficulties in emergencies. A diminished sense of smell could make an older person less likely to identify spoiled food. A hearing loss may cause an older person not to hear what is said in the noisy environment.



Fig.7. Disaster Response

4.2 Delayed Response

Some older persons may respond slowly to calls for disaster relief for reasons including age-related slowing of cognitive and motor activity. In such circumstances they were often ill-treated by others while standing in queue to get relief supply as observed in emergency phase.

4.3 Chronic Illness and Dietary Considerations

Arthritis may prevent an elder from standing in line. Medications can cause confusion or a greater susceptibility to problems such as dehydration. Memory disorders can cause communication problems, as can neglect of special dietary considerations. Emergency food rations, for example, need to be low in sodium for the many older adults who suffer from hypertension. Considering the number of affected population providing specialized assistance to elderly persons was noticed to be partially/ totally neglected which resulted in increased panic and casualties.

4.4 Multiple Loss Effect

As described earlier, many seniors have lost their spouse, income, home, and/or physical capabilities. The compounding effect may make disaster recovery difficult. Intense attachments to specific items of property often add to their tensions.

4.5 Transfer Trauma

Nursing homes and other residential facilities may have to move residents from one facility to another during disasters, causing distress and disorientation. Similar reactions can occur when elders must evacuate their own homes leaving behind treasured possessions.

4.6 Language and Cultural Barriers

Lower reading skills among elders and inadequate command of the language can cause confusion and exasperation at relief centers or in the field. Minority elderly are especially vulnerable.

As per observations and discussions with members of response team from Japan and United States it has been noticed that this phenomenon is predominant in developing countries like India as compared to developed ones. Tamil population were found to be unable to take best advantage of facilities provided to them either because of language problem, illiteracy or highly conservative attitude.

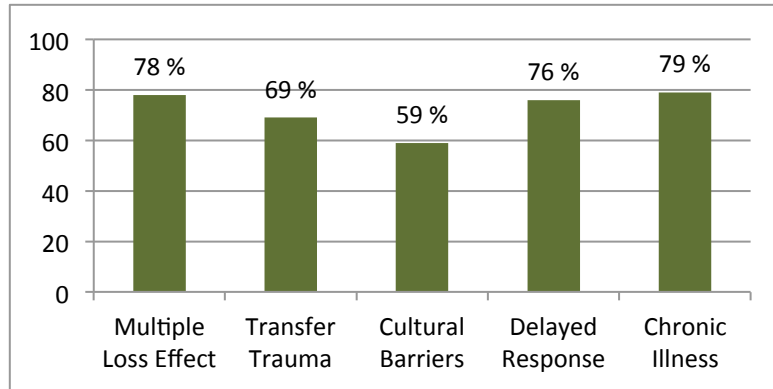


Fig.8. Psychological and Physical Disorders

Survey results revealed that a majority of the elderly population suffers from multiple psychological and physical disorders. But no special assistance was available to address their specific problems as observed in Cuddalore, Tamilnadu, 2004 Sumatra Tsunami



Fig. 9. Multiple Loss Effect



Fig. 10. Depression

It has been noticed that elderly disasters victims are less susceptible to post-traumatic stress or other psychological disorders than younger victims.

The great Hanshin earthquake on 17 January 1995 hit the elderly population of an urban society particularly hard. More than half of the fatalities were among those over 60 years old, and in this age group female fatalities were almost double those of men. Surviving elderly people were largely left to their own devices and became relegated to the marginal space in shelters. Elderly people tended not to proclaim their problems, and so their suffering tended to be underestimated. Again, as survivors rebuilt their homes and moved back, elderly people and other vulnerable groups tended to be left behind in temporary accommodation. This tragedy has shown that special attention and continuous care is necessary for elderly and vulnerable people after such disasters.

Studies show that older people are often slower to register for disaster assistance, and once they are registered, may not follow through and complete the necessary applications to obtain assistance. They may be at higher nutritional risk in the aftermath of a disaster and may forget to take necessary medications. In addition fraudulent contractors and “con men” that follow disasters and financially exploit disaster victims often target them. Many times they are less likely than

younger generations to use formal aid sources such government disaster management division and NGO's or Red Cross.



Fig. 11. Healing Touch from Younger Generation

If additional funds are available, other services may be provided to fill “gaps” or to strengthen local service delivery systems. The elderly population may experience a number of common ailments which may become worse in a disaster situation, including heart disease, cancer, stroke, arthritis, poor vision and hearing, depression and dementia. Understanding the high risk in the elderly population is paramount. Particular attention should be paid to possible vision deficit, hearing loss, cognitive changes, and acute illness. Precautions should be taken to prevent new or further injuries from falling during relocation.

5. Mapping Elderly People: Monzenmachi, Japan.

At 9:41 on the morning of Sunday, March 25, a powerful earthquake, with the magnitude of 6.9, struck the Noto Peninsula, which juts into the Sea of Japan. Municipalities in Ishikawa Prefecture such as Wajima, Anamizu, and Shika townships were most seriously affected. Reportedly 638 houses in the prefecture were totally and 1,563 partially destroyed. The human toll was light relative to the scale of the earthquake, with one fatality, 341 injured. It is particularly noteworthy that casualties among elderly and disabled persons, that is, those most likely to be affected by a disaster of this magnitude, were not extensive.

This is because of the crucial role-played by local community In Monzenmachi that is the hardest hit town. Less destruction occurred in the town where as many as 3,700 of its 7,800 residents were elderly people aged 65 or above, accounting for 47% of the total population: well above the national average. The “Elderly People Map” of Monzenmachi Township in Wajima is an effective example implementing the concept promoted in the manual. The “Elderly People Map” of the township played a major role in providing the safety of the town's elderly people. With this map one can immediately identify the location of elderly and disabled people in different stages of disability, because they are color-coded as “bedridden,” “living alone,” or “living as a couple.” Immediately after the earthquake the township administrators requested social workers in the town's eight districts to visit elderly residents and lead them quickly to safety with the use of the map. The municipal government of Monzenmachi could identify the status of all elderly residents within approximately four hours after the earthquake struck. With only four of them seriously hurt and 11 sustaining light injuries, the human cost was minimal. Monzenmachi made this unique map after they experienced the deaths of three old people who were living alone. In this earthquake the map showed its worth [9].

6. *Tracking of the Victims*

Many families could not locate their elderly loved ones for days to weeks due to the absence of a tracking system. Several family members recounted the agony and fear they faced wondering where their frail family member was or if they had survived at all. In the absence of a comprehensive evacuee registration or tracking system efforts to identify elders without families or other supports were hampered. This ineffective means of identification resulted in a “first found/first served” scenario. To whatever degree possible all shelter occupants need to be registered, particularly for frail elders who require screening to determine their level of need. Some elders will need to be quickly discharged from the shelter to more appropriate placements. Registration also ensures that central command for the area knows how many frail elders are in the facility so they can devise a strategy to ensure that on-site medical and social services are accessible and available to them. It will not always be possible for every evacuee to be registered upon entry. Some elders may be confused, traumatized, or non-cooperative.

7. *Elderly Volunteers*

Sixty-five percent of American Red Cross disaster volunteer workers are age fifty-five or above. Those elders with prior mental health issues need not be excluded. The disaster literature reports many incidences of effective response to the needs of others by persons with emotional disorders. Many elders are themselves served by volunteers (meals-on-wheels, chore services, etc.) and are aware of the existence of helping networks. A large number of elderly offer Volunteering in disaster situations. Survey revealed that about 23% of the sixty-five plus population was engaged in rescue and relief work and another 21% percent were willing to become involved. Many older volunteers have valuable, having extensive knowledge of community resources.

8. *Discussion and Conclusions*

Proper conduct of the discharge process is a critical issue. Across the country countless elderly were missing, presumed dead, or thought to be in one place when actually in another due to failure to track their movements once they had reached a shelter and then left. Frail elderly were likely to be discharged from shelters to hospitals or other settings. In some cases, placement was temporary and they were returned to the shelter. Most healthy younger adults have the capacity to contact family and friends to let them know where they are. Frail elders may be too physically or cognitively impaired to do so. This caused stress for them and their families who had no clear mechanisms to locate them. Establishment of a proper registration system within the shelter will limit this problem. As evacuees are permanently or temporarily discharged from the shelter the registration database is updated. In addition, there needs to be a regional registry to facilitate location of shelter residents by family and friends who do not know the shelter to which their frail elder has been evacuated. There has been a discussion of the use of technology in shelter settings such as computer based tracking or electronic Cards. Careful consideration should be given to that strategy for this particular population. Many of the frail persons who had difficulty evacuating in time were impoverished and or cognitively impaired. The population of frail elders and vulnerable adults will benefit most from the simple, effective means of tracking.

Shelters should be able to meet the basic needs of special populations. Initially, in the patients requiring help with basic activities of daily living were largely left to fend for themselves or were helped by those next to them in cots. Bathing, toilet facilities, and food services need to be accessible to persons with disabilities. It is highly likely, especially early in the evacuation process that facilities for special populations would not be readily available. In that case, a separate area for frail elderly and vulnerable adult evacuees should be designated. A separate designated area would also allow for easier access by professionals who serve the aging or disabled community. Transfer to these distinct areas can be accomplished at the time of registration into the facility. When possible, this area should be further divided into separate sections for men and women.

Often shelter residents perceive their social needs as more important than their medical needs, and in many instances this is true. Finding housing, ensuring evacuees receive existing benefits and obtaining disaster relief is critical not only to their material well being but also to their mental and physical health. Living day to day in a shelter without any plan for a return to a more normal setting is extremely disturbing to frail elders who want to preserve their prior level of independence. For this reason, elder response teams must begin to address social issues as quickly as they address medical issues. Social workers on the team need to have a working knowledge of housing resources, benefit programs, disaster aid programs, and any other resources necessary to resolve the frail elders' nonmedical problems. They must advocate for getting evacuees the services they require. They also need to keep evacuees informed about the progress being made in resolving their problems. This process should continue even when the elder or vulnerable adult is placed out of the shelter until it is clear that the evacuee's problems have been resolved or that another agency has assumed responsibility for that activity. Communication was a challenge for all as observed in past events. Proper signage and directions allow elders or others to navigate through the facility and arrive at designated sites. In areas where a percentage of disaster victims' primary language is not English, translators or volunteers versed in the foreign language should be available to help bridge rescue workers by and large.

Key Lessons Learned:

- Lack of age responsive Disaster Mitigation and management system pose a serious problem for elderly people on occurrence of a natural disaster.
- Frail elderly people have less capacity to face a disaster.
- Absence of trained disaster management team resulted in an increased impact of disaster with reference to elderly in past events in India.
- Establishment mapping and recording of data regarding elderly population can assist rescue workers to help and assist elderly people on exposure of a disaster by and large.

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