

DISASTER PLANNING AND RESPONSE: CONSIDERING THE SPECIAL NEED OF AGING POPULATIONS

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Abstract

The world's population is aging and this changing demographic provides a challenge for emergency management professionals. While there is a great deal of diversity among older adults world wide, there are many common health issues that must be taken into consideration when planning for the emergency preparedness and response needs of the frail elderly. When planning emergency interventions, a clear understanding of the aging process and the impact of common chronic diseases processes can facilitate a more successful response.

Introduction

In some countries, frail elderly live in institutional settings such as assisted living facilities, or nursing homes. In an emergency situation, problems can arise in these institutions unless special care is taken to address the emergency preparedness and response needs of the frail elderly. Without special assistance, many of the frail elderly can be severely compromised in their ability to respond to and recover from disasters. The 2005 hurricane season in the United States underscores the importance of recognizing and addressing the vulnerabilities of the

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frail elderly living in independent or assisted living environments. If the special needs of the frail elderly are not incorporated into emergency planning to improve emergency preparedness and response initiatives, their critical needs cannot be met during the disaster. The purpose of this discussion is to outline the special needs of the frail elderly during a disaster and to suggest emergency preparedness strategies for addressing this vulnerable population.

The 2005 hurricane season in the United States underscores the importance of recognizing and addressing the vulnerabilities of special populations such as the frail elderly. In this paper, the term frail elderly refers to adults over the age of 65 suffering from the effects of physical deterioration due to age and chronic disease that severely affect their ability to recognize and respond to a disaster. Chronic disease in combination with advancing age, also increase the risk of complications due to environmental changes during a disaster. Subpopulations of those over 65 years of age and older may also suffer from low economic status and poor social networks that further increase their risks. These characteristics put the frail elderly in danger of increased sickness and death during a disaster. This was evidenced in the United States with Hurricane Katrina. Although only 15% of the residents of New Orleans pre-Katrina were aged 65 and older, 74% of hurricane related deaths were people in that age group, and almost half of those were older than 75 years of age (Hyer, et al., 2006). Emergency management professionals must recognize the importance of developing a special section in disaster plans that address the needs of the frail elderly. Emergency plans must address the needs of elderly living independently or in institutional settings.

Thesis

Emergency managers must consider the special needs of the frail elderly in emergency preparedness planning to minimize the disaster's immediate and long term impacts on this population. During a disaster experience, individuals with special needs such as the frail elderly are at a greater risk for sickness and death (Somasundaram & van de Put, 2006). Communities who do not address the special evacuation needs of the frail elderly increase the risk of illness and death of this group during a disaster event. (Smith, 2005)

Sources of information

This paper was prepared using published research studies focused on special populations that should be addressed during disasters and best practices for successful disaster planning and preparation at the community level.

Findings and Discussion

The Vulnerable Elderly

Factors contributing to the vulnerability of the frail elderly are important considerations for emergency managers to understand. Advanced age alone does not equate to vulnerability and within the elderly population, there is a wide range of individual health and fragility. However, frail elderly have increased risk of death during or following a disaster. Characteristics of frail elderly living independently include:

- 1) chronic illness
- 2) limitations in vision, hearing and mobility
- 3) reliance on outside health care resources
- 4) low economic status
- 5) poor social networks

Frail elderly living in institutional settings:

- 1) Nursing homes

2) Assisted living facilities

The probability of developing chronic illnesses increases with age. Many older adults suffer with chronic diseases such as diabetes, cardiovascular disease, chronic obstructive lung disease, and arthritis (Ferrini & Ferrini, 2008). Chronic illnesses often result in a decreased ability to perform routine activities of daily living (ADLs) such as bathing, dressing, and using the toilet. A recent study reported that one-fourth of the young old (65-74 years of age) and almost one-half of the old-old (75 and older) had at least one limitation in ADLs due to chronic disease (Centers for Disease Control, 2004). Deficits in ADLs require assistive devices and/or physical assistance in performing these activities. Much of this care is provided through informal networks such as family and friends (U.S. Department of Health and Human Services, n.d.). These networks may be lost during a disaster leaving this vulnerable population at risk. During Hurricane Katrina, loss of family and friends left many frail elderly unable to care for themselves or to advocate for their own needs while housed in a public shelter (Dyer et al., n.d.).

Chronic illnesses may also result in physical limitations that impact the ability to respond during a disaster. Visual impairments, hearing impairments, and impaired mobility can present major challenges during disasters. The frail elderly with impaired mobility may not be able to find shelter or quickly evacuate when the onset of a disaster is sudden such as earthquakes and floods. Those with sensory impairments may be unaware of disaster warnings and instructions. Emergency managers must address these limitations when planning sheltering-in-place, evacuation, response and mitigation of disaster events (Fernandez, 2002). The impact of these impairments was documented with elderly Hurricane Katrina evacuees in a public shelter, “Many could not walk to the bathroom or the cafeteria and many were demented and did not know where they were. Some had sensory impairments that prevented them from reading signs indicating where help was located or from hearing the public address system announcements” (Dyer, n.d.).

The frail elderly may also have decreased health status during and after a disaster due to the loss of transportation, medical and communication infrastructures. The frail elderly may be housebound, and reliant on the delivery of medication, medical treatments, or nursing care. These services are provided by volunteers or paid employees and the loss of infrastructure can leave frail elderly without vital services during and after disaster events. The disruption of infrastructure is a particular concern for the frail elderly with chronic conditions or diminished capacity. This problem was demonstrated in the United States during a severe snowstorm in the state of New York in 1987. Hospitals in the state of New York were required to accept frail elderly patients with chronic respiratory conditions which overextended hospital resources. These patients typically managed their respiratory conditions at home. The hospitalizations were required because the homes of these frail elderly lost electric power and they were unable to manage their conditions at home. While the hospital responded to the special need of this vulnerable group, the lack of preplanning for alternate sheltering capacity caused the ability of the hospitals to meet other urgent care needs to be diminished (Fernandez, et al., 2002).

Groups of frail elderly that can be at higher risk during a disaster are those of extreme age or low income. Age in combination with low economic status increases vulnerability during a disaster. Older women, especially women of color, suffer economic and social disadvantages (Ferrini & Ferrini, 2008). Since women live longer than men, they are the larger elderly group in need of services during a disaster. Older women must have special consideration when planning for evacuation, shelter specifications and relocation. In some circumstances, elderly women have the increased burden of care giving responsibilities. Cultural restrictions in some societies that discourage women from seeking disaster aid or medical care further contributes to the vulnerability of elderly women following a disaster (Kumar et al., 2007).

Individuals with low economic status have limited financial resources and may not be able to evacuate before a disaster. During recovery, when members of this group lose a home or possessions, these cannot be restored without outside assistance. The impact of low economic status was found to be a major factor for those seeking shelter following Hurricane Katrina. Six of 10 Katrina evacuees housed in a public shelter had incomes below \$20,000 (Brodie, et.al, 2006). Many residents in the higher socio-economic levels in the area affected by Katrina had the means to evacuate to hotels or to shelter with friends or family.

In disaster situations, frail elderly with poor social networks are at increased risk of illness and death. The lack of functional social networks was reported as the primary cause for the large number of elderly men dying in a week long Chicago heat wave in the United States in 1995. Studies of this heat related disaster indicated that older men, particularly men without children and men with substance abuse problems were less likely to maintain crucial parts of social networks which provide support during an emergency. Although research indicates that men are more likely than women to become socially isolated, both elderly men and women are susceptible to the loss of social ties. Those frail elderly who live alone and do not engage in support networks are at increased risk. To reduce this risk, emergency preparedness programs can encourage the building and strengthening of social networks (Klinenberg, 2002).

Frail elderly in institutional environments such as nursing homes and assisted living facilities present significant challenges during a disaster. The frail elderly in group living environments typically have greater mental, physical and mobility limitations in contrast to the elderly in independent living environments. In many cases, the frail elderly in institutional environments require total dependence on others for their care. In order to meet the special needs of the frail elderly living in an institutional environment, such as nursing homes and assisted living facilities, community and state planning for disasters must include representatives from these institutions. These representatives are familiar with the special needs of their residents and this information is vital in the development of appropriate disaster preparation, response, mitigation and recovery plans. The deaths of thirty-four residents in St. Rita's Nursing Home in Louisiana occurred because the residents were not evacuated to safety prior to severe flooding. During Hurricane Katrina, an estimated 36 additional deaths in 12 other nursing homes revealed the terrible consequences of inadequate institutional planning and response to the disaster (Hyer, 2006).

Community Emergency Planning

Planners must consider the frail elderly as a high risk group when developing a risk assessment, the emergency plan, and a geographic assessment of their community. Emergency planners need to understand how the unique social and political patterns of communities can result in heightened risk for specific sub-groups such as the frail elderly. Emergency management planners must go beyond the development of a community natural hazard and risk assessment. Planners must identify and map special groups that are at higher risk than the general public. A community vulnerability map can identify the location of at risk groups such as the frail elderly (Morrow, 1999).

Community Vulnerability Maps

Community Vulnerability Maps assist emergency managers in identifying the magnitude and location of high risk groups. This information on high risk groups is necessary to estimate the manpower, equipment and health care resources needed during the response phase of a disaster to effectively evacuate and shelter disaster victims. Knowledge of the geographic location and total number of the frail elderly living in institutional environments that must be evacuated during a disaster can help avoid problems such as double counting of the same ambulance to evacuate two different nursing homes. This double counting error was found to be one of the causes of death of the frail elderly during the Hurricane Katrina disaster. Nursing home patients were not evacuated prior to flooding because the ambulance service

listed in the institution's plan was unavailable because the ambulances were servicing other facilities. (Smith, 2005)

Mapping does not have to be completed in a costly or high-tech manner. Residents of a rural community in the Philippines created a three-dimensional town map on a plywood base. The group used flour and water dough to depict the most vulnerable locations and homes in their community. Local planning projects sponsored by schools and other voluntary organizations can use low tech methods to visually display high risk areas and vulnerable groups within their neighborhoods (Morrow, 1999)

Warning and Evacuation

Emergency managers should consider the unique needs of vulnerable elderly in regards to adequate warning system and transportation issues during evacuations. Visual and audible warning devices and alarms must be maintained to meet the needs of the visually and hearing impaired frail elderly. Individuals with impaired mobility and those who do not have adequate physical or financial resources may not be able to evacuate during a disaster.

The frail elderly who have no transportation or need special transport due to mobility impairments should be identified and alternate transportation plans put in place. Emergency managers should have a strategic plan in place that demonstrates 1) adequate ambulance service will be available to meet the demands of all frail elderly living in institutional environments 2) coverage will be available to frail elderly living independently.

Providing proper medications to the frail elderly in a safe manner during evacuation is important for effective care of the frail elderly. During an evacuation, medication and the equipment needed to administer the medication should be transported in the same vehicle as the victim. If medications are transported separately, health care providers will not be able to administer necessary medications during unanticipated long delays during transport. The proper secure storage of medications must be provided during transport as well. If residents are allowed to carry their own medications during evacuation, the improper consumption and trading of medications may occur (Department of Health and Human Services, 2006)..

Emergency Shelters

Emergency shelters must be provided with the necessary supplies, staff, and equipment to ensure adequate healthcare for those with special needs. Shelters designated for the frail elderly should have wheelchair access and bathroom facilities to meet the needs of mobility limited individuals. When communities identify significant populations of individuals with special need, including the frail elderly, it is recommended that special care emergency shelter centers be established. These special care centers are available to individuals requiring assistance with activities of daily living. Typically, special care centers are equipped with basic medical assistance and monitoring. Lee County, located in the state of Florida in the United States, is an example of one local community with established special care centers. While Lee county special care centers have basic medical assistance and monitoring, they are not equipped with advanced medical equipment, medications, or staff to provide advanced medical care. Lee County requires that each special needs resident be accompanied by a caregiver since volunteer medical staff will be unfamiliar with the resident's special needs. There are limitations to the care provided by special care centers. Notices provided by Lee County concerning their special care centers state the following warnings, 1) "If the volunteers do not report to the shelters there will be no hands on other than your caregiver and a Public Health Unit manager (R.N.) to assist should an emergency arise." 2) "If you need 24 hour skilled nursing care, dialysis 3 or more times a week, or are electricity dependent for life support, you are not a good candidate for Special Care Centers." (Lee County Public Safety, 2001).

Past disasters in the United States have demonstrated that the lack of a centralized medical record tracking system for evacuees in shelters slowed the provision of health services for the frail elderly (Hyer, et al., 2006). Community and state level emergency managers need to create a system that allows for key health information to be portable and available to medical personnel for adequate treatment of disaster victims.

When planning food for shelter disaster victims, emergency managers need to recognize that many of the frail elderly have poor dental health or no teeth and this restricts their diet. Chronic diseases such as hypertension and diabetes may also require dietary restrictions that are difficult to provide in a shelter.

Planning for Nursing Home and Assisted Living Facilities

Nursing homes and assisted living facilities must be required to have very detailed emergency plans which address early evacuation of residents and safe off-site shelter locations. Since rapid onset of some types of emergencies leave institutions such as nursing homes and assisted living facilities little time to evacuate, preplanning is critical. In addition to planning for an evacuation to a separate safe shelter, each institution housing the frail elderly should also maintain adequate supplies of food and medicine and an emergency power generator to allow sheltering-in-place in case no timely warning can be provided to allow evacuation. (Hyer, et al., 2006).

Summary

The world's population is aging and this changing demographic provides a challenge for emergency management professionals. The needs of the frail elderly in the community and institution must be met. There are specific needs in regards to warning, evacuation and sheltering the frail elderly. Addressing these needs can facilitate a more successful emergency response.

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Author Biography

Dr. Susan M. Smith

Dr. Smith is an Associate Professor at the University of Tennessee, Coordinator of the Graduate Safety programs and Director of the UT Safety Center. Prior to accepting her current position, Dr. Smith completed a successful 20-year career working with rural communities on the complex issues of disaster mitigation, environmental protection, and community safety. She teaches graduate courses in emergency management, accident prevention and environmental health. Dr. Smith's research areas include emergency evacuation and warning systems for special populations.

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Dr. Tremethick has a broad nursing background having worked and/or taught clinically in Intensive Care/Critical Care, Medical/Surgical, and Physical Rehabilitation nursing. She has also studied aging and has worked with the aged in community and institutional settings. She was appointed to and currently serves on the Marquette County Aging Services Advisory Committee, the Michigan State Advisory Council on Aging, and the Michigan Healthy Aging Initiative Steering Committee. She currently teaches at Northern Michigan University in Community Health Education.

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Peggy Johnson has a background in respiratory therapy having worked in Intensive Care/ Critical Care, Coronary Care and Home Health Care Settings. She has also worked in Cardiopulmonary Rehabilitation in hospital and nursing home settings. She completed a Masters in Public Health in the summer of 2006 and is currently a Graduate Student and Graduate Teaching Associate in the Safety Program at the University of Tennessee.