

Original Research

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Rural Older Adults in Disasters: A Study of Recovery From Hurricane Michael

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Abstract

Objective: This study aims for a greater understanding of how older adults (age 65 and older) in Jackson County, Florida, are prepared for and cope with the effects of a natural disaster.

Methods: A multidisciplinary, international research team developed a survey examining: (1) resources available to individuals aged 65+ in rural communities for preparing for a disaster; (2) challenges they face when experiencing a disaster; and (3) their physical, social, emotional, and financial needs when it strikes. The survey was administered with older adults (65+) in Jackson County, Florida, following Hurricane Michael in 2018. The descriptive, multivariate logistic, and linear regression analyses were performed to examine the relationship between respondents' demographic information and needs, concerns, and consequences of disaster.

Results: Results indicated ($n = 139$) rural community-dwelling older adults rely on social support, community organizations, and trusted disaster relief agencies to prepare for and recover from disaster-related events.

Conclusions: Such findings can be used to inform the development of new interventions, programs, policies, practices, and tools for emergency management and social service agencies to improve disaster preparedness and resiliency among older populations in rural communities.

Older Adults and Disasters

Natural disasters are varied and are generally defined as events that have rapid and profound effects on the natural and social environment, causing significant financial loss, trauma, or death. Lethality and long-term consequences of natural disasters are worse for women, minorities, impoverished individuals, older adults, and other marginalized groups even in wealthier societies, depending on how disaster management occurs.¹

Scholars point to numerous sources of stress for older adults in disaster situations. Older adults at large are more likely to be socially isolated. For older adults, chronic disease, as well as stress and anxiety from extreme weather events and disasters, can affect mental and cognitive health.²

Aging in Place and Disasters

Researchers have found that older rural Americans are typically long-time residents in their homes and desire to age in place. Aging in place is often assumed to be a positive experience³; however, this does not hold true in the context of disasters where there is a lack of congruence between needs, supplies, and environment. An experience of forced relocation is 1 of the most stressful events that can occur in a person's life, and many people may be willing to endure significant hardship to remain in their homes,⁴ even if circumstances are sub-optimal or unsafe.

Table 1. Sample characteristics of the study (N = 139)

Variable	N (%)	Variable	N (%)
Gender		Race	
- Female	102 (73.4)	- White	61 (43.9)
- Male	37 (26.6)	- Black, African American	76 (54.7)
Age in Years		Marital Status	
- Under 64	6 (4.3)	- Divorced/Separated	37 (26.6)
- 65-74	78 (56.1)	- Married	46 (33.1)
- 75-85	38 (27.3)	- Never Married	15 (10.8)
- Over 85	17 (12.2)	- Widow/Widower	41 (29.5)
Income		Lived With	
- Less than \$1,041	55 (39.6)	- Alone	57 (41.0)
- \$1,384	20 (14.4)	- Spouse	49 (35.3)
- \$1,436 to \$2,082	30 (21.6)	- Children	12 (8.60)
- \$2,602 & above	34 (24.5)	- Other family/roommate	21 (15.1)
Education Level		Type of dwelling	
- Less than High school	14 (10.1)	- Apartment	22 (15.8)
- High School Diploma	62 (44.6)	- House	84 (60.4)
- At least some College	63 (45.3)	- Mobile Home/Farm	30 (21.6)
		- Homeless	3 (2.2)

Note: *one person reported other, ** 4 individuals did not report income, they were included in lowest category+ *** only one person reported living on a farm.

Hurricane Michael

In October 2018, Hurricane Michael was the strongest hurricane recorded to strike the Florida Panhandle, reaching a Category 5 strength. The household income, employment status, poverty status, and health insurance status of individuals 65 and older in Jackson County reflects what is typical for individuals experiencing social and economic hardship.⁵

Federal Emergency Management Agency (FEMA) Information Data and Analysis reported that, after Hurricane Michael, there were 3309 survivors in Jackson County aged 65 and older who registered for financial assistance.⁶ To align emergency management plans with the reality of the specific community and area being serviced, ie, to build a culture of preparedness, one must survey the population, assess the real needs of its residents, and identify groups that historically have been underserved. As emphasized, older adults are considered to be at higher risk of poor social and health outcomes due to mobility issues, chronic health conditions, fixed incomes, etc.⁷ According to Hirsch (2019), declining health and economic constraints can place older adults at increased risk of injury, death, and physical and psychological loss during and after disasters.⁸

Study Purpose

In this study, researchers endeavored to understand how adults aged 65 and older in Jackson County, Florida prepared for and coped with the effects of the disaster within the application of FEMA's National Disaster Recovery Framework, which supports the recovery of states, tribes, territories, and local jurisdictions. Specifically, the study sought to answer the following questions: (1) What resources are available to individuals aged 65 and older in rural communities to prepare for a disaster? (2) What challenges do individuals aged 65 and older in rural communities face when experiencing a disaster? (3) What are the physical, social, emotional, and financial needs of individuals aged 65 and older in rural communities when a disaster strikes?

Methods

The interdisciplinary team for this project consisted of research experts from the United States, Canada, Ireland, Scotland, Sweden, and Brazil, representing disciplines including gerontology, disaster preparedness, social work, psychology, nursing, mental health, public health, community health, and public policy.

A cross-sectional survey method was used, where face-to-face surveys were administered as an interview to collect information from older adults (65+) in Jackson County, Florida, following the 2018 Hurricane Michael. The interdisciplinary team developed measures to administer face-to-face cross-sectional interviews for this exploratory study that were probing in nature to capture a descriptive profile of the residents, identify critical trends regarding disaster planning, and capture attitudes regarding disaster planning and concerns.

Study Recruitment

The ethics committee from the Federal Emergency Management Agency and the Florida Department of Health in Jackson County reviewed and approved the study, and written consent was obtained from the participants before participation. There were no monetary incentives used to recruit the participants. Members from the Department of Health at Jackson County acquired permission from 15 local organizations to conduct the survey with local study participants. Study participants were recruited from 1 of 12 locations in the county. A total of 139 interviews were included for analysis. A total of 14 surveys were removed due to incomplete information and survey respondent issues.

Measures

The survey was developed to include 20 questions measuring demographic characteristics, living arrangements, types of informal and formal supports, use of 1 or more assistive devices, access

Table 2. Descriptive information regarding a) resources, b) needs, barriers & concerns, and c) consequences of disaster. Unless otherwise reported the values represent count and percentage

A. Resources	
Paid help, social services or institutional helping to prepare for a disaster	
- No	123 (88.5)
- Yes	16 (11.5)
Family, friends, neighbors helping to prepare for disaster	
-Yes	117 (84.2)
- No	22 (15.8)
Number of days one could pay for food & housing in case of evacuation	
- unsure	21 (15.1)
- zero	8 (5.8)
- 1 day	22 (15.8)
- 3 days	29 (20.9)
- 7 days	46 (33.1)
- ≥ 14 days	13 (9.3)
Who spreads information about disaster	
- Radio	46 (33.1)
- Television	77 (55.4)
- Other (senior center, health department, friend/neighbors, church)	16 (11.5)
First contact for assistance after disaster	
- Family	108 (77.7)
- Friends/neighbors	12 (8.6)
- Formal resources (FEMA/Red Cross, Social Service, Paid help, 911)	12 (8.6)
- Unsure if anyone available to contact	7 (5.0)
Knowledge of what should be in emergency kit	
- Yes	102 (73.4)
- No	11 (7.9)
- Unsure	26 (18.7)
B. Needs, Barriers and Concerns	
Some need of assistance in evacuation	
	61 (43.9)
Top forms of assistance needed in evacuation	
- Transportation	32 (23.0)
- Walker cane	24 (17.3)
Mean number (SD) of concerns when watch/warning is issued	
	2.8 (2.0)
Top concerns when watch/warning is issued	
- Safety	84 (60.4)
- Medicines	78 (56.1)
- Shelter	50 (36.0)
- Food	46 (33.1)
Top conditions thought to prevent one's evacuation	
- Arthritis	33 (23.7)
- Diabetes	22 (15.8)
- Mobility issues	20 (14.4)
C. Consequences	
Decrease in mood after hurricane	
- Yes*	71 (51.1)
- No	53 (38.1)
- Unsure	15 (10.8)
Self-harmful ideation after the hurricane	
	5 (3.6)

*includes those reporting decrease in mood more than a year ago (n = 6).

to medications, chronic condition needs during the disaster, perceived mood postdisaster, perceived knowledge of disaster preparedness, and communication access during a disaster.

Statistical Analysis

Due to the exploratory nature of this study, descriptive statistical analysis was performed, including frequencies, cross-tabulations, and correlations. This analysis was followed by multivariate logistic and linear regressions examining the relationship between demographic information (age, gender, race, educational level, living and housing situation) and needs, concerns, and consequences of disaster. In a second set of models, educational level was replaced with income to examine the associations for this socioeconomic predictor. Due to small sample sizes, these results should be interpreted with caution.

Results

The sample characteristics of 139 participants are provided in Table 1. The mean age of the sample was 73.2 y (standard deviation [SD], 7.3; range, 61-92 y). Participants were predominantly female (73.4%), Black/African American (54.7%) or White (43.9%), and living alone (41%). Participants had diverse income levels and living and marital situations (Table 1). For example, one-quarter of respondents lived in a mobile home. Compared with the older population in Jackson County at large, the sample had a higher proportion of females and did not include any Hispanic individuals.

The descriptive findings regarding resources, needs, barriers, concerns, and consequences of disaster situations for older adults who responded to the face-to-face survey interviews are summarized in Table 2. The results indicate a strong reliance of older adults on social networks when it comes to locating resources. Family, friends, and neighbors were the most likely first points of contact for assistance after a disaster. For the majority of respondents ($n = 117$; 84%), family, friends, and neighbors were also the most likely to help participants prepare for disasters. More than a half of the participants (54.7%) relied on only 1 source of support. There was substantial variation within this figure, however, with 10% of respondents reporting being unsure of whether they could secure aid in preparing for a disaster, and 35.3% reporting that they could secure aid and get help from 2 or more sources.

Despite its importance as a source of assistance, social networks played a comparatively minor role as a source of information during disasters. Respondents were asked to select 1 response identifying how they learned about disasters (health department, senior center, radio, TV, friends/neighbor, or church). The majority of respondents (88.5%) reported that they were likely to learn about emergencies from radio or television. Finally, there was substantial variation in respondents' financial resources in case of evacuation. Nearly one-fifth of respondents could not or were unsure if they could pay for food and housing for even a single day in the event of an evacuation. More than one-third of the participants ($n = 51$; 36.7%) reported that they could only sustain costs for only 1-3 d.

Nearly half of the respondents ($n = 61$; 43.9%) reported requiring some form of assistance during the evacuation. The most common needs identified were associated with mobility, such as needing help with transportation (23%) or having a walker or cane (17.3%). Respondents were most likely to report arthritis, diabetes, and mobility issues as the health conditions most likely to affect

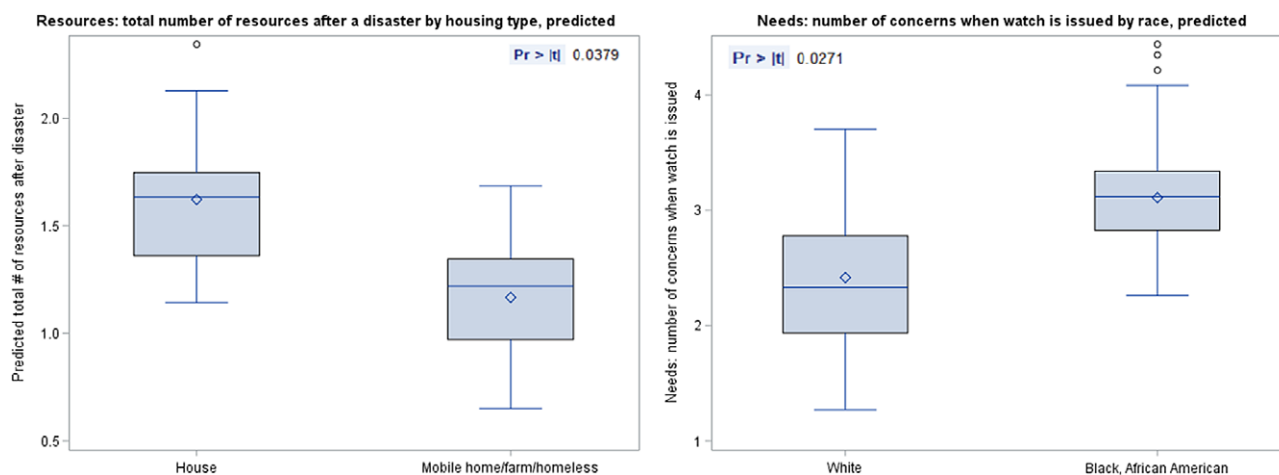


Figure 1. Figures of predicted mean number of (left) resources after disaster by housing type and (right) concerns when watch is issued by race. Multivariate analyses were adjusted for age, gender, race (left) and education, living situation, and dwelling (right).

their ability to evacuate (see Table 2). The number of initial concerns respondents reported when a disaster watch or warning was issued varied substantially. The mean number of selected concerns was 2.8 (SD, 2.0), with a range from 0 to 9. The most common concerns involved basic needs, including safety (60.4%), medicine (56.1%), shelter (36.0%), and food (33.1%). Approximately half of the participants reported a decrease in mood ($n = 70$; 51.1%) as a result of the hurricane.

The mental health of older adults in Jackson County after the hurricane appears to have worsened, with nearly half (46.8%) of participants stating a decline in mood. Only 38% of study participants indicated no change in their state of mind.

The exploratory multivariate analyses showed that those older individuals were less likely to rely on formal help when preparing for (odds ratio [OR], 0.89; 95% confidence interval [CI]: 0.78-1.01) and recovering from a disaster. Predictably, older individuals, (OR 1.02; 95% CI: 0.96-1.08), African Americans/Blacks (OR 1.30; 95% CI: 0.58-2.88), as well as those living alone, (OR 2.90; 95% CI: 1.14-7.4) reported greater need for assistance. African Americans/Blacks tended to report lower knowledge about emergency kits (OR 0.40; 95% CI: 0.15-1.02), lower ability to cover costs in case of evacuation, and had a higher predicted mean number of concerns when a warning was issued (Figure 1). Thus, they are an essential group to focus on. Another at-risk group seemed to be those living in mobile homes. They reported having access to less help after a disaster and had a smaller total number of resources (Figure 1) they could draw on in disaster situations.

Discussion

The findings presented in this report indicate that older individuals rely mainly on family and friends and less on social services and institutional help for disaster preparedness and recovery. This is consistent with previous findings⁹ and is a significant predictor for how rural older adults prepare for disaster-related emergencies. The study findings also revealed that individuals aged 65 and older lack disaster preparedness and are disproportionately affected when a national disaster strikes. The analysis identified lack of transportation as a key challenge for older adults during an emergency evacuation situation.

Most participants indicated concerns about access to their medications or the challenges of finding food. Of equal importance are

older adults' wide range of physical, social, emotional, and financial needs when a disaster strikes.

There is a close link between poverty and disasters; in this study, nearly half of the participants had an income of less than \$1041 monthly, equivalent to the federal poverty level. There is also a direct link between poverty and literacy. This study revealed that some of the study respondents had literacy deficiencies, making it challenging for them to access disaster preparedness materials. These findings align with previous studies that suggest a gap between population literacy and the level of education required to read most disaster preparedness materials.¹⁰

Limitations

There are several limitations in applying the findings from this pilot study. Only those organizations that were already engaged in disaster relief work were likely to respond to the project team's request for assistance in recruiting respondents. The sample size was also relatively small and homogeneous in terms of geographic location and race, which limits the ability to generalize the study findings to more diverse populations.

Conclusion

This study shows that many older adults face obstacles in preparing for and responding to disasters. The high percentage of survivors in these counties (Figure 2) who are aged 65 and over suggests the counties consider supporting the construction of accessible housing in preparation for future disasters. It is crucial for federal, local, and state government, as well as community organizations, and trusted relief agencies for national disasters to work together to help older adults prepare for and recover from disaster-related catastrophic events.

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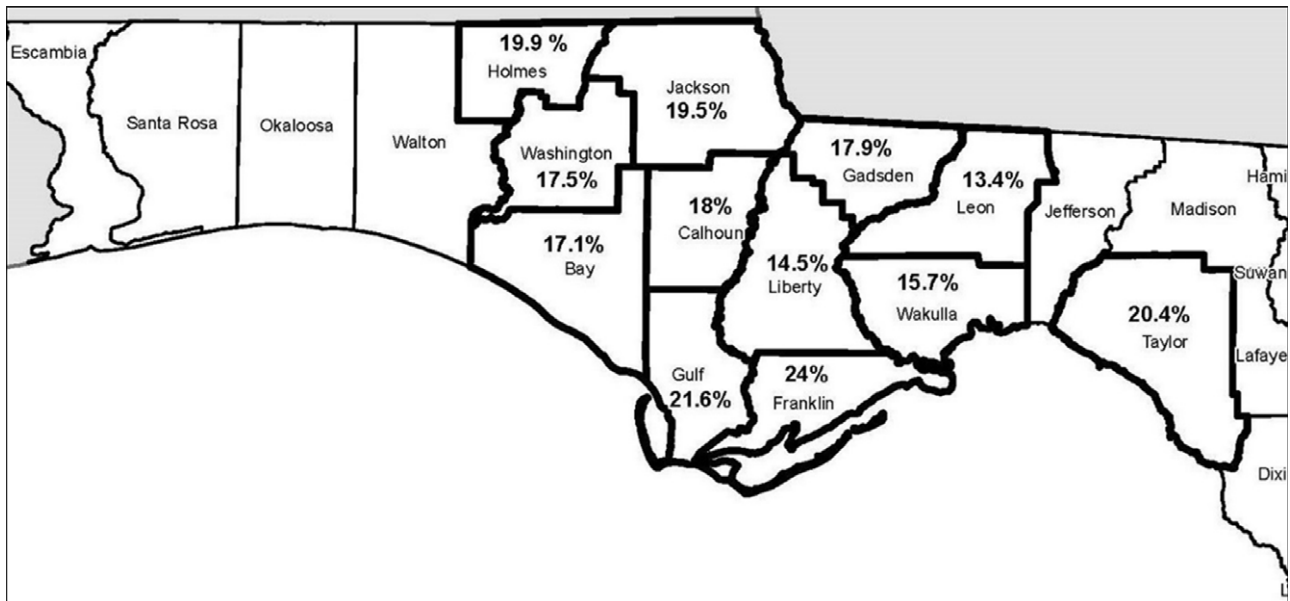


Figure 2. Percentage of population over 65 y of age – designated counties for individual assistance.

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