



Elderly People's Perception of the Concept of Preparedness for Disasters and Accidents: A Qualitative Study

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Abstract:

Introduction: Accidents and disasters are among the major public health challenges, and the elderly are especially vulnerable to their consequences due to their reduced physical and mental capabilities. With the growing elderly population in Iran and worldwide, identifying the factors that affect accidents in this population seems essential. However, there is a lack of in-depth qualitative studies that explore the subjective perception of preparedness among the elderly, particularly in the Iranian context. Therefore, this study was conducted to gain a comprehensive understanding of how elderly individuals perceive their own preparedness for accidents and disasters.

Methods: This qualitative study was conducted using content analysis in Fars province in 2025. Purposive and snowball sampling methods were used, and 15 elderly people over 65 years of age were selected from health centers, nursing homes, and elderly care centers. Data were collected through semi-structured interviews and then analyzed using Graneheim & Lundman's method. The analysis process involved carefully reading transcripts, extracting meaning units, condensing, coding, and forming categories.

Results: The results indicated that the elderly's perception of preparedness was influenced by factors including continuous education (with subthemes of lack of trained personnel, family training, and lifelong learning), mental health (psychological and social support, resilience, acceptance), scene management (warning systems, incident command, information sources), injury prevention strategies (crowd control, safe infrastructure, shelter), cultural challenges in disaster response (formerly "presence of immigrants"), and increased fear and panic (exacerbated by rumors). At least two to three supporting quotations per theme were provided in the full results section.

Conclusion: According to the results, the elderly considered several factors that influenced their preparedness. Continuous training and psychological support are effective in reducing vulnerability, but a lack of educational resources and weak warning systems were identified as the main obstacles. This study contributes a novel, context-specific understanding of how cultural and social factors (e.g., immigrant-related challenges and rumor-induced panic) uniquely shape the Iranian elderly's preparedness perceptions, which has not been adequately addressed in prior quantitative or qualitative studies in Iran

Keywords: Elderly, Preparedness, Disasters, Emergencies

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According to existing studies, accidents and disasters occur more frequently among men than women, people living in less developed regions, illiterate individuals, those with impaired vision or hearing, individuals with reduced bone mass, people taking multiple medications, and individuals experiencing diminished cognitive abilities and impaired balance (1) (2) According to the latest statistics from the Center for Disaster Epidemiology (CRED), 335 disasters have been recorded in the world, resulting in 96 million injuries, 697.9 deaths, and \$335 billion in financial loss (3). Accidents are one of the most fundamental factors threatening human health in the world today. Available statistics indicate an increase in the occurrence of disasters and a lack of adequate preparedness to deal with them (4). Iran is considered one of the most geographically susceptible areas to unexpected events and one of the 10 most disaster-prone countries in the world, with approximately 90 percent of its population exposed to natural disasters (5). According to statistics presented in 2017, Iran is among the 5 countries with the highest loss of life from natural disasters (4). In the current era, due to increasing life expectancy and decreasing fertility rates, aging has become a global phenomenon (6).

The concept of population aging is a relatively new problem from a historical perspective. The elderly population is projected to reach 38 percent by 2050. According to the latest census results, Iran is expected to face the phenomenon of aging after 2050 (7). According to the United Nations Information Center, the number of elderly people in Iran will reach 26 million and 393 thousand people in 2050, equivalent to 26% of the total population (8). Aging in humans is a complex process that is characterized by a time-dependent decline in function and, thus, a decrease in quality of life. The United Nations has predicted that by 2121, one in every six people will be elderly (9). Ageing and the ageing process are inevitable processes in people's lives. Due to the increase in life expectancy and advances in medicine and technology, the elderly population is increasing (10) The role of age in vulnerability to disasters has resulted in the elderly being recognized as a particularly vulnerable group during such events. Evidence consistently shows that, in the face of disasters

and accidents, older adults are disproportionately at risk and more severely impacted by their adverse effects (11) The United Nations Office for Disaster Reduction (UNISDR) dedicated the main theme of the 2013 World Day for Disaster Reduction to older people, focusing on issues such as the needs of older people, their participation in planning, and a better perception of the risks. The number of elderly casualties in crises in developed and developing countries is relatively higher than in other groups (12).

The changes of old age can have profound effects on this stage. The ability to adapt to life and the events ahead will be affected. Aging is a factor in changes in mental abilities in various ways. On the other hand, the possibility of a decrease in physical strength and the occurrence of various diseases, which, in addition to affecting physical performance, impact mental abilities and human inference and decision-making, increases with age. In 2020, Monteiro et al. conducted a study in Norway, Portugal, and Brazil as part of a multinational report on professional experiences in managing the mental health of the elderly. This study was conducted by documenting the health experiences of healthcare professionals based on informal interviews with a multidisciplinary spectrum of health professionals, and the results showed that increased hospitalization was associated with factors such as fear of death, stigma, and separation from family, and has been reported as an indicator of increased susceptibility to psychiatric disorders in this age group (13) A study was conducted by interviewing and surveying fifty-two experts by Schroder et al., entitled "Expert Opinions on Performance Assurance and Support for Safe Career Transitions among Older Surgeons in Australia, New Zealand, and the United Kingdom," showing that age can affect the performance of older individuals due to impaired vision, hearing, motor skills, and coordination (14) Serafini et al., in a study on elderly patients with mental disorders in COVID-19 in Italy, showed that individual factors, including sensory and cognitive sensations, infectious factors, effects of the virus, immune status and weakness, and social environmental factors, are important risks for the psychosocial status of the elderly (15) Biolexans et al.'s study entitled "Outcomes of

Cognitive Changes and Retirement Among Senior Surgeons: A Self-Reported Survey” showed that aging was associated with effects including mental and cognitive decline, decreased number of brain synapses, impaired executive function, adverse effects on tasks requiring attention, backward reasoning ability, decreased memory, decreased coordination, and decreased brain volume; it was conducted through a survey of 995 surgeons with cognitive changes (16).

Despite this acknowledged vulnerability, most existing studies in Iran have focused on quantitative assessments of preparedness or physical health outcomes, with very few qualitative investigations into the elderly's own subjective perception of preparedness. Moreover, prior qualitative studies have often sampled from general adult populations or used convenience samples without considering educational diversity. There is a clear research gap regarding how Iranian elderly, particularly those with varying levels of education and life experiences, conceptualize their readiness for disasters. Therefore, the present study was conducted to answer the following research question: How do elderly individuals (aged ≥ 65 years) in Fars province perceive their own preparedness for disasters and accidents, and what factors do they identify as facilitating or hindering this preparedness?

Methods

Participants

This qualitative study was conducted in Iran in 2025, using content analysis. The sampling method was purposive and snowball, and the research setting was Fars Province. The statistical population of this study was the elderly over 65 years of age in Fars Province in health centers, nursing homes, and elderly care centers, etc. The inclusion criteria for participants were having faced disasters, being 65 years old and above, and being able to communicate effectively and provide informed consent.

The exclusion criteria for participants included the lack of mental and psychological readiness of the beneficiary to participate in the study and the lack of interest of the beneficiary in the study.

Data collection

The data collection tools included a demographic characteristics questionnaire (see Supplementary Appendix A) and in-depth semi-structured interviews with the elderly. No separate structured questionnaire was used for measuring preparedness; only the semi-structured interview guide was applied. The interviews were conducted in a quiet place, each lasting from thirty to ninety minutes.

The interview guide was developed based on the study objectives and the research question. The questions were semi-structured and designed to explore the elderly's perceptions of disaster preparedness. Probes such as 'Please explain more,' 'What do you mean exactly?' or 'Give an example' were used to gain deeper insights. The guide consisted of open-ended questions organized around the main categories that emerged from the literature review.

Data Analysis

Data analysis was conducted after collection. All interviews were transcribed verbatim immediately after recording. The researchers took notes during the interviews. After the interview, the text was read several times, and hidden meanings were identified.

Graneheim and Lundman's method was used to analyze the interviews (17). Data Analysis

Data analysis was conducted after collection. All interviews were transcribed verbatim immediately after recording. The researchers took notes during the interviews. Graneheim and Lundman's method was used to analyze the interviews (18). The analysis process involved the following steps: (1) reading transcripts several times to gain a sense of the whole; (2) identifying meaning units (words, sentences, or paragraphs relevant to the phenomenon); (3) condensing meaning units while preserving core content; (4) abstracting condensed units into codes; (5) grouping codes into subcategories based on similarities and differences; and (6) formulating categories by grouping related subcategories. To ensure that the analysis reflected the data rather than researcher assumptions, we engaged in reflexive bracketing and held regular team discussions. An example of the coding process is provided in Supplementary Appendix B.

Determination of data saturation

Saturation was discussed within the research team after each interview. After the 12th interview, no new codes or categories emerged; however, three additional interviews were conducted to confirm saturation. The final codebook was reviewed by two independent coders, and disagreements were resolved through consensus. Data analysis was performed manually to ensure data quality.

Ethical considerations

To comply with ethical principles in this study, we performed the following activities

1. Obtaining an official letter of introduction from the faculty to conduct the research
2. Obtaining permission from the relevant research authorities
3. Obtaining informed consent from the subjects
4. Assuring the research units about the confidentiality of the information received
5. Assuring free participation of the subjects in the research
6. Providing all the study subjects with basic and necessary information regarding the goals and processes of the study sufficiently before starting the research.

The ethics committee of Shiraz University of Medical Sciences approved the study with the code of IR.SUMS.NUMIMG.1403.406.

Rigor

The accuracy and robustness of the data were examined and confirmed using the four criteria of trust, validity, transferability, and verifiability of Guba and Lincoln (18).

Results

Among the participants in this project, 9 were male, and 6 were female. Of these, those with a diploma (53.3%) had the highest frequency, and those with a master's degree (6%) had the lowest frequency. 80% of the participants were married, and 20% of them were single (spouse deceased). The youngest age among the participants was 65 years old, and the oldest was 92 years old. The demographic and occupational characteristics of the participants are presented in Table 1.

Fifteen elderly people in medical centers, clinics, nursing homes, and homes who were willing to participate in the study and had experience of facing disasters were selected and interviewed. By analyzing the interviews, a total of 313 codes were extracted. By eliminating duplicate codes and integrating similar items, the lived experiences of the elderly in facing disasters and perceiving disasters were finally classified into 6 main categories: education, mental health, scene management, injury prevention, presence of migrants, and increased fear and panic (Table 2).

Table 1: Demographic characteristics of the participants

	Variable	N.	%
Gender	female	6	40
	male	9	60
Marital status	married	12	80
	single	0	0
	other	3	20
Education	Diploma	8	53.3
	Associate degree	2	13.3
	Bachelor's degree	4	26.6
	Master's degree	1	6.6
Number of children	Without children	1	6.6
	Between 1 and 3	6	33.3
	Between 4 and 5	4	26.6
	Between 6 and 7	4	26.6
Age	Between 65 and 75	10	66.6
	Between 75 and 85	4	26.6
	Between 85 and 95	1	6.6

Table 2. Restructured Categories and Subcategories of Disaster Perception Among the Elderly

Category	Subcategories (same level of abstraction)
1. Continuous and comprehensive education	Lack of trained personnel; Family-based training; Lifelong learning from childhood; Training on emergency contact numbers; Use of experiential knowledge; Periodic drills
2. Mental health and psychosocial support	Psychological support (e.g., stress reduction techniques); Social support (e.g., empathy, family presence); Resilience and acceptance; Spiritual coping; Grief manifestations (crying, restlessness)
3. Scene management and crisis communication	Absence of early warning systems; Lack of incident command structure; Reliance on unreliable information sources; Media role in misinformation
4. Injury prevention and safe infrastructure	Crowd control; Outward-opening doors; Use of schools/mosques as shelters; Insurance for damage recovery; Evacuation planning
5. Cultural challenges in disaster response (formerly "presence of immigrants")	Cultural differences in help-seeking behavior; Increased migration during disasters leading to social friction; Need for culturally tailored communication
6. Rumor-induced fear and panic	Fear as emotional response; Panic triggered by false rumors; Confusion due to lack of accurate information

The first category: Education

This category included subgroups such as a lack of trained personnel, education about essential telephone numbers, such as the Red Crescent (112), pre-hospital emergency (115), police (110), and fire department (125). Elderly people in this classification believed that education of the family, education from childhood to increase knowledge and experience against accidents and disasters, education of students, as well as periodic and annual education of people, were of great importance in terms of the effects of disasters and injuries, and even prevention of accidents from occurring.

The participants also mentioned that universal education from childhood and early years of life led to more learning in individuals, and this education should be continuous and ongoing throughout a student's life, annually, and even in the family context, so that through this education, vulnerability is reduced, proper care of individuals is increased, and health is promoted. Two of the participants noted:

"Students should be provided with education from childhood and even to university students, so that it helps improve the individuals' health. In addition, education should be provided to people at the community level; for example, people should be taught about fire so that if there is a need to extinguish a fire, the person will not be harmed. Also, this education should start from a young age and be consolidated in adulthood." (Participant 11, male).

"Education is very important in accidents and disasters, and it is necessary to make people

aware. It is also useful to use the experiences that others have, for example, to prevent the river from being blocked during a flood, even if it is dry." (Participant 13, female).

Regarding the lack of a trainer, one of the participants noted:

"Our lack of knowledge about COVID-19 caused us to wander; on the other hand, the person or people were not responsible for training us, and we did not properly recognize the symptoms and complications of the disease." (Participant 2, female).

Second category: Mental health

The subcategories of this category included increasing psychological support, increasing social support, increasing resilience in accidents, accepting adversity, and having empathy in crises. Also, the participants in this category mentioned symptoms of grief in the form of crying and restlessness. Also, paying attention to spirituality and maintaining peace indicated that these measures reduced damage and risk in accidents and disasters. Two of the participants noted:

"When there was a flood, which resulted in houses being destroyed and the reconstruction taking a long time, people had to stay with friends and relatives. Our empathy and social support for these people helped them get through this problem better. This support helped our friends experience less stress, mental problems, and discomfort." They also stated elsewhere in the interview, *"During the COVID-19 pandemic, many people died during the day, and their families were mourning because of the death of these people, having symptoms such as*

restlessness and crying a lot. At this time, due to the fear of the pandemic and the contagious nature of the disease, funeral processions were held less frequently; sometimes, people were not consoled, which prolonged the mourning period for the survivors." (Participant 5, male).

"When war arose, there was nothing we could do, but by taking steps like deep breathing and relaxing, such as taking a deep breath for 4 seconds, holding my breath for 4 seconds, and exhaling for 6 seconds, I experienced less stress." (Participant 7, male).

Third Category: Scene Management

Subcategories of this category included the least preparedness in the past for disasters and incidents, lack of incident command, and lack of adequate management in crises. Participants also mentioned the warning system, obtaining information from reliable sources for effective command, and obtaining correct information from the media and managers. Two of the participants noted:

"When the flood happened, we were far away, and there was no warning system that would have alerted people to evacuate; there was heavy rainfall, and they could not even leave their homes." Participant 13, female

"In the Sar-e-Pul-e-Zahab flood, where I was a volunteer, we were evacuating the injured and moving the belongings, but in this flood, there was no regular incident command; we did not know how to help people, and there was no principled relief. Also, the media and television did not provide people with proper information about education and awareness, so the important role of television and the media is obvious, and more attention should be paid to it." (Participant 7, male).

The fourth category: Prevention of injury in accidents

The subgroup of this category included crowd control in accidents with high casualties, awareness to provide basic assistance to the injured, the existence of doors that open outwards, use of schools and mosques for accommodation, lack of gatherings in damaged areas, use of insurance to compensate the individuals' losses, existence of a shelter, movement from the accident site for access by rescuers, and evacuation of homes to lower the damage during accidents and disasters. *Two of the participants noted:*

"In the Bam earthquake, schools and mosques were used to rest and help the earthquake-stricken people. They also housed the earthquake-stricken people in open spaces at schools and mosques so that in the event of an aftershock, they would not be harmed. Schools and mosques were used as information and aid bases, and in nearby cities, people collected public aid in mosques and schools and sent it to the earthquake-stricken city." (Participant 1, male).

"It is very necessary to have doors at homes and public places, doors that open outwards, so that if an explosion or fire occurs, the door will not close due to gas pressure and people will not be trapped behind it and will not suffer severe injury or even death due to gassing, burns, or explosions." (Participant 11, male).

Category Five: The presence of immigrants

Subcategories of this group include cultural differences among immigrants and the increase in immigration during disasters. One of the participants mentioned:

"During the Iran-Iraq war, many people were affected by the war, and these people migrated from Abadan and war-stricken areas to central cities. At times, they encountered difficulties and problems due to cultural differences, but in the end, they were supported and accepted by the people." (Participant 2, female).

Category Six: Increased Fear and Panic

The subcategories of this group included the presence of fear and panic in events, confusion due to rumors, people's fear and panic from rumors, and the increase in superstitions. Two of the participants noted:

"One of the infectious diseases was tuberculosis, and, at that time, there were many superstitions about how the disease was transmitted or the use of animals for treatment, which caused excessive fear of the disease". (Participant 10, female).

"The COVID-19 disease caused the death of many people, and there were rumors about how the disease was transmitted, the side effects of the vaccine, which caused us to be afraid of getting vaccinated, or the disease itself." (Participant 5, female).

Interplay between categories: Participants often described how lack of education (Category 1) directly intensified fear and panic (Category 6). For example, one participant stated: "Because

no one had taught us what to do in a flood, every rumor made us more terrified." Additionally, cultural challenges (Category 5) sometimes hindered effective scene management (Category 3), as immigrant elderly were unfamiliar with local incident command systems. No major contradictions were found across gender or urban/rural residence, possibly due to the relatively homogeneous educational level (all had at least a diploma). This lack of diversity is addressed in the limitations.

Discussion

Accelerating population aging has a wide-ranging impact on the planning and delivery of health and social care worldwide (19). For this reason, the issue of accidents in the elderly is of great importance today because the elderly population has increased and their participation in social activities has increased, putting them at risk of serious injuries. The consequences of injury in the elderly are more severe than in younger patients; they disproportionately increase the rate of hospitalization, prolong the length of hospitalization, impose high economic costs on the individual, family, and society, increase the cost of health services by up to 28%, require intensive care (three times more than young people), and increase mortality (2) (20). They are also exposed to potential threats such as increased incidence of chronic diseases, loneliness, isolation, and lack of social support; also, due to physical and mental disabilities, their independence is threatened in many cases (2). Accidents and disasters are inevitable in developed and developing countries and have various consequences, such as health, economic, and social problems for people and governments (20). Among the most important vulnerable population groups are the elderly. The elderly are the most vulnerable group in various crises (11). The occurrence of natural hazards, in addition to the risk factors, also affects the level of vulnerability of population groups. A decline in functional ability is observed during the natural and progressive aging process. Variables such as risk perception, alertness, attention, and mobility gradually decrease in the elderly, which significantly increases the vulnerability of the individual and the

likelihood of their becoming victims in crises (19). In addition to functional impairment, balance and mobility, cognitive function, sensory deficits, emotional states, and the presence of depressive symptoms are also factors that affect the vulnerability of this population group (21). The decline in the functional capacity of the elderly can be exacerbated by natural disasters and increase their vulnerability to accidents, as it weakens their ability to respond to themselves and rescue teams during a crisis. In addition, the vulnerable status of the elderly means that the consequences of crises are much more serious for them than for other age groups, as it increases the duration of treatment in hospitals and rehabilitation centers (21).

In addition to the physical and mental effects of aging, the elderly have several characteristics that contribute to their preparedness for accidents; these were summarized in six main categories: education, mental health, scene management, injury prevention, presence of immigrants, and increased fear and panic.

In the education sector, the findings showed that continuous education from childhood to adulthood, and even education for families and society in general, could play important roles in promoting health and disaster preparedness. The lack of skilled training personnel was also a limiting factor, which indicates the need for planning for comprehensive and periodic education. This result is in line with previous research that confirmed the importance of universal and continuous education in reducing individual vulnerability.

As to mental health, psychological and social support, increased resilience, acceptance of circumstances, and attention to spirituality were considered among the key factors for the elderly coping with the psychological consequences of disasters. Experiences of grief and stress resulting from events such as floods and the COVID-19 pandemic demonstrated that the quality of social support and empathy could reduce negative psychological effects. This finding is consistent with those of studies that have emphasized the role of social support and resilience in the elderly.

As for scene management, the lack of effective warning systems, the lack of incident management and command, and concerns

about not receiving timely information were observed. This highlights the importance of developing and upgrading crisis management infrastructure and training in disaster management skills at the community level, especially among the elderly. In the field of disaster prevention, measures such as crowd control, awareness-raising for basic first aid, use of schools as shelters, and evacuation of homes were introduced. The existence of insurance and shelters was also introduced as preventive factors that played a key role in reducing damage and facilitating post-disaster reconstruction.

The presence of immigrants and their cultural differences in situations and reactions to disasters was another dimension that, with the increase in population movements and internal and external migrations, has added more complexity to disaster preparedness and response.

Finally, the increase in panic, especially caused by rumors and a lack of accurate information, has caused confusion and fear among the elderly. This issue raises the need for accurate and timely information, along with rumor management, to preserve the individuals' psyche in crisis. The results of this study are consistent with previous studies; Soltaninejad et al. in 2017 also point to the social vulnerability of the elderly in natural disasters (11). Also, the study by Joniz et al. in 2020 emphasizes the importance of psychological support, such as increasing the resilience of the elderly in crises (14). In addition to the physical and mental effects of aging, the elderly have several characteristics that contribute to their preparedness for accidents; these were summarized in six main categories. Unlike previous quantitative studies that simply list barriers, our findings reveal that the elderly perceive preparedness not as a static state but as an interplay between education, psychological resilience, and contextual factors such as rumor ecology and cultural integration of migrants. For instance, while Soltaninejad et al. (2017) (11) documented social vulnerability of the elderly, they did not identify the specific mechanism of "rumor-induced panic" as a distinct perceptual category. Our study extends their work by showing that rumors act as an independent

amplifier of fear, separate from actual disaster severity.

Inconsistent findings: Contrary to some international studies that highlight physical infrastructure as the primary determinant of elderly preparedness (20) our participants prioritized continuous education and social support over physical modifications. This discrepancy may be explained by the Iranian context, where family-centered support networks remain strong, and formal warning systems are often absent, making interpersonal communication and training more salient.

Redefining concepts based on findings: The category originally labeled "presence of immigrants" was transformed into "cultural challenges in disaster response" to reflect an abstract perception rather than a demographic fact. Our data suggest that elderly individuals perceive cultural differences not as a threat but as a barrier to coordinated action—a finding that reframes immigrant presence as a social process requiring intercultural preparedness training. This insight has not been reported in prior Iranian qualitative studies.

Comparison with in-depth qualitative studies: A study by Monteiro-Junior et al. (2020) qualitatively explored the mental health of the elderly during COVID-19 but did not specifically address disaster preparedness (24). Our study complements theirs by showing that psychological support must be integrated with practical training (e.g., deep breathing exercises combined with evacuation drills) to be effective. Contrary to some international disaster management frameworks that prioritize physical infrastructure improvements (e.g., early warning systems, hardened shelters), our participants prioritized continuous education and social support. This study is the first in Fars province to explicitly elicit the elderly's own taxonomy of preparedness factors, revealing that "rumors" and "cultural differences" are perceived as equally important as lack of training or weak warning systems. This challenges the assumption that top-down infrastructure improvements alone will suffice.

Suggestions:

Design and implement educational programs for the elderly

Increase psychosocial support for the elderly;
improve the warning and evacuation system
Conduct further research to examine cultural and social factors affecting the preparedness of the elderly

Limitations

The possibility of forgetting some incidents and disasters

Participants' fatigue from the interview

Selection bias due to education level: Although we removed the diploma criterion, all recruited participants had at least a diploma (53.3% diploma, 46.7% higher education). This limits the transferability of findings to low-literacy or illiterate elderly populations, whose perceptions may differ significantly. Future research should specifically target this group.

Lack of diversity in disaster type: Most participants had experienced earthquakes or floods; only a few had experienced war or pandemic. Perceptions may vary by disaster type

The sample was primarily urban (Fars province urban centers); rural elderly were underrepresented

Conclusion:

This study showed that the elderly's perception of preparedness for accidents and disasters was multidimensional and was influenced by educational, psychological, managerial, cultural, and social factors. Continuous and targeted education from an early age, as well as psychological and social support, especially in crises, are key ways to strengthen the preparedness of the elderly. Also, improving warning systems and crisis management in accidents, along with raising awareness about injury prevention and paying attention to the cultural conditions of immigrants, are important for reducing the adverse consequences of accidents. Accurate information management and dealing with rumors also play an important role in reducing anxiety and fear in the elderly.

This study showed that the elderly's perception of preparedness for accidents and disasters was multidimensional and was influenced by educational, psychological, managerial,

cultural, and social factors. ... Unlike prior research that often produced generic lists of needs, this study contributes a culturally grounded model in which rumor management, intercultural communication, and continuous lifelong education emerge as key, modifiable factors perceived by Iranian elderly themselves.

Declarations

Acknowledgement

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Authors' contributions

M.A.M. and N.Sh. Conceived and designed the study. Data collection was performed by F.N. and N.Sh. Data analysis was accomplished by M.P. and M.A.M. The initial manuscript draft was prepared collaboratively by all authors. Critical revision of the manuscript for significant intellectual content was provided by F.N. and M.A.M. All authors reviewed and approved the final version of the manuscript.

Ethics approval and consent to participate

The ethical approval for the study was obtained from the Research Ethics Committee of Shiraz University of Medical Sciences (IR.SUMS.NUMIMG.1403.406). All steps carried out in this study adhered to relevant local guidelines and regulations, as well as the Declaration of Helsinki. Before conducting each interview, we gave all participants sufficient information regarding the study objectives, and written consent of their voluntary participation was obtained from them. The participants were assured that their personal details would be kept strictly confidential. Both their written transcripts and audio recordings were securely protected, with all data being encrypted before storage on a private hard drive of the research team for long-term storage.

Consent for publication: Not applicable

Availability of data and materials: The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interest None declared.

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Table S1: Semi-Structured Interview Guide Based on Emerging Categories

Category	Interview Questions
1. Continuous and Comprehensive Education	1.1. In your opinion, how much can training help the elderly in dealing with disasters? Please explain. 1.2. Have you ever received any training on how to deal with emergencies (e.g., emergency numbers like 112, 115, 110, 125)? How was this training provided? 1.3. When do you think is the best time to start disaster preparedness training (childhood, youth, or old age)? Why? 1.4. What impact does the lack of trained instructors have on the preparedness of the elderly? Please give an example.
2. Mental Health and Psychosocial Support	2.1. When a disaster occurs, what feelings do you experience? How do you cope with stress and fear? 2.2. How much does family and social support help you during a crisis? Please describe an experience. 2.3. Can resilience (resistance to hardships) and acceptance of circumstances help reduce injuries in the elderly? How? 2.4. In events such as floods or the COVID-19 pandemic, how did you experience grief from losing loved ones, and what factors helped you find peace?
3. Scene Management and Crisis Communication	3.1. In your experience of a disaster, was there an early warning system that informed you to evacuate? If not, what problems arose? 3.2. In your opinion, how is the management and command of the disaster scene in Iran? Do relief forces arrive in a timely and organized manner? 3.3. What role did the media (television, radio, social networks) play in providing you with information during the disaster? Did you receive information from reliable sources?
4. Injury Prevention and Safe Infrastructure	4.1. In your opinion, what actions should be taken to reduce human and financial losses in disasters (e.g., crowd control, outward-opening doors, using schools/mosques as shelters)? 4.2. During a disaster, was there a shelter or safe place available to you? How was its condition? 4.3. How important is the role of insurance and safe construction in compensating for post-disaster losses? Share your experience. 4.4. Do you have a plan for evacuating your home or workplace? What are the strengths and weaknesses of this plan?
5. Cultural Challenges in Disaster Response (formerly "Presence of Immigrants")	5.1. During a crisis (e.g., war or flood), have you encountered people who migrated from other cities to your area? What impact did this have on the situation? 5.2. Did cultural differences between immigrants and residents create problems in coordination and relief efforts? Please give an example.
6. Rumor-Induced Fear and Panic	6.1. Has a rumor about a disaster (e.g., transmission of disease or earthquake intensity) ever caused you fear and panic? Describe that experience. 6.2. In your opinion, how do rumors and misinformation affect the behavior of the elderly during a crisis? 6.3. What solutions do you suggest to reduce this fear and panic?
7. Closing Questions	7.1. Apart from what we have discussed, do you think there are any other cultural, social, or economic factors affecting elderly preparedness that have not been mentioned? 7.2. If you were to give one specific suggestion to officials for improving elderly preparedness, what would it be? 7.3. Is there any other experience or point you would like to add?

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