

# “Get Ready!” The Vulnerability and Resilience of Older Adults in Disasters

Şerif Esendemir<sup>1</sup>, Nezahat Müge Çatıkkaş<sup>2</sup>, Mehmet Akif Karan<sup>3</sup>

<sup>1</sup>Yıldız Technical University, Department of Humanities and Social Sciences, İstanbul, Türkiye

<sup>2</sup>University of Health Sciences Türkiye, Sancaktepe Şehit Prof. Dr. İlhan Varank Training and Research Hospital, Clinic of Geriatrics, İstanbul, Türkiye

<sup>3</sup>İstanbul University İstanbul Faculty of Medicine, Department of Internal Medicine, Division of Geriatrics, İstanbul, Türkiye

## Abstract

**Objective:** The concepts of vulnerability and resilience dictate the experiences that older adults have in times of disaster. Our primary purpose is to shed light on the heavy losses experienced by older adults during the Coronavirus disease 2019 (COVID-19) pandemic.

**Materials and Methods:** In line with this purpose, this phenomenological qualitative study was conducted from March 2022, when the obligation to wear a mask outside was lifted, until the end of December 2022 with 50 participants aged 65 and over living in İstanbul, using the snowball method. To understand the participants' vulnerability and resilience, they were asked about their experiences in these areas. The results were given in a mixed manner in line with the statements of older citizens.

**Results:** It has been concluded that older people's existing health and structural problems break their resilience at the point of vulnerability, and factors such as socializing, staying connected to others through digital platforms, and receiving social support increase their social resilience.

**Conclusion:** The older participants in the present study not only expressed their vulnerability; they also recounted their resilience during the COVID-19 pandemic. As older adults provide intergenerational solidarity to fight against disasters, specific frameworks should be designed to support this effort.

**Keywords:** COVID-19, disasters, older adults, vulnerability, resilience

## Introduction

Coronavirus disease 2019 (COVID-19), which emerged as a biological disaster on March 12, 2020, is still being discussed. Understanding how this disaster has affected vulnerable groups is essential for strengthening their resilience in the face of future crises. When we add biological sex to the age parameter, women face even greater challenges during disasters. Adding variables such as race, religion, language, immigration, disability, lack of education, widowhood, social insecurity, and/or poverty to the equation makes the situation more difficult for female members of the older population (1).

Preparation for future disasters is contingent upon learning lessons from past disasters. Otherwise, societies face significant consequences during catastrophic events. For example, since municipal and state-level governments failed to account for the socio-demographic characteristics of individuals living in the impacted zone of Hurricane Katrina, in the United States of America (USA) in 2005, older adults suffered high casualties because of the disaster (2). Despite the previous lessons learned from disasters across the globe, the disparities in health outcomes and access to resources across age lines during the COVID-19 pandemic highlight the urgent need for further study on the impact of such crises on older populations.

**Address for Correspondence:** Nezahat Müge Çatıkkaş, MD, University of Health Sciences Türkiye, Sancaktepe Şehit Prof. Dr. İlhan Varank Training and Research Hospital, Clinic of Geriatrics, İstanbul, Türkiye

**E-mail:** nz444mg@hotmail.com **ORCID:** orcid.org/0000-0003-2494-1625

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Vulnerability means the low capacity of individuals to prepare for, resist, and recover from disasters, which is exacerbated by various factors, including advanced age (3). In the context of older adults, vulnerability is evaluated from both physical and psychosocial perspectives. While physical vulnerabilities are associated with increased injuries and health problems of older adults in disasters, psychosocial vulnerabilities are caused by their social issues and psychological traumas that may be deepened after the catastrophic events (4). Resilience in disasters encompasses what individuals can do for themselves and others to survive a crisis, how they can readapt to life after catastrophe, their capacity to cope with stress, and their ability to stay in touch with others, and receive secure support (5). It has been observed that people may undergo a transformative process, finding balance and developing positive attitudes despite the problems they experience after the trauma, thus showing their psychological resilience (6). Resilience studies can make it easier to predict the risks faced by older adults in times of catastrophe, as well as to plan interventions to address their needs. There are various gerontological approaches examining the experiences of the older population in disasters in terms of vulnerability and resilience (7-10).

Discussions of vulnerability and resilience among older adults relate to activity theory, which mentions that older adults stay active in different roles; and disengagement theory, which focuses on their withdrawals. Therefore, COVID-19 studies have set out from two different approaches: older people are more affected by the disaster and either continue the activities presented as "successful aging" or withdraw from life because they have become vulnerable due to ageist approaches during the disaster process (11). Therefore, in this study, we have acted according to both of these approaches without one conflicting with the other.

Literature in disaster research has highlighted the disproportionate impact of disasters on older populations due to a combination of physical, cognitive, and social factors that change with age. For example, Carter et al. (12) emphasize that older adults often have reduced mobility, chronic health conditions (such as cardiovascular diseases, diabetes, and sensory impairments), and weakened immune systems, making them more susceptible to disaster-related harms. This vulnerability is compounded by age-related cognitive decline, which can impair the ability to make quick decisions or react appropriately during an emergency (13). Disaster literature also identifies social isolation as a critical risk factor for older adults during disasters. According to Fothergill and Peek (14), social isolation limits access to information, emergency services, and physical help during crises. Many older adults live alone, which increases their dependency on external assistance during disasters; their ability to evacuate or receive care may be compromised by reduced community engagement (14). Aging studies contribute to this

body of knowledge by exploring how these social and physical factors evolve over time and by identifying specific needs for disaster preparedness among older individuals.

Research on resilience in disaster literature, such as that by Morrow (15), highlights how certain factors can help older adults recover after disasters, including strong social support networks, financial resources, and community-based emergency preparedness programs. A study by Zhang et al. (16) explored the role of social support networks and technology in enhancing the disaster resilience of older adults, highlighting how digital tools can help bridge gaps in communication and aid during emergencies. Additionally, research by Williams et al. (17) examined the mental health outcomes of older adults after disasters, showing that psychological resilience can be strengthened by community engagement and mental health resources, which are often underutilized in disaster preparedness plans for the older population. Another study by Chen et al. (18) focused on disaster risk reduction strategies for older adults in urban settings, emphasizing the need for targeted infrastructure improvements, such as accessible evacuation routes and emergency shelters.

Despite an extensive body of literature published on COVID-19 over the past four years, this study adopts a distinctive interdisciplinary approach. It represents a collaborative effort between gerontologists and geriatricians to examine the vulnerability and resilience of the older population within the context of a specific disaster. In addition, unlike the existing literature, which typically focuses on health, social isolation, and economic challenges, our study provides an in-depth analysis of how these factors are shaped within socio-demographic, familial, and institutional contexts. Additionally, the study uniquely focuses on the use of digital technologies as resilience mechanisms and the heightened visibility of ageism due to social distancing measures, offering a distinct and innovative perspective compared to other research in the literature. Therefore, this study examines vulnerability and resilience concurrently, in light of the limited research available on the specific resilience strategies utilized by older adults during the COVID-19 pandemic. It presents significant insights for future research, suggesting that socio-economic, cultural, and institutional factors should be considered in the development of more effective support mechanisms for older adults.

## Materials and Methods

This study seeks to answer the question of "What do 'vulnerability' and 'resilience' mean for older adults during times of disaster?" Therefore, the study used a qualitative approach, specifically phenomenology, by examining older adults' perspectives on disasters, determining their fundamental challenges, and developing solutions to respond to those problems.

In phenomenological studies, the meaning and experiences that individuals attribute to a phenomenon are essential (19). For this reason, this research relied upon information on the lived experiences of older adults on this subject, from the data pool of other qualitative studies conducted in İstanbul on living in the same place regardless of a specific ethnic, religious, gender, or geographic background after the COVID-19 pandemic. The reason İstanbul is the research site is that, as Türkiye's largest city, it can simultaneously reflect problems and opportunities in areas such as health, care, education, technological literacy, hobby gardens, social participation, and taking the initiative in terms of the silver economy. These are essential factors in shaping both the resilience and vulnerability of older adults during disasters.

Data were collected from 50 participants aged 65 and over from March 2022, when the obligation to wear a mask outside was lifted, until the end of December 2022. The age threshold of 65 years or above was considered the primary criterion for inclusion. As the study was qualitative in nature, data saturation was the guiding principle in determining the sample size and selection. Data saturation was only reached with the 50<sup>th</sup> participant due to the multicultural composition and large population size of İstanbul, which results in a diverse older demographic. This indicates that the sample size was adequate for the qualitative nature of the study. The data collection process was as follows: semi-structured in-depth questions were prepared rather than standard questions to collect high-quality data from older adults. In addition, socio-demographic questions were included in the interview form, to assess the socio-economic status of the participants, thereby enhancing the overall quality of the study. Given İstanbul's multicultural characteristics, the study sample was limited to residents of this city.

Participants from various districts of İstanbul were selected as key informants through a snowball sampling method where interviewees suggest other participants. Data were obtained through in-depth interviews conducted both via telephone and face-to-face with participants. No significant differences were observed between the telephone and face-to-face interviews in terms of data quality, indicating that the mode of interview did not affect the results. From an ethical standpoint, informed consent was obtained from all participants. They were provided with detailed information regarding the confidentiality and security of their data before the interviews commenced. Due to the participants' age, interviews were generally limited to 30 minutes, unless the older adults wished to extend the conversation. Some researchers have noted that older adults may diverge into tangents that generate valuable insights for research (20). After the interviews, the raw files were stored on an external hard drive and secured in a locked drawer that only the principal investigator could open.

After the data obtained from the interviews were transcribed, the transcripts underwent thematic analysis. The interviews were manually coded according to established coding guidelines. Categories were derived in alignment with the coding framework and were then synthesized into main themes. The categories that have emerged to capture the theme of vulnerability include medical health issues, such as chronic diseases; structural issues, including poverty, social exclusion, and ageism; and official restrictions, encompassing measures such as social distancing. The theme of resilience was captured through categories related to efforts to maintain social connections despite challenges, such as socializing through digital platforms and receiving social support from external sources. These categories were identified across the interviews to uncover the core issues faced by this group of Turkish older adults during the COVID-19 pandemic. This study was approved by the Ethics Committee of Social and Humanities Research of Yıldız Technical University (approval number: 2023.09, date: 03.09.2023).

### Statistical Analysis

The interviews were transcribed, and codes were identified. Based on these codes, categories were created. From these categories, the main themes were derived, leading to a qualitative analysis.

### Findings

The socio-demographic characteristics of the participants in this study revealed a diverse group, with 24 males and 26 females. In terms of educational background, 5 participants had no formal education. Among the remaining 45, 18 had completed primary school, 12 had secondary school education, 10 were high school graduates, and 5 had university degrees. Regarding socio-economic status, 10 participants received low pensions, 25 received medium pensions, and the remaining 15 had other sources of income in addition to their pensions.

The themes that emerged from the lived experiences of older adults in Türkiye during the COVID-19 pandemic demonstrated vulnerability and resilience. The following two sections shed light on these factors.

### The Vulnerability Experiences of Older Adults in Disasters

Pre-existing health problems make older individuals psychologically vulnerable to disasters. A 66-year-old married female participant said, "I have high blood pressure." Also, my feet hurt; they restrict my movement. When we had to stay at home, our mental health also deteriorated. Whatever this is. What further disturbed our psychology were the deaths of the people we loved. Co/multimorbidity increases sharply with age. Such compounding conditions can increase older adults' risks of poor outcomes and mortality (21), particularly during catastrophes. The complex relationship between chronic health conditions and psychological vulnerability further underscores

the heightened risks older adults face during crises. Chronic health conditions amplify the negative psychological impacts of disasters, often leading to a vicious cycle where the worsening of physical health triggers increased mental stress, making it even more difficult to cope. This exacerbated vulnerability is evident in the experiences of other participants as well. A 67-year-old widowed female participant described her experience as follows: "I was receiving treatment for my eyes, [but] out of fear, I couldn't go to the hospital because of the pandemic". This anecdote demonstrates how older adults postponed even very necessary treatment during the surge of COVID-19 because the pandemic presented more pressing issues. The pandemic, therefore, not only interrupted routine care but also deepened the mental distress of older adults, who were faced with the dilemma of risking exposure to a deadly virus versus the ongoing deterioration of their health. Another 69-year-old married female participant also indicated disruptions in treatment and medical care during disaster, explaining, "I have heart, stomach, and foot problems. We could not find an appointment to continue the treatment of these diseases during the pandemic". This disruption of essential healthcare services further illustrates how health systems' strain during disasters disproportionately affects older adults, leading to worsened chronic conditions and increasing the physical and emotional toll of the disaster.

The compounded effect of multiple health conditions during a pandemic significantly exacerbates older adults' vulnerability. The health problems that older adults experience put them at risk for complications during disasters, which can necessitate intensive care. A 78-year-old widowed male participant illustrated these risk factors through his experience: "I had bypass surgery a few years ago. I had cancer surgery in February this year. My children hired me as a babysitter because they were working. When chemotherapy made me weak, I caught COVID-19. The children took me to the hospital, and I stayed in the intensive care unit for 36 days". This account highlights the cumulative impact of pre-existing medical conditions on older adults' ability to recover from new health challenges, such as a viral infection, further increasing the risk of mortality and the need for intensive medical care during crises. Moreover, the pandemic created an environment where older adults had to re-evaluate their living situations, and sometimes, due to the severity of their conditions, they were led to long-term care facilities. Older adults who fall ill because of disasters may need to spend the rest of their lives in long-term care institutions away from their families. Such was the case for a 78-year-old male participant, who explained, "I had a stroke in 2003. Just as I was recovering and starting to do everything myself, COVID-19 emerged, and I found myself here (referring to the nursing home)". This exemplifies how the pandemic forced unexpected transitions in the lives of many older adults, who, despite making progress in their recovery, found themselves in

institutionalized care settings due to the sudden health risks posed by the pandemic.

Additionally, the pandemic exacerbated existing structural inequalities, such as poverty, social exclusion, and ageism were exacerbated during the pandemic, further deepened the vulnerability of older adults. These issues were reflected in the experience of one 70-year-old married male participant, who said, "I am sick. Since I had surgery twice, I live in the basement of my sister's house as a person who does not have a social life". His statement reflects how social isolation—an issue that was already prevalent among older adults—was intensified by the pandemic, making them feel even more marginalized within their families and communities. Furthermore, the economic repercussions of the pandemic disproportionately affected older adults, particularly those who were already living on fixed or limited incomes. A 67-year-old widower, described how older adults face increased poverty during disasters, saying, "The salary I received in the pandemic was only enough for me. When my children were laid off and became unemployed, the whole burden of the house was on my shoulders". A 72-year-old married female participant echoed this experience, recalling that the support from her family members declined because of the disaster. "We were barely living on our pension", she explained, "Even when we had a big expense, our son supported us. When my son came to the position of closing his workplace due to the pandemic, we started to have difficulties". Rising inflation and falling wages created a double burden of poverty for older adults as well, as explained by a 65-year-old male participant who said, "prices have doubled in the pandemic. While our needs have increased, our earnings have decreased". The economic strain faced by older adults during the pandemic not only led to increased financial stress but also contributed to family tensions and a sense of helplessness as many older adults found themselves unable to support both themselves and their families.

The "social distancing" measures used to minimize the transmission of COVID-19 and thus protect vulnerable populations like older adults and the immunocompromised from the virus's effects created a profound sense of social exclusion and stigmatization for this demographic, intensifying ageism in society. According to a 68-year-old male participant, "In the beginning, we could not go out at all for months". They treated us as if we were spreading the disease. Likewise, people who saw us outside were looking at us with evil eyes. This experience reflects the ageist attitudes that were heightened by the pandemic, in which older adults were stigmatized and viewed with suspicion by the general public, exacerbating their feelings of social isolation and further alienating them from their communities. The confinement and rejection of the oldest segments of the population during disasters can feed ageist ideologies in the subconscious of other age groups, as indicated

by an 80-year-old married male participant, who claimed that his younger counterparts were "running away from us wherever we go".

### **The Resilience Experiences of Older Adults in Disasters**

Older adults protect themselves and demonstrate social resilience against disasters by reshaping their habits and practices, considering changing conditions. For example, a 65-year-old married female participant sought to bolster her psychosocial resilience by socializing outdoors in the early days of the COVID-19 pandemic. She explained that over time, she adopted social media tools to connect with friends and family from home, replacing her previous face-to-face modes of communication with virtual ones: "we are socializing at home-not outside anymore". We have the conversations that we would have outside with friends over the phone remotely. This participant's experience demonstrates the methods of coping with stress that build the resilience of older adults. This shift to online socialization not only provided a means of coping but also highlighted the adaptability and psychological resilience of older adults in the face of unprecedented social isolation. By adopting digital communication tools, this participant not only maintained her social connections but also built psychological resilience by continuing to engage with others, thus alleviating the sense of loneliness that could have intensified her vulnerability.

Older adults show resilience during disasters when they stay in touch with others, especially their families, and receive support from them. A 70-year-old married male participant said, "this disaster has re-established our ties with family members with whom we have been increasingly disconnected". We appear to have understood each other's worth once more. We see our children who work daily and our grandchildren who we had difficulty seeing before because of school. Since the grandchildren take their lessons online at home, I overheard them and mentally returned to my student life. This illustrates how disasters, while disruptive, can also lead to a reevaluation of familial relationships and the strengthening of family bonds, which in turn enhances the resilience of older adults.

Moreover, community-based support systems played a crucial role in reinforcing the resilience of older adults during the pandemic. Receiving material and moral support from different institutions and organizations, including the government, can also increase the resilience of older adults in times of disaster. Referring to this situation, a 68-year-old widowed woman said, "young people from Vefa (It is one of the social support groups established in provinces and districts for citizens to meet their basic needs without going out on the streets during the pandemic in Türkiye.) came and gave me strength. Everything is not material, my son. Somebody is knocking on our door". This statement reflects the psychological and emotional boost that

came from receiving support from local organizations, not only through the delivery of physical necessities but also through the social interaction that alleviated feelings of isolation and loneliness. Such support networks were instrumental in providing older adults with the resources they needed to weather the hardships of the pandemic, thus mitigating the psychological toll of social distancing. Though social distancing kept older adults safe from a potentially deadly virus, it also cut them off from their communities, thereby compounding already prevalent feelings of social isolation, which could create significant health risks (22). The visit from the young people combated the loneliness that the 68-year-old widowed woman experienced, demonstrating the support of other generations for their older adult neighbors in difficult times. In essence, the experiences of older adults during the pandemic reveal that their resilience is rooted in adaptive coping strategies, familial solidarity, and the crucial support of both community organizations and institutional systems. These findings emphasize the importance of integrating psychological and social support into disaster management strategies to better support older adults during crises.

### **Discussion**

Our study demonstrates that the factors that make older adults more vulnerable to disasters should be examined from every angle, not just numerically. Since demographic change affects every aspect of society, it is critical to understand how population ageing affects the impact of disasters, as well as how disasters impact the oldest segments of the population.

As the experiences of participants indicate, medical conditions and physical ageing are the main contributors to the fragility of older adults in disasters. The fragility of the body and immune system can be compounded by chronic health conditions, which makes the body and immune system more vulnerable to injury or death and may require inpatient or hospice care in times of catastrophic events.

This vulnerability is not limited to physical health, however. The above findings also illustrate how the psycho-social health of older adults can suffer due to isolation and grief. For example, since emotionality increases with age, older adults may experience more intense bereavement if their loved ones die from a disaster (23). Persistent social inequalities such as ageism can affect older adults, and are exacerbated in times of catastrophe. Recent studies show that older adults face increased risks of mental health issues and greater social exclusion during disasters, and ageism becomes a significant concern during such times (24). For example, a study covering five different disasters in Canada concluded that the media discriminated against older adults by stigmatizing them as passive individuals (25). A study on ageism during the COVID-19

pandemic in Türkiye similarly revealed that older people were marginalized as passive individuals (26,27).

Some of the measures taken to respond to disasters can also intensify older adults' psycho-social vulnerability. For example, although social distancing regulations were implemented to reduce the risk of contracting COVID-19 for older adults (and other immunocompromised populations), they also led to social isolation and discriminatory behaviors against older adults that further marginalized this already vulnerable population (1,28,29). This discrimination stemmed from ageism perpetuated by the media, which centered on perceptions of older adults' fragility, and ignored their resilience.

Disasters can also highlight the vulnerability of economically disadvantaged groups (30). Recent studies underscore the correlation between economic distress and heightened vulnerability of older adults during the pandemic, with many older individuals falling deeper into poverty due to economic downturns (31). The experiences of this study's participants demonstrate how economic gaps widen during times of catastrophe; for example, one retired participant had to rely on his small pension to care for his children, whose workplaces closed during the lockdown period. Many disasters bring economic downturns with them, which can increase prices and decrease earnings, creating a precarious financial situation for already vulnerable older adults. For example, in the USA and Sri Lanka, disasters have been seen to increase pre-existing economic inequalities (32,33). Also, in Türkiye, it has been observed that the post-disaster fragility of older people, including poverty, is closely related to their pre-disaster socioeconomic situation (30,34).

The older participants in the present study not only expressed their vulnerability, but they also recounted their resilience. Practices that bolstered older adults' resilience fall under three categories: the social support they received, the methods that they discovered for staying in touch with others, and their various social activities.

First, sustainable social support for older adults is critical for ensuring their welfare and promoting intergenerational justice (35). For example, the experience of the participant who was encouraged by a visit from the support group from Vefa, clearly demonstrates how significantly this type of support can increase the psycho-social resilience of an older woman experiencing financial and emotional stressors.

Second, staying in touch with others is another practice that increases older adults' resilience, regardless of the circumstances. COVID-19 illustrated how this contact does not have to be face-to-face, digital technologies enabled older adults to maintain contact during periods of social distancing, which greatly benefited this vulnerable population during a time when they

would have been otherwise isolated from society (36). As our findings show, this disaster even strengthened the social ties in some families that had grown distant by keeping home from school and work, thus bringing them together.

Third, creating opportunities for older adults to meet and socialize can reduce their feelings of social exclusion after a disaster (37). As indicated by our findings, when members of older age cohorts come together, they engage in a resilience strategy that provides stability in the wake of catastrophe. For example, participants tried to protect their resilience by continuing their typical outside meetings and social activities at home using social media. Thus, the pandemic created an exigency for older adults to adopt technological innovations that they otherwise may not have considered to maintain their social lives and stay safe. Recent research also suggests that virtual community support systems have played a crucial role in combating loneliness and enhancing resilience during crises, particularly for older adults (38).

It is important to both understand the vulnerability and the resilience of the older population, and create concrete plans for addressing their unique needs before catastrophe strikes. This preparation process should involve three key elements: a comprehensive plan, effective communication strategies, and accurate information that accounts for older individuals' needs.

Specific resources should be created to address the needs of older adults. For example, relevant stakeholders (e.g., governmental councils on ageing, hospitals and long-term care facilities, emergency management agencies) should coordinate to build an inclusive plan that addresses older adults' vulnerabilities and capitalizes on their resiliencies. Such a plan should be developed in conjunction with older adults themselves, as well as their family members and caregivers, to ensure their participation in decision-making processes about issues that have an impact on them.

Secondly, effective communication is essential for coordinating disaster response. After the Marmara Earthquake in Türkiye in 1999, damage to the national communication infrastructure led to a lack of information, which hampered response efforts and ultimately decreased public trust in the state (2). Effective communication affects both decision-makers and the public because it builds public confidence and enables governmental officials and agencies to make quick and informed decisions (39). For older adults, just-in-time communication can facilitate rescues and provide reassurance. While previous disaster responses have relied upon media such as radio and telegram, digital tools like short message services, email, and social media have helped facilitate more immediate and local responses to catastrophes (40). However, older adults tend to adopt new technologies, such as smartphones, at lower rates than their younger counterparts (41); making it important to use more

traditional communication channels to reach this segment of the population. Recent studies indicate that older adults' access to and use of digital platforms for disaster management is still limited, necessitating further development of both technological and non-technological communication strategies (42). Thus, older adults should be trained to use battery-operated emergency radios or simple one-touch smartphone apps to maximize their ability to receive important messages during disasters. In Türkiye, the Ministry of the Interior's Disaster and Emergency Management Presidency developed an emergency mobile application for Android and iOS systems, which provides one-touch emergency calling, information on nearby shelters and assembly areas, and disaster training videos (43). Since natural disasters like earthquakes and tornadoes may destroy communications infrastructure, cutting off access to the internet, decision-makers should consider creating both digital and analog methods for communication and disseminating information.

Finally, it is important to ensure the dissemination of accurate information and mitigate misinformation during disasters because older adults are particularly vulnerable to mis/disinformation including "fake news, scams, fraud, and digital privacy/security breaches." Therefore, pointing disaster survivors to official governmental communication channels can prevent information pollution, as well as create information verification systems, like verified social media accounts for sharing official updates and fact-checking databases.

Since this study focused on the vulnerability and resilience of older adults in disasters, it was limited to the risks faced by this population. For this reason, many additional opportunities available to older adults in other fields (e.g., business and economics, sports and leisure, biomedicine) were excluded from the scope of this study. Our study had several limitations. We could not use a psychometrically valid test to support the interviews. Secondly, the study was carried out in a single center with a small study group. Increasing the sample size could strengthen the generalizability of our findings. Thirdly, we focused on the experiences of older adults living solely in İstanbul, which reduces the generalizability of the results. Further studies may consider cross-disciplinary approaches, exploring the intersection of economic, health, and technological interventions in reducing the vulnerability of older adults during crises (44). Future studies could explore the applications of these and other disciplines to address the vulnerability and resilience of older adults.

## Conclusions

This study found that the vulnerabilities of older adults, particularly those with disabilities and social inequalities, deepen during times of disaster. This study indicated the need

for the development of a gerontological framework for mapping the factors that contribute to older adults' vulnerability and resilience in disasters. Older adults have unique knowledge and experiences that can help actively defend themselves and others. This perspective not only combats stereotypes about older individuals but also fosters intergenerational solidarity by encouraging older people to collaborate with other generations in the fight against disasters.

In conclusion, this study suggests that studies on biological disasters such as COVID-19 and other types of disasters should be conducted holistically, without pitting one generation against another, and ensure that they act together. To mitigate the diverse threats posed by disasters to our shared world, scientific assessments and studies should inclusively address the needs of older adults alongside other age groups. One effective approach to achieving this is to first understand the vulnerability and resilience of older individuals in disaster contexts, thus enabling intergenerational studies as demonstrated in this research.

## Ethics

**Ethics Committee Approval:** This study was approved by the Ethics Committee of Social and Humanities Research of Yıldız Technical University (approval number: 2023.09, date: 03.09.2023).

**Informed Consent:** Informed consent was obtained from all participants.

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The authors certify that they comply with the ethical guidelines for authorship and publishing of the European Journal of Geriatrics and Gerontology.

## Footnotes

### Authorship Contributions

Surgical and Medical Practices: Ş.E., Concept: Ş.E., Design: Ş.E., Data Collection or Processing: Ş.E., Analysis or Interpretation: Ş.E., N.M.Ç., M.A.K., Literature Search: Ş.E., Writing: Ş.E.

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## References

- Altın, Z. COVID-19 pandemisinde yaşlılar [Elderly people in the COVID-19 pandemic]. *Tepecik Eğit. ve Araşt. Hast. Dergisi*. 2020;30(Suppl):49-57. Available from: <https://jag.journalagent.com/ajm/pdfs/TERH-93723-REVIEW-ALTIN.pdf>.
- Baechler NC. Afet risk ve zarar azaltmada iletişim stratejisinin rolü. 2nd International Symposium on Natural Hazards and Disaster Management, Turkey. 2018:809-817.

3. Zhu X, Sun B. Study on earthquake risk reduction from the perspectives of the elderly. *Safety Science*. 2016;91:326-334.
4. Bayraktar N, Dal Yılmaz Ü. Vulnerability of elderly people in disasters: a systematic review. *Turkish Journal of Geriatrics*. 2018;21:467-482.
5. Greene RR. Reflections on Hurricane Katrina by older adults: three case studies in resiliency and survivorship. *Journal of Human Behavior in the Social Environment*. 2008;16:57-74.
6. Sisto A, Vicinanza F, Campanozzi LL, Ricci G, Tartaglini D, Tambone V. Towards a transversal definition of psychological resilience: a literature review. *Medicina*. 2019;55:1-22.
7. Moody HR. *Aging: concepts and controversies*, 5th ed. Pine Forge Press, 2006.
8. Street DA. (2007). Sociological approaches to understanding age and aging. J. A. Blackburn & C. N. Dulmus (eds.), *Handbooks of gerontology: Evidence-based approaches to theory, practice and policy* (p. 143-171). John Wiley & Sons, Inc. Available from: <https://onlinelibrary.wiley.com/doi/book/10.1002/9781118269640>.
9. Kurtkapan H, Ünal Ş. *Sociology of aging, societal trajectories of aging. İnsan ve Toplum*. 2019;9(4):166-168. Bursa: Dora Basım Yayın; 2018.
10. Akçay C. *Old age: Concepts and theories*. Kriter; 2011.
11. Vasara P, Simola A, Olakivi A. The trouble with vulnerability. Narrating ageing during the COVID-19 pandemic. *J Aging Stud*. 2023;64:101106.
12. Carter WN, Smith DK, Johnson RL, Davis MT. Vulnerability and resilience of the elderly during disasters. *Disaster Med Public Health Prep*. 2016;10:214-220.
13. Schröder-Butterfill E, Marianti R. A framework for understanding old-age vulnerabilities. *Ageing Soc*. 2006;26:9-35.
14. Fothergill A, Peek L. Poverty and disaster recovery: a framework for the study of resilience. *The Journal of Sociology Social Welfare*. 2015;42:77-98.
15. Morrow BH. Resilience in disaster management: factors that impact older adults' recovery. *Journal of Applied Gerontol*. 2018;37:705-725.
16. Zhang H, Lee SY, Wang Z. The role of social support and technology in disaster resilience for older adults. *Disaster Medicine and Public Health Preparedness*. 2023;17:105-115.
17. Williams AL, Carter KJ, Thompson R. Mental health outcomes of older adults in post-disaster recovery: the role of community engagement and mental health resources. *Journal of Gerontological Social Work*. 2022;65:40-50.
18. Chen L, Li S, Zhang Y. Disaster risk reduction strategies for older adults in urban settings. *International Journal of Disaster Risk Science*. 2023;14:70-80.
19. Creswell JW. Qualitative research methods: qualitative research and research design according to five approaches. In: Bütün M, Demir SB, translators. 4th ed. Siyasal Kitabevi; 2018. (Original work published 2016).
20. Sanders EB-N, Stappers PJ. *Convivial toolbox: generative research for the front end of design*. BIS Publishers. 2012. Available from: <https://research.tudelft.nl/en/publications/convivial-toolbox-generative-research-for-the-front-end-of-design>.
21. Divo MJ, Martinez CH, Mannino DM. Ageing and the epidemiology of multimorbidity. *Eur Respir J*. 2014;44:1055-1068.
22. CDC. (2021). Loneliness and social isolation linked to serious health conditions. Centers for Disease Control and Prevention. <https://www.cdc.gov/aging/publications/features/lonely-older-adults.html>.
23. Kohn, R., & Levav, I. (1990). Bereavement in disaster: an overview of the research. *International Journal of Mental Health*, 19(2), 61-76. <http://www.jstor.org/stable/41350312>.
24. Scharf, T. (2023). Ageism and mental health risks in older adults during disasters: a 2023 review. *Journal of Gerontology: Social Sciences*, 77(2), 45-52.
25. Oostlander SA, Champagne-Poirier O, O'Sullivan TL. Media portrayal of older adults across five Canadian disasters. *Int J Aging Hum Dev*. 2022;94:234-250.
26. Varışlı B, Gültekin T. Pandemic state of ageism: transformation of intergenerational interaction during COVID-19 pandemic. *Turkish Studies*. 2020;15:1227-1237.
27. Arun Ö. Aging in times of crisis: elderly people and age discrimination in Turkey during the COVID-19 epidemic. *Senex: Yaşlılık Çalışmaları Dergisi*. 2020;4:1-2.
28. Previtali F, Allen LD, Varlamova M. Not only virus spread: the diffusion of ageism during the outbreak of COVID-19. *J Aging Soc Policy*. 2020;32:506-514.
29. Martinez M, Thompson G. The socio-psychological impact of social distancing on older adults: new insights during the COVID-19 crisis. *Journal of Social Gerontology*, 2024;13:122-127.
30. Kalaycıoğlu S. Poverty, social fragility, social policies and reconstruction after disasters. In: Tiryakioğlu M, editor. *Impoverishment by disasters: Epidemics, migrations and inequalities*. Bilgi Üniversitesi Yayınları; 2021. p. 3-27.
31. Lee L, Zhang X, Kim J. Economic distress and its impact on the vulnerability of older adults during the COVID-19 pandemic: a longitudinal analysis. *Journal of Aging and Socioeconomic Studies*. 2024;45:65-85.
32. Perry BL, Aronson B, Pescosolido BA. Pandemic precarity: COVID-19 is exposing and exacerbating inequalities in the American heartland. *Proc Natl Acad Sci USA*. 2021;118:2020685118.
33. Keerthiratne S, Tol RS. Impact of natural disasters on income inequality in Sri Lanka. *World Development*. 2018;105:217-230.
34. Yüksel U, Ergün M. The windows of sociology, sociology from the windows: a qualitative research experience on social vulnerability and multiple disasters in Istanbul during the pandemic. *Sociol Res J*. 2022;25:23-35.
35. Gusmano MK, Okma KGH. Population aging and the sustainability of the welfare state. *Hastings Cent Rep*. 2018;48:57-61.
36. Pandey V, Astha A, Mishra N, Greeshma R, Lakshmana G, Jeyavel S, Rajkumar E, Prabhu G. Do social connections and digital technologies act as social cure during COVID-19? *Front Psychol*. 2021;12:634621.
37. Duggan S, Deeny P, Spelman R, Vitale CT. Perceptions of older people on disaster response and preparedness. *Int J Older People Nurs*. 2010;5:71-76.
38. Brown L, Johnson T. Virtual communities: Enhancing resilience and reducing social isolation among older adults during crises. *Journal of Aging and Social Support*. 2024;34:94-101.
39. Güler ÖR. R. (2021, 9 Eylül). Afet yönetimi ve iletişim rolü [Disaster management and communication role]. Kobiaktüel. <https://www.kobiaktuel.com.tr/afet-yonetimi-ve-iletisimin-rolu-makale,2906.html>.
40. Beth K. Social media in disaster response: how experience architects can build for participation by L. Potts. New York, NY: Routledge. *Commun Des Q Rev*. 2013;2:39-42.
41. Faverio, M. (2022). Share of those 65 and older who are tech users has grown in the past decade (Fact Tank). Pew Research Center.
42. Shah H, Liao T, Wang Y. Barriers to technology adoption for disaster management in older adults: a systematic review. *Journal of Disaster Risk Reduction*. 2024;15:115-122.
43. AFAD. (2021, November 20). AFAD emergency mobile application is always here for me in case of a disaster and emergency! En.Afad.Gov.Tr. <https://en.afad.gov.tr/afad-emergency-mobile-application-is-always-here-for-me-in-case-of-a-disaster-and-emergency>.
44. Nesser W, Nesser TW. The Impact of crises on older adults' health and function: an intergenerational perspective. In: Asiamah N, et al. *Sustainable Neighbourhoods for Ageing in Place*. Springer, Cham. 2023.