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Vulnerability of elderly people during climate-induced disasters in Sub-Saharan Africa: a scoping review

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Climate-induced disasters present significant challenges to vulnerable populations, especially elderly individuals with disabilities who face unique difficulties in preparing for, responding to, and recovering from such catastrophic events. Despite growing concerns about the impact of climate-induced disasters in sub-Saharan Africa, there is a notable lack of information regarding the specific vulnerabilities experienced by elderly people with disabilities in this region. This study aims to address this gap by identifying and synthesizing the existing literature on the subject. Researchers conducted a scoping review, selecting articles from regional (Sabinet African Journals, Science Direct) and global databases (PubMed, PsycINFO, and ProQuest) using search strategies with Boolean operators, truncations, and MeSH terms. The review included primary studies (qualitative, quantitative, and mixed methods) published between 2013 and 2023 that met specified inclusion and exclusion criteria, with a focus on assessing the quality of the included studies. The findings revealed that elderly people in sub-Saharan Africa face significant physical, cognitive, and socio-economic challenges due to limited access to resources, inadequate infrastructure, and social exclusion. These challenges are amplified in the sub-Saharan context, highlighting a critical gap in inclusive risk reduction strategies during disasters. The review emphasizes an urgent need for targeted research and the development of community-based intervention programmes to improve the resilience and wellbeing of elderly individuals with disabilities facing climate-induced disasters. This study not only mapped the existing literature but also underscored the scarcity of research in the field of climate-induced disasters, with only six articles focusing on the elderly. The researchers recommend the development of more inclusive disaster risk reduction strategies and policies.

KEYWORDS

climate-induced disasters, elderly, resilience, sub-Saharan Africa, vulnerability

1 Contextualization of the study

Climate change is universally acknowledged to have significant implications for human health, as evidenced by [Watts et al. \(2021\)](#), which has highlighted compelling evidence over recent decades. The adverse impacts of climate change are projected to disproportionately affect vulnerable populations, communities, and health systems ([Nilsson et al., 2021](#)). Vulnerability, as defined by [Wisner et al. \(2004\)](#), encompasses individual and contextual

characteristics influencing resilience to natural hazards. Socioeconomic status, gender, age, and environmental factors all contribute to differential experiences of vulnerability (Chagutah, 2013). Specifically, Chagutah (2013) highlights the susceptibility of elderly individuals, women, people with disabilities, and those with poor socioeconomic status to disaster impacts. Even in the aftermath of disasters, women disproportionately shoulder caregiving responsibilities, exposing them to heightened risks during floods (Oyilizee et al., 2022). This burden underscores the need for inclusive disaster management strategies, as emphasized by Meyer-Ohlendorf (2009), which recognize the unique vulnerabilities of elderly and disabled populations.

The repercussions of climate-induced disasters were vividly demonstrated by Hurricane Katrina, where nearly 60% of the victims were individuals aged 65 and above (Jonkman et al., 2009). This tragic event underscores the urgent need to address the vulnerabilities of elderly populations in the face of climate change-induced disasters. Addressing these concerns is paramount, especially considering projections suggesting that climate change will demand urgent attention by 2030. For instance, Michaux (2021) underscored that nearly half of the world's population will face water stress due to water shortages by 2030 while the United Nations Educational, Scientific and Cultural Organization UNESCO (2023) highlighted that water shortages will worsen in regions such as the Middle East and the Sahel in Africa. This looming crisis is particularly acute in semi-arid regions, where water scarcity is escalating, potentially displacing millions. It is forecasted that by 2030, approximately 700 million individuals may experience displacement (Hameeteman, 2013), a number that reflects the severity of the impending crisis. Moreover, alarming estimations by Watts et al. (2017) suggest that by the year 2107, a billion people could be compelled to migrate as a consequence of climate change.

It is undistputable that climate-induced disasters have dire implications on the health of individuals and elderlies are no an exception. For instance, heat waves, as documented by the World Health Organization (2018) and Ebi and Hess (2020), contribute significantly to excess cardiovascular and respiratory mortality among the elderly. Poor thermoregulation exacerbates cardiovascular risks (Millyard et al., 2020). Conversely, during winter months, extremely cold temperatures increase the risk of death from pneumonia and respiratory illnesses among older populations (Nelson et al., 2021). Research conducted by Reckien et al. (2017) suggests a shifting landscape in heat-related mortality, with younger demographics increasingly affected. Nevertheless, the elderly remain highly vulnerable to health challenges associated with rising temperatures. Furthermore, gender disparities in heat-related mortality are evident, with females exhibiting greater susceptibility (World Health Organization, 2010; Reckien et al., 2017). Physiological factors, as proposed by Otto et al. (2017), may contribute to this discrepancy, with women's higher heat intolerance potentially attributable to spending more time in poorly ventilated interior spaces.

Conversely, Otto et al. (2017) suggests that elderly men, often experiencing loneliness, face heightened vulnerability to heat-related risks. Warner (2010) underscores the delayed response of older individuals to disasters, citing lower physical mobility and strong ties to ancestral lands as contributing factors. This

reluctance to relocate during disasters is echoed by Salick and Byg (2007), with Khan et al. (2011) noting the added vulnerability of those with lower socioeconomic status, particularly evident in regions like Bangladesh. Moreover, elderly individuals, alongside women and people with disabilities, are frequently overlooked in disaster preparedness and response efforts (D'Orsi and Naldi, 2021). Despite this, protocols such as the Protocol on Older Persons and the Protocol on Persons with Disabilities in Africa aim to prioritize assistance for these vulnerable groups during disasters.

1.1 Positioning sub-Saharan Africa to climate change

Much like other continents, Africa is not immune to climate change and Intergovernmental Panel on Climate Change. (2014) and Niang et al. (2014) have identified Africa as a continent vulnerable to climate change. The Network of African Science Academies (2015) has noted that in Africa, countries that makes up sub-Saharan African region are rapidly growing into climatic diversity. This is due to the fact that countries in Sub-Saharan Africa depend on the agricultural sector which employs about 65% of labor force (World Bank, 2013). The challenge is noted by Mueller et al. (2014) who pointed out that as much as countries in sub-Saharan Africa depend on agriculture for food security, the concern is that there is inadequate water. Due to inadequate water, agricultural production is affected by climate change as about 96% of crop production depends on rainfall (World Bank, 2013). The unfortunate reality is that farmers are affected by extreme drought which affects their inability to maintain food security. This poses a threat to the attainment of the first sustainable development goal, namely that of *No Poverty* by 2030 (Sustainable Development Goals, 2015). Various authors (Müller et al., 2011; Sarr, 2012; Niang et al., 2014) have already noted a decline in agricultural yields in some parts of sub-Saharan Africa regions due to shortened rainfall and also destructive rainfall (Thomas et al., 2007; Songok et al., 2011) which leads to floods (Connolly-Boutin and Smit, 2016) that makes it difficult for productive crop production. As such, due to these hideous challenges, the sub-Saharan African region was chosen, for this study, since the livelihood of 70% of Africans depends on the agricultural sector which is dependent on rain. However, it has been established that Africa is vulnerable to drought and at other times to excessive rainfall (Matlakala et al., 2021). A case of excessive rainfall that affected agriculture could be drawn from the impact of cyclones Dineo and Katrina.

1.2 Problem statement

Climate change is increasingly leading to more frequent and severe disasters in Sub-Saharan Africa, disproportionately impacting vulnerable populations. Extreme weather events like flooding, drought, and heatwaves are threatening lives and livelihoods across the region (Codjoe and Atiglo, 2020; Thiede et al., 2022). Understanding effective coping strategies is crucial for enhancing the resilience and adaptive capacity of at-risk communities. Internally displaced populations, such as those

relocated due to flooding and riverbank erosion in Bangladesh, face severe livelihood challenges including food insecurity, unemployment, income loss, and housing and sanitation issues in their new places of residence (Lilier et al., 2022). Women and girls are often more vulnerable to the effects of climate change due to socioeconomic inequities and their roles in agricultural production and natural resource management (Nellemann et al., 2011). The most concerning element is that men are said to be drawn away from agricultural activities (Glazebrook et al., 2020) yet Assan and Sibanda (2015) reported that women who are in agriculture often fight for resources with men.

To cope with climate-related shocks, affected populations employ a variety of strategies at the household and community levels. Assan and Sibanda (2015) highlight the importance of considering gender in analyzing adaptation, vulnerability, and resilience in local communities. Diversifying crops and livestock, adopting drought-resistant varieties, and shifting planting times are common agricultural adaptations (Awuah-Nyamekye and Mawere, 2015; Thiede et al., 2022). Migration, either seasonal or permanent, is another coping mechanism, although it can lead to the loss of social ties and cultural identity (Lilier et al., 2022; Thiede et al., 2022).

1.3 Review question

What are the experiences of elderlies in sub-Saharan Africa during climate-induced disasters?

1.3.1 Aim

This study was aimed at describing the vulnerability of elderly people during climate-induced disasters in Sub-Saharan Africa. This is to gather knowledge gaps in the field and make recommendations for future studies focusing on this phenomenon.

1.3.2 Objectives

- To determine the vulnerability of elderlies during climate-induced disasters in sub-Saharan Africa;
- To identify the coping strategies used by elderlies after experiencing climate-induced disasters.

2 Methods

Researchers used a scoping review (Arksey and O'Malley, 2005) in mapping the existing literature on the vulnerability of the elderly during climate-induced disasters. Researchers opted for a scoping review due to its ability to allow the researchers to rapidly scope the body of literature and map emerging evidence on a particular topic (Munn et al., 2018). In this paper, the researchers were guided by Arksey and O'Malley (2005)'s five steps of conducting scoping reviews. In the first step, the researchers identify the research question guided by the population, exposure, outcome (PEO) framework to ensure that the question is topic-focused. In line with the topic, the aforementioned research question was

developed: "How do elderly individuals in Sub-Saharan Africa experience vulnerability during climate-induced disasters?"

The second step was to identify relevant studies/literature. To do so, researchers downloaded articles from regional and global databases. Moreover, they also requested the assistance of a subject librarian, as Arksey and O'Malley (2005) recommend teamwork with professional help. The global databases (ProQuest, EBSCOhost, PubMed, and PsycINFO) and regional databases (Sabinet African Journal and Science Direct) were used using search strategies including Boolean operators, truncations, and Medical Subject Headings (MeSH) terms. To accumulate more literature, researchers performed a backward and forward search on Google Scholar. Researchers used the search strategy (vulnerabilities OR challenges OR experiences OR "coping strategies" OR "coping mechanism" AND elderly* OR "older persons" AND "climate-induced disasters" OR "natural disasters" OR "climate hazards" AND "sub-Saharan Africa").

Thirdly, the researchers moved to the process of selecting studies wherein two reviewers (KM and CM) were tasked with the opportunity of screening the articles [Topic and Abstract (TA) and Full text (Tx)]. Arksey and O'Malley (2005) enunciated that during this step, researchers have to develop inclusion and exclusion criteria. Studies focusing on individuals aged 55 and older were included in this review, as Sabharwal (2015) noted the complexity of defining the elderly age due to variations in life expectancy, quality of life, and functional capacity within the older population. Moreover, the review included qualitative, quantitative, and mixed-method studies conducted between 2013 and 2023 to ensure that the review reflects recent or current dynamics around the phenomenon at hand.

Before synthesizing the data from selected articles, the researchers developed a data charting (step four) table that was used to guide them on the kind of information to look for when screening articles (see Table 2). The data charting table had headings such as author and year, title, approach/design, setting/context, population, and main findings. Then the researchers moved to step five which was to summarize, synthesize and report on the findings. The summarized data was placed into the data charting table as per the developed headings. To do this activity, two reviewers (KM and CM) were responsible for synthesizing data with FK serving as a mediator and resolving conflicts. Moreover, the quality of papers was appraised using the Mixed Method Appraisal Tool (MMAT) and the scores were not reported in the chart as this was a scoping review and not a systematic review.

To analyse the data from the selected articles, the researchers employed two data analysis methods: descriptive analysis and thematic content analysis. Descriptive analysis was applied to the demographic characteristics of the selected articles, such as population, approach, and context or location. Thematic content analysis was used to synthesize the main findings of the selected articles, as this method is particularly suitable when there is a scarcity of literature on the topic (Clarke and Braun, 2013). Furthermore, Clarke and Braun (2013) noted that thematic content analysis is ideal for analyzing various documents, which in this case were the different articles selected by the researchers. One reviewer (FK) utilized the comment commander feature in Microsoft Word to identify codes in the main findings, while the other

two reviewers (KM and CM) served as co-coders. To ensure transparency, the researchers followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) guidelines (Moher et al., 2009).

2.1 Ethics

Although this is a review paper and does not involve human participation, the researchers acknowledge the importance of adhering to ethical guidelines. Wager and Wiffen (2011) provide several recommendations for maintaining ethical standards in research. Firstly, the researchers ensured that they avoided plagiarism by properly citing all sources used in the study. Secondly, they maintained transparency throughout the research process by saving the search history and documenting all steps followed using the PRISMA-ScR guidelines (see Figure 1). Lastly, all materials used in the study are securely stored on the Microsoft One Drive account of the principal researcher, Dr K. Matlakala.

3 Results

3.1 Demographics of the studies

A total of six articles were sampled and placed on the data chart (Table 2) for the purpose of charting the data and collating and summarizing data (step 4 and 5 of scoping review). The majority of the studies ($n = 5$) used a qualitative research methodology to unpack the vulnerabilities of the elderly during climate-induced disasters (Dayour et al., 2014; Mavhura, 2019; Omolo and Mafongoya, 2019; Nyahunda and Tirivangasi, 2020; Musasa, 2023) whereas one study ($n = 1$) used mixed methods research approach (Mhlanga et al., 2019). From the selected studies, the majority of the studies were conducted in Zimbabwe (Mavhura, 2019; Mhlanga et al., 2019; Musasa, 2023), followed by South Africa (Nyahunda and Tirivangasi, 2020; Musasa, 2023), Kenya (Omolo and Mafongoya, 2019) and Ghana (Dayour et al., 2014). It is not surprising to see that the majority of the studies were conducted in Zimbabwe and South Africa, as these countries are particularly vulnerable to climate-induced disasters such as floods and cyclones.

3.2 Vulnerabilities of the elderly during disasters

There is a dearth of literature on the vulnerabilities of the elderly during disasters. Most of the studies conducted on climate-induced disasters have been focused on women and others do not disaggregate the findings based on age. However, researchers were able to sample six (6) articles which are presented in the data extraction. From the sampled articles, it is revealed that elderly people do not have funds to fix their houses (Nyahunda and Tirivangasi, 2020) and they lack resources to recover from climate-induced disasters due to little income (Mavhura, 2019). Moreover, elderly people have physical conditions as they are weak (Omolo and Mafongoya, 2019) and during disasters, they are unable to run for their lives as they are not fit (Musasa, 2023). Moreover, due to their poor health (Mavhura, 2019), elderly are more prone to

stress and trauma which eventually leads to their death (Mhlanga et al., 2019). Women are tasked with the responsibility of taking care of the elderly during disasters (Musasa, 2023). However, it has been reported that some elderly succumb to death as they lack social contacts for assistance during disasters (Mavhura, 2019). One of the articles in the sample communicated a message resembling that:

elderly in Zimbabwe are particularly vulnerable to disaster-related trauma, which they may struggle to cope with due to limited support systems. The study found that older adults who experienced Cyclone Dineo in the Sipepa area reported high levels of stress, anxiety, and depression in the aftermath of the disaster (Mhlanga et al., 2019).

These challenges are also summarized by country on Table 1 and are extracted from data charting found on Table 2.

3.3 Coping mechanisms used by the elderly during disasters

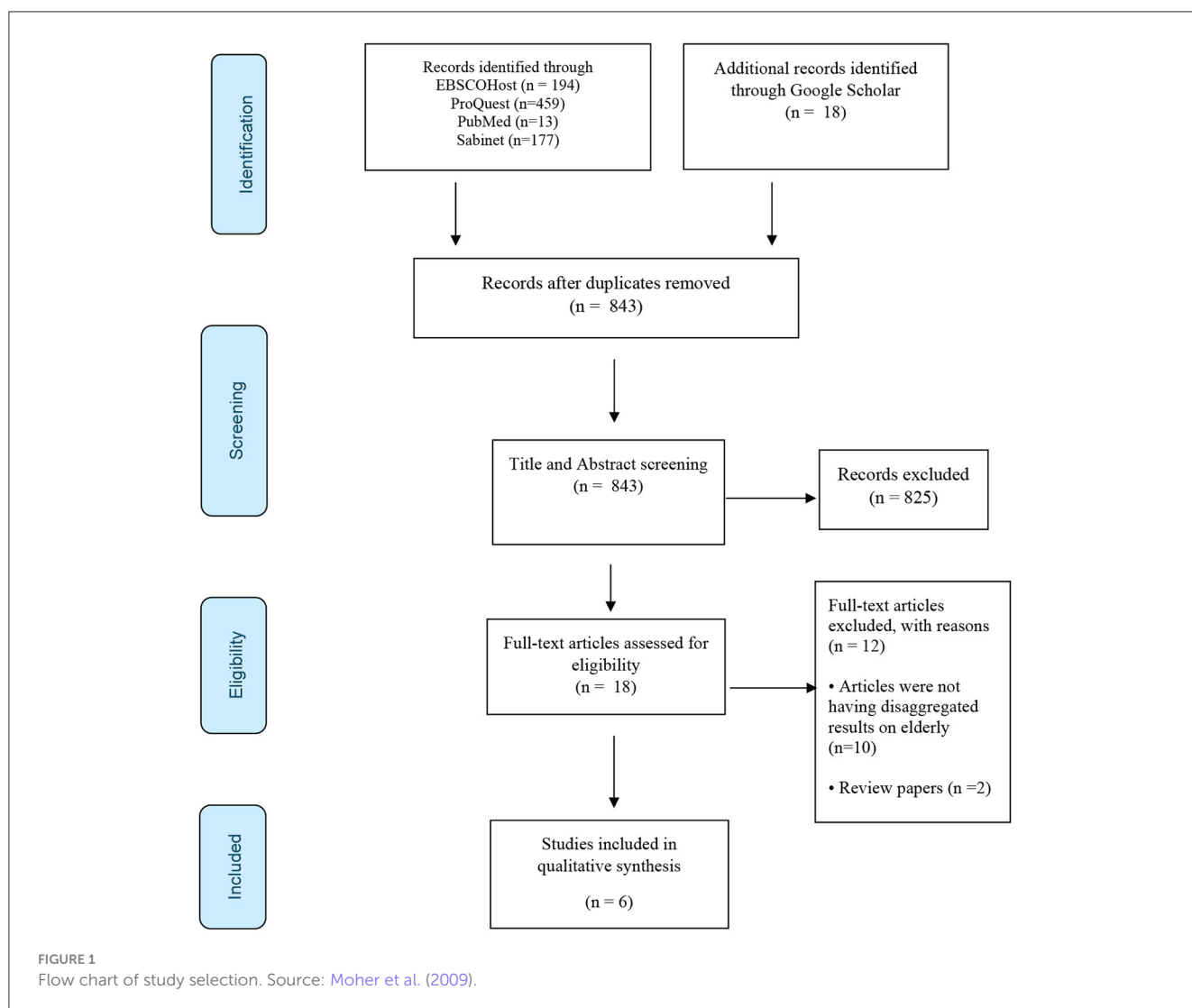
Elderly people have been reported to employ various coping mechanisms during climate-induced disasters. For example, during droughts, some elderly individuals store water in reservoirs to ensure they have access to water (Dayour et al., 2014). Those who cannot afford reservoirs may resort to planting drought-resistant plants to avoid experiencing poverty (Dayour et al., 2014). Furthermore, when heavy rains occur, elderly people may seek assistance from village residents to help place stones on their roofs to protect their structures (Dayour et al., 2014). Others, however, may simply rely on prayer, leaving their fate in the hands of God (Dayour et al., 2014).

4 Discussion

Based on a thorough examination of the collected literature using thematic content analysis (Clarke and Braun, 2013), two key themes were identified: (i), vulnerabilities of the elderly to climate change impacts, and (ii) coping and adaptation strategies used by the elderly during disasters. In the following section, the researchers discuss these themes with relevant sub-themes in detail, drawing upon the findings of the relevant studies.

4.1 Vulnerability of the elderly to climate change

There is a dearth of literature on the vulnerabilities of the elderly during disasters in sub-Saharan Africa. Most of the studies conducted on climate-induced disasters have been focused on women and farmers (Nyahunda and Tirivangasi, 2020; Matlakala et al., 2021), while others do not disaggregate the findings based on age. One of the reasons for many articles focusing on farmers could be that in many parts of Sub-Saharan Africa, the elderly play a crucial role in agricultural production and food security, especially in rural areas (Aboderin and Beard, 2015). However, the physical demands of agricultural labor become increasingly challenging with age, and climate-related stressors like prolonged droughts and



erratic rainfall patterns can further strain their capacity to cope (Spear, 2015; Serdeczny et al., 2017).

Despite the lack of literature, findings of the reviewed articles highlighted that the elderly population in Sub-Saharan Africa is particularly vulnerable to the impacts of climate change due to a combination of psychological, physical and economic factors (Aboderin and Beard, 2015; Spear, 2015). Spear (2015) and Serdeczny et al. (2017) found that the impact of extreme weather events such as heatwaves, floods, and droughts disproportionately affect older adults, exacerbating existing vulnerabilities and increasing the risk of morbidity and mortality (Spear, 2015; Serdeczny et al., 2017). This section dwells on the factors contributing to the vulnerability of older people during disasters and the varying impacts that these elderly experience.

4.1.1 Physical factors

The review found that the challenges experienced by the elderly are exacerbated by their weak physical health which eventually leads to their death (Mavhura, 2019; Mhlanga et al., 2019). This is because the elderly must walk long distances to seek help during

disasters (Mavhura, 2019) as well as to access healthcare services in their area (Aboderin and Beard, 2015; Spear, 2015). In water scarce countries such as Kenya, the elderly walk long distances in order to access water exposing themselves to heat-related illnesses and also experiencing exhaustion whilst on their way to rivers (Omolo and Mafongoya, 2019). Again, during floods, due to lack of strength, the elderly struggle to move with pace to areas of safety leading them to be swept away by floodwaters (Mavhura, 2019; Musasa, 2023). These findings align with a study by Aldrich and Sawada (2015) which demonstrated that physical strength during disasters is a predictor of survival as most elderly couldn't run fast enough to save themselves from the Indian Ocean tsunami. Thus, Serdeczny et al. (2017) recommends that the physical safety and wellbeing of the elderly population must be a key consideration in adaptation and disaster risk reduction efforts.

4.1.2 Psychological factors

The sudden occurrence of catastrophic events can lead to stress and trauma for the elderly (Mavhura, 2019; Mhlanga et al., 2019). For instance, the sudden loss of homes, livelihoods, and

TABLE 1 Table of vulnerability.

Country	Specific challenges faced by elderlies	Reasons for varying impacts
Zimbabwe • Musasa	<ul style="list-style-type: none"> Elderlies suffer from the lack of funds to fix houses High levels of stress, anxiety, and depression among elderly due to disaster-related trauma Older women tasked with caring for family members during disasters, increasing emotional burden and stress level 	<ul style="list-style-type: none"> Limited income and resources for recovery Limited support systems for coping with emotional burden
South Africa	Limited support systems for elderly individuals to cope with disaster-related trauma	Lack of social contacts for assistance during disasters
Kenya	Elderly individuals walk long distances to access healthcare, exposing themselves to heat-related illnesses	Limited access to healthcare services in remote areas
Ghana	Elderlies rely on government resources like water tanks and reservoirs during droughts	Government assistance as a primary source of support during disasters

loved ones during disasters can be particularly be devastating for the elderly, who may already be coping with age-related physical and cognitive declines (Nyahunda and Tirivangasi, 2020). Musasa (2023) captured it well when reporting that, in countries like Zimbabwe, Mozambique, Malawi, and South Africa, older women are often tasked with caring for family members during disasters, which can add to their emotional burden and stress levels. Therefore, the loss of the person whom the elderly cared for causes them to experience mental illness (Mhlanga et al., 2019). Thus, Codjoe and Atiglo (2020) advocate for integrating mental health considerations into climate change adaptation efforts which is crucial for promoting the psychological resilience of the elderly population. Whilst, both Mhlanga et al. (2019) and Nyahunda and Tirivangasi (2020) recommend collaborative efforts between government agencies, humanitarian organizations, and community-based groups to help ensure that the unique needs of older adults are met in disaster preparedness, response, and recovery efforts.

4.1.3 Economic factors

Financial insecurities among the elderly population appear to be a significant barrier to their resilience and recovery. The findings of the review revealed that elderly people living in mud houses struggle to rebuild or fix their houses after disasters due to lack of money (Nyahunda and Tirivangasi, 2020). The reason could be that most older people are dependent on social grants which is not enough to cover their basic needs and build at the same time. In corroboration, Mavhura (2019) indicated that most elderlies lack the financial resources to recover from disasters because they earn less income and cannot afford to buy building materials. Due to these challenges, the elderly may become susceptible to more disasters which may subsequently lead to diseases and death.

4.2 Coping and adaptation strategies used by the elderly during disasters

The fact that climate-induced disasters lead to mental health challenges cannot be disputed. Unlike young people who find refuge by resigning from work (Lilier et al., 2022) elderlies are at home and have to find new adaptive coping strategies as it

deemed crucial for building psychological resilience to climate change (Serdeczny et al., 2017; Sifelani et al., 2022). Some of the coping strategies adopted by elderlies are discussed below;

4.2.1 Reliance on the state resources

From the sampled articles it became evident that elderly people in sub-Saharan Africa depend on the assistance that is provided by government resources during drought (Dayour et al., 2014). These government resources during disasters become crucial for their wellbeing, making it easier for them to survive the unbearable situations caused by disasters. For instance, Dayour et al. (2014) highlighted the significant collaboration of the government of Ghana, its development partners as well as community stakeholders in setting up irrigation systems and providing water tanks and reservoirs to combat the effects of droughts during the dry season. Similarly, Omolo and Mafongoya (2019) reported that some of the elderly in Kenya have been provided with boreholes to enable them to cope with droughts thereof their mental wellbeing.

4.2.2 The use of traditional methods

A study by Ngwese et al. (2018) conducted in Ghana contends that many communities rely on traditional and local knowledge. Ngwese et al. (2018) affirmed that communities rely on snails and chameleon egg hatch which gives an indication of incoming disasters. Furthermore, Ngwese et al. (2018) reported that flooding at Chietanga river was predicted by animals such as a small population of hippopotamus movement before flooding. So, the residents build flood barriers made from mud to prevent water from going through their farms. Moreover, Mavhura (2017) reported that communities will also ensure that they store food and water using polythene bags to store dry food, seeds and grains. Moreover, elderlies who are involved in farming opt to plant drought-resistant plants that will ensure that they do not experience food insecurity (Dayour et al., 2014).

4.2.3 Religious methods

Spirituality is another form of method of adapting and coping mechanism that is used during a disaster. Farhan et al. (2022) reported that strong spiritual belief causes people to surrender and accept disaster events as God's will. In Kenya, it has been reported

TABLE 2 Data charting.

References and location	Title	Research approach and data collection tool	Population (include age if possible)	Main findings
<ul style="list-style-type: none"> Dayour et al. (2014) and Ghana 	Local residents' perception and adaptation/coping strategies to climate-induced disasters in Bankpama, Wa West District, Ghana	<ul style="list-style-type: none"> Qualitative approach Focus groups and In-depth interviews 	<ul style="list-style-type: none"> 10 community elders, 10 men and 10 women 50% aged 50+ 6.7% below 20 13.3% between 20-29 13.3% between 30-39 	<ul style="list-style-type: none"> Participants believed that natural disasters result from punishment by God/gods and bushfires and felling of trees Participants use methods such as planting on high land and avoiding valleys to adapt to the calamities of disasters During droughts, participants resort to planting crops with shorter maturation periods and changing calendars for cropping although this strategy is short-term They also used stone bonding to prevent roofs from being ripped off, asked assistance from family and friends and prayed to God
2. Omolo and Mafongoya (2019) and Kenya	Gender, social capital and adaptive capacity to climate variability: A case of pastoralists in arid and semi-arid regions in Kenya	<ul style="list-style-type: none"> Qualitative approach. Literature review of secondary data sources focus group discussions (FGDs) and key informant interviews (KIIs) 	<ul style="list-style-type: none"> 104 households in Namoruputh and 275 Households in Katilu 	<ul style="list-style-type: none"> The results of the study indicated that elderly women and men were found most vulnerable to natural disasters This population group is vulnerable because they are weak and require assistance from family members which sometimes they don't get To cope with drafts the participants used coping strategies such as contraction boreholes, reservoirs, digging shallow wells and migration to areas with water
3. Nyahunda and Tirivangasi (2020) and South Africa	Effects of climate change on rural women in Makhado municipality, Vhembe district, Limpopo province, South Africa	<ul style="list-style-type: none"> Qualitative approach, multiple case study design Group discussions and individual interviews 	40 women and traditional healers	<ul style="list-style-type: none"> The study revealed that elderly women living in mud houses had their houses destroyed by disasters and did not have money to fix the damages
4. Musasa, (2023) and Zimbabwe, Mozambique, Malawi and South Africa	Disasters, pandemics, vulnerability factors and their impacts on women and children in africa	Qualitative approach. Document reviews, interviews, focus group discussions and observations		<ul style="list-style-type: none"> The study revealed that natural disasters affect women more than men Women are required to take care of their elderly family members during natural disasters because the elderly can not run
5. Mhlanga et al. (2019) and Zimbabwe	Natural disasters in Zimbabwe: The primer for social work intervention	Mixed-method approach. Scale-based questionnaire and in-depth interviews	60 victims of cyclone Dineo and 5 five key informants in Sipepa area	<ul style="list-style-type: none"> Researchers found that elderly are vulnerable to stress and trauma; The elderly are more exposed to death during disasters
6. Mavhura (2019) and Muzarabani District, Zimbabwe	Analyzing drivers of vulnerability to flooding: a systems approach	Systems approach. Interviews, workshop deliberations, field observations and census reports	15 key informants from Muzarabani	<ul style="list-style-type: none"> The study revealed that elderly people are most vulnerable to natural disasters It is found that elderlies lack financial resources to recover from disasters due to little income Lack of access to building materials and physical strength to build strong structures has been found to contribute to disaster vulnerability among elderlies Elderlies are vulnerable to trauma which they struggle to deal with Elderlies are unable to receive flood warnings due to poor health and a lack of social contacts

that elderlies engage in heavy prayers demonstrating their adaptive nature and multifaceted coping strategies (Omolo and Mafongoya, 2019). Teller (2018) has positioned deep-rooted faith as a method to assist the elderly in dealing with stressors caused by disasters. Moreover, Samaraweera (2022) has found that faith does not only assist in dealing with stressors during disasters but also uses belief systems as a way to predict disasters before they occur. For instance, in Konso of Ethiopia when there was a quarrel in a town it led to an angry response from God which resulted in drought and sterility. As a mitigation strategy, Samaraweera (2022) reported that during that period the elderly in Konso will engage in prayers to prevent disasters.

5 Conclusion

This study highlights the multifaceted nature of the challenges posed by climate change for vulnerable populations, namely the elderly, in Sub-Saharan Africa. The most concerning element of the findings is the lack of research conducted on the elderly in Sub-Saharan Africa. However, we were able to unearth some of the published articles which had disaggregated findings on the elderly. From the findings, we found that the elderly experience psychological and physical challenges during induced disasters. What was impressive was to also find that the elderly use various coping mechanisms when faced with climate-induced disasters. Coping strategies span multiple sectors and scales, from household agricultural practices to psychological resilience-building. Addressing the root causes of vulnerability, including the specific needs of the elderly and mental health risks, is essential for enabling long-term adaptation. This includes targeted interventions to improve access to healthcare, social protection, and age-friendly infrastructure. Engaging older adults in community-based adaptation initiatives and leveraging their traditional knowledge and experience can also contribute to more inclusive and effective resilience-building efforts. Future research should prioritize understanding differential impacts and coping needs, evaluating the effectiveness of interventions, and developing integrated, community-based approaches to climate resilience.

5.1 Limitations

This scoping review has some inherent limitations that should be acknowledged. As a scoping review, the aim was to map the existing literature on the vulnerability of elderly people during climate-induced disasters in Sub-Saharan Africa, rather than to provide an in-depth analysis, quality assessment, or synthesis of the evidence as would be expected in a systematic review. While there is value in scoping this emerging area to identify trends, gaps, and future research directions, the review does not assess the methodological rigor of the six included studies.

Additionally, while related concepts like exposure are important, thoroughly examining that extensive body of literature was beyond the feasibility and scope of this targeted scoping review and would require its own comprehensive study. Significantly expanding the scope would have required substantial changes to the search strategy, inclusion criteria, and data extraction that

would have detracted from the intended purpose of mapping the literature specific to the review question.

As such, the findings should be interpreted as an overview of the current evidence landscape with limitations in the depth of analysis rather than as conclusive results on the topic. Despite these limitations, this review provides a valuable foundation to guide future, more focused systematic reviews and research on this important issue. Building on this foundation, the following recommendations are proposed to address the identified gaps and limitations and advance the field of research on this topic.

5.2 Recommendations

- We recommend establishing age-friendly spaces in emergency shelters, where the elderly can access counseling services and engage in stress-reducing activities.
- We recommend community-based interventions that strengthen social cohesion, provide psychosocial support, and raise awareness about mental health to help older adults cope with the emotional challenges of disasters.
- We recommend the development of training programmes that equip healthcare providers with the skills to deliver trauma-informed care and provide psychological first aid to improve the quality of mental health support available to the elderly.
- Future research should aim to better understand the specific physical vulnerabilities faced by older adults in different contexts and evaluate the effectiveness of interventions designed to enhance their resilience.
- Future research should further prioritize understanding the differential impacts of climate change on older adults, identifying context-specific vulnerability factors, and evaluating the effectiveness of interventions aimed at enhancing their adaptive capacity.

Author contributions

FM: Conceptualization, Methodology, Supervision, Validation, Writing – original draft, Writing – review & editing. KR: Data curation, Formal analysis, Software, Validation, Writing – review & editing. CM: Supervision, Validation, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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