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Uncovering the impact of loneliness in ageing populations: a comprehensive scoping review

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Abstract

Background Europe's aging population increasingly faces social isolation and loneliness, with nearly 20% of older adults living alone. Social isolation refers to an objective lack of social contact, while loneliness is the subjective experience of unmet social needs. Both are prevalent among community-dwelling older adults, driven by life transitions, loss, and declining health. These issues severely impact mental and physical health, increasing risks of depression and suicidal ideation. This scoping review maps the literature, identifies knowledge gaps, and highlights key challenges regarding loneliness and social isolation in this population.

Methods A scoping review was conducted between March and September 2024, following the PRISMA guidelines for scoping reviews. The review adhered to Arksey and O'Malley's five-stage framework, which includes identifying research questions, searching for and selecting relevant studies, extracting data, and synthesizing results. The search was conducted in major scientific databases, including Embase, CINAHL Plus, Web of Science, and PsycINFO, along with grey literature sources, including doctoral theses and organizational reports.

Results A total of 45 studies were included, with 66.6% using quantitative methods, 11.1% using qualitative methods, and the remainder being systematic reviews or mixed-method analyses. The studies revealed a significant prevalence of loneliness and social isolation among community-dwelling older adults, with risk factors including health deterioration, widowhood, and loss of social networks. The consequences of loneliness and isolation span physical and mental health issues, including an increased risk of cardiovascular disease, anxiety, depression, and cognitive decline.

Conclusions Loneliness and social isolation among community-dwelling older adults are complex issues with profound implications for physical, mental, and social well-being. Addressing these challenges requires integrative approaches that consider individual, relational, and contextual factors. Further longitudinal and standardized research is needed to improve our understanding of the long-term impacts and effectiveness of interventions to mitigate these issues.

Keywords Loneliness, Social isolation, Older adults, Scoping review, Well-being

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Background

Social isolation and loneliness in older adults

Europe is undergoing a demographic shift, with a steadily ageing population and a growing number of older adults living alone. This trend is driven by several sociodemographic factors, including declining birth rates, increasing life expectancy, and evolving family structures. Cultural shifts towards individualism and the fragmentation of traditional community-based living arrangements as life expectancies increase have further exacerbated social isolation and loneliness among older adults [1]. According to Eurostat, nearly 20% of people aged 65 and over in the European Union live alone, a figure that continues to rise. A survey by Age UK revealed that 1.2 million older adults in the UK are chronically lonely, a statistic likely mirrored in other European countries [2]. This increasing prevalence of solitude reflects deeper societal changes, including urbanization, smaller family units, and the migration of younger generations to cities. As societies become more individualistic, the support networks that once offered companionship and care for the elderly are weakening, leaving many older adults at risk of prolonged social isolation. According to recent findings of the Generations and Gender Survey, loneliness was common among 30–55% of older people in Central and Eastern Europe and 10–20% in Northwestern Europe [1, 3].

Although often used interchangeably in common discourse, social isolation and loneliness represent distinct concepts within the scientific literature. Social isolation is defined as an objective state characterized by a quantifiable reduction in social contacts and interactions. This can be assessed through measures of social network size, frequency of communication, and participation in social activities. In contrast, loneliness is a subjective emotional experience arising from a perceived discrepancy between desired and actual social relationships. Crucially, the experience of one does not necessitate the presence of the other; individuals can be socially isolated without feeling lonely, and conversely, feel lonely despite maintaining active social connections [4]. This independence underscores the need for differentiated assessment and intervention strategies targeting each phenomenon. Several studies have shown that among older adults, although many may be objectively socially isolated, only a proportion experience loneliness. This suggests that loneliness and social isolation, although related, are not identical experiences and can occur independently of one another [4–6].

According to the World Health Organization (WHO), **social isolation** occurs when an individual has minimal or no contact with others, and it typically involves a lack of meaningful relationships. Social isolation is an objective condition characterized by a lack of social interactions, contacts, and relationships. It involves minimal engagement with family and friends and reduced participation in community or social activities [7]. Social isolation can result from several factors, including physical distance from others, limited mobility, or a lack of social support systems. Unlike loneliness, which is a subjective feeling, social isolation is measurable through concrete indicators such as the number of social contacts or the frequency of social interactions [8].

In contrast to social isolation, **loneliness** is a subjective emotional experience. It occurs when there is a perceived discrepancy between the quantity and quality of social relationships a person desires and what they experience [9]. Loneliness can occur even in the presence of social interactions if those interactions do not meet an individual's emotional or social needs. As described by De Jong Gierveld and Van Tilburg (2010), loneliness is a subjective, negative experience that arises when individuals perceive a gap between the social connections they wish to have and those they possess [10]. This means that a person can feel lonely even if they are surrounded by others. Although loneliness can be experienced at various stages of life, it becomes particularly significant in older adulthood because of the accumulation of multiple factors.

Loneliness is a prevalent situation that has been linked to various negative physical and mental health outcomes [11–13]. Old age represents a transition often marked by various negative social and health challenges, which can significantly contribute to feelings of loneliness. Life changes associated with ageing, such as the weakening of family and social connections due to children leaving home; the loss of a spouse, parent, or friend; and a decline in health or ability, can make older individuals especially vulnerable to loneliness. Loneliness among older adults has been recognized as a substantial risk factor for suicidal ideation, particularly when loneliness is perceived as unwanted and enduring [14–16]. The absence of social support systems and meaningful interpersonal connections has a detrimental effect on mental health, increasing susceptibility to depressive symptoms, which may subsequently precipitate suicidal thoughts. Empirical evidence indicates that, in advanced age, perceptions of being a burden to others and a diminished sense of purpose are associated with reduced resilience to psychological stressors, thereby intensifying the risk of suicidal ideation in the context of chronic loneliness [17].

Common risk factors include widowhood, living alone, deteriorating health, and significant life events such as loss and bereavement. Protective factors include having a confidant and higher socioeconomic status [18].

Loneliness and social isolation in community dwellings

While loneliness and social isolation have been the subjects of considerable research, a definitive understanding of their prevalence, scope, and sequelae within the

population of community-dwelling older adults remains incomplete. This demographic, defined as individuals aged 65 years and older residing independently in non-institutional settings such as private residences, exhibits heightened vulnerability to social isolation owing to factors including, but not limited to, age-related declines in mobility, attrition of social networks through mortality or relocation, and the social and economic consequences of retirement. Consequently, community-dwelling older adults represent a critical target population for investigations into the detrimental health outcomes associated with social disconnection.

Considering the impact and importance of loneliness and social isolation, the objective of this research was to synthesize published articles on the phenomenon of loneliness in older adults in community dwellings. Specifically, the goals of this research include the following: (a) identify and map the key factors related to loneliness, main sources of evidence, and research gaps; (b) detect evidence of the consequences of loneliness and social isolation; and (c) capture the diversity of study designs, methodologies, and types of evidence available, including grey literature; (d) determine whether a full systematic review is feasible or necessary; and (e) help researchers identify variables and select appropriate methodologies for future studies by identifying common research approaches and methods used in the literature.

Methods

Study design

Accordingly, a scoping review was conducted between March and September 2024. This review was designed in accordance with the PRISMA guidelines for scoping reviews [19] and followed the five-stage framework outlined by Arksey and O'Malley (2005), which includes (1) identifying the research questions; (2) identifying relevant studies; (3) selecting studies; (4) data charting; and (5) collating, summarizing, and reporting results [20].

In contrast to systematic reviews, which seek to answer specific research questions through detailed and often quantitative analyses, scoping reviews pursue broader objectives and are exploratory in nature. Consequently, this scoping review was not registered in PROSPERO [21]. To ensure the comprehensiveness and accuracy of the search strategy, it was validated by a librarian with expertise in systematic reviews and database searches. Also, the protocol was validated by an external expert in the field prior to the implementation of the search strategy. Additionally, the review protocol was registered in the Open Science Framework (Registration DOI: https://doi.org/10.17605/OSF.IO/M9QH5).

Identifying the research questions

The research questions guiding this scoping review were as follows: (1) What are the key concepts related to loneliness in older adults, and what are the primary sources of evidence on this topic? (2) What are the documented consequences of loneliness and social isolation in older adults? (3) What study designs, methodologies, and types of evidence, including grey literature, are available in the research on loneliness among older adults? (4) Is a full systematic review on loneliness in older adults feasible or necessary? (5) What common variables and methodologies in the literature can guide future research on loneliness in older adults?

Identifying relevant information

The search strategy was conducted in two parallel stages. First, a systematic search was performed using major scientific databases, including Embase, CINAHL Plus, Web of Science, and PsycINFO. Second, additional searches were performed in sources of grey literature, such as doctoral thesis databases (Teseo, TDX, DART, OATD) and the websites of national and international organizations. It also included a manual search to add relevant information related to the main topic of the investigation.

To construct the search strategy, relevant keywords were identified for the main variables: loneliness and older adults. The concept of "loneliness" included related terms such as isolation, solitude, and social isolation, whereas "older age" encompassed variations such as elder, old age, and elderly. The terms within each variable were combined using the OR operator, and the main variables were connected using the AND operator. For reproducibility, the search strategy including the databases searched and the main keywords used was: (isolation OR Loneliness OR Solitude OR social isolation) AND (aged OR aging or ageing or elder* OR "old age" OR "old* people") AND (mental health OR emotional OR physical health OR health problems OR chronic diseases OR frailty OR health outcomes).

Study selection

The selection process was guided by predefined inclusion and exclusion criteria to ensure alignment with the study objectives. The inclusion criteria were as follows:

- Focus: Studies investigating community-dwelling older adults (65 years or older).
- Phenomenon: Research addressing loneliness and social isolation specifically.
- Language: Publications in English or Spanish.
- Publication Date: Studies published between 2013 and 2024.

- Source Type: Peer-reviewed journals, doctoral theses, reports, conference proceedings, books, and government publications.

The exclusion criteria were as follows:

- Focus Misalignment: Studies that did not focus on the topic of loneliness or social isolation in older adults.
- Accessibility: Documents for which the full text was unavailable, despite requests made to authors.

The selection process began with an initial screening of titles and abstracts to assess relevance, followed by a full-text review of studies that met the initial criteria. Two independent reviewers conducted each stage of the selection process to maintain consistency and reduce bias. Any disagreements between reviewers were discussed and resolved through consensus to ensure that all selected studies aligned with the review's objectives.

Charting the data

This phase was executed by the reviewers in three distinct phases to ensure accuracy, consistency, and comprehensiveness in data handling.

- **Phase 1: Initial screening and identification of duplicates**. The first step involved an independent review of the titles and abstracts by each reviewer on the basis of the preestablished inclusion and exclusion criteria. Studies that met the initial relevance criteria were subjected to a full-text review. During this phase, duplicates across different databases were identified and removed to avoid redundancy in the final dataset.
- **Phase 2: Collaborative review and removal of duplicates**. Following the independent reviews, the selected records were shared among all reviewers for a collaborative evaluation. Duplicates identified across the different databases were removed, and only those records that adhered to the study's objectives and inclusion criteria were retained for further analysis. This collaborative review process helped ensure the consistency and reliability of the selected studies.
- **Phase 3: Final selection of records**. In this phase, only those studies that were agreed upon by all reviewers were included in the final set for analysis. This consensus-based approach ensured the validity and relevance of the selected studies to the research questions and the objectives of the scoping review.

The retrieved articles were transferred to the Covidence review manager for screening and review [21]. In the **data extraction process**, a comprehensive range of key concepts and main consequences related to loneliness was systematically extracted from each study. These variables included bibliographic details, participant characteristics (age and gender), the geographical context of the study, the data collection methods employed, the consequences and the specific factors related to loneliness that were investigated. Standardized charting was employed to ensure consistency across studies and to facilitate data analysis. Additionally, Table 3 presents the main findings from the studies, which should be considered when extrapolating the data and conclusions of this review.

Collating, summarizing, and reporting the results

In this final phase, the findings were synthesized to identify prevalent themes, research gaps, and methodological trends in the literature. Key insights from both the scientific literature and the grey literature were combined to present a comprehensive overview of the current research landscape on loneliness among older adults.

Results

To illustrate the strategy and the results of the search, the study flowchart is presented (Fig. 1).

Characteristics of the included studies

Among the 52 studies, 40 (76.6%) used quantitative methods (27 cross-sectional, 9 cohort studies, and 2 experimental, 2 longitudinal), 4 (16%) were qualitative, 3 (5.7%) were systematic or scoping reviews, and 4 (16%) applied mixed methods or opinion-based analyses, and 1 case report. Geographically, 20 (44,4%) studies were from Europe, 14 (31,1%) were from Asia, 6 (13,3%) were from the United States or Canada, 2 (4,4%) were from Latin America, and 3 (6,6%) were from regions such as Australia and Ghana. In total, 24 (54,4%) studies were conducted in community settings, followed by 8 (17,7%) virtual studies (including telephone interviews, online platforms, virtual support groups, mail, and WhatsApp), 4 (8,8%) in health care units, and 3 (6,6%) each in residential and institutional settings. Sample sizes varied from 7 to 35,878 participants, totalling over 150,000. Table 1 presents the detailed characteristics of the included studies.

Of the 28 grey literature documents (Table 2), 15 were doctoral theses, followed by reports [3] and final academic projects [4]. The majority, 17 (51,8%), originated from Spain, with others from New Zealand, Oman, the US, the Netherlands and Canada.

The studies included in this review were conducted across a wide range of settings, as summarized in Table 1. These settings include community-based environments, where 24 studies were conducted, reflecting the increasing focus on understanding loneliness in everyday social

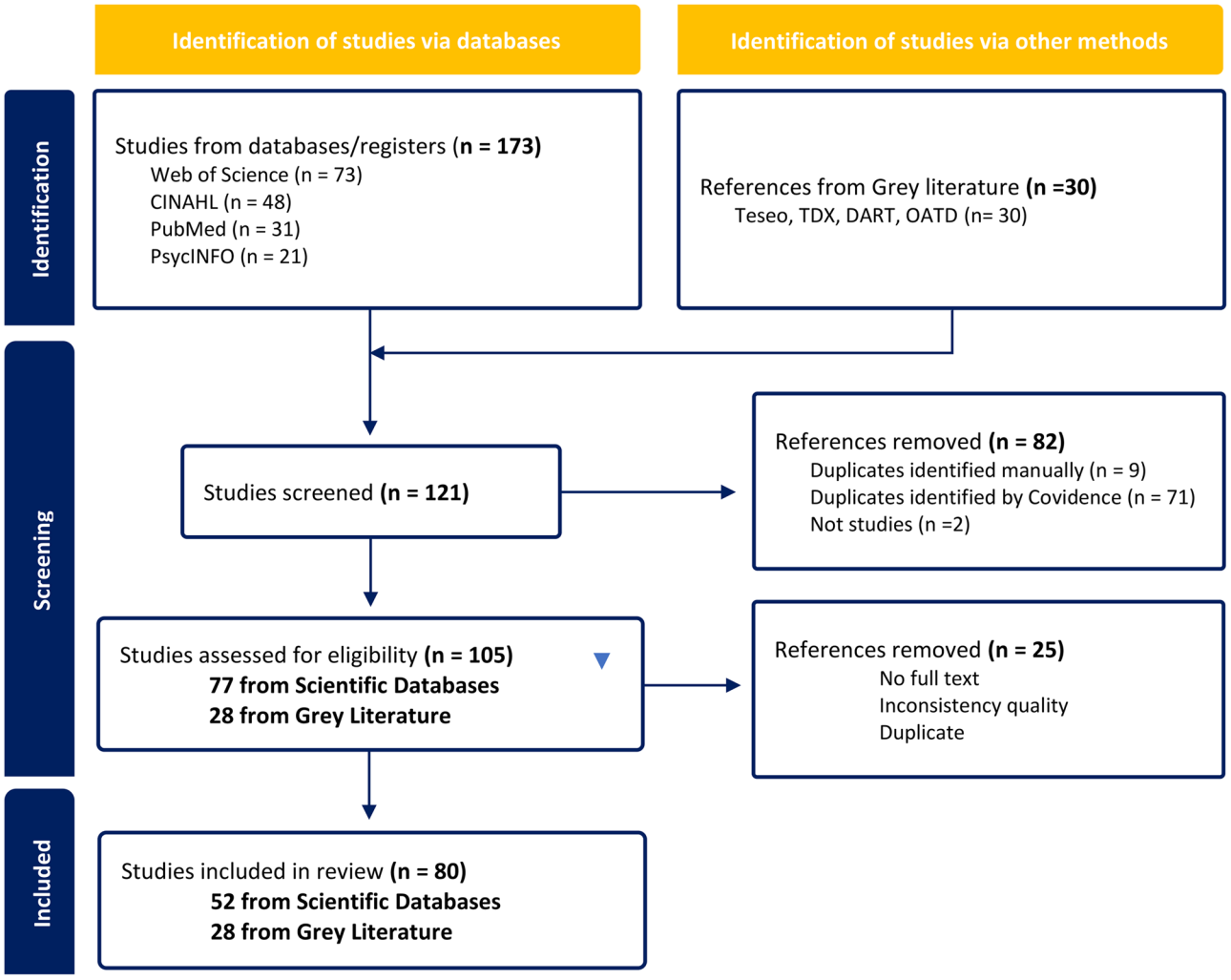

Fig. 1 PRISMA flow diagram of study selection process

contexts. Other settings include virtual environments (8 studies), which have gained significance, particularly in light of the COVID-19 pandemic, as more people have turned to online platforms for social interaction. Additionally, some studies were conducted in home-based settings, as well as in health care units and institutional settings such as nursing homes. The studies also varied in terms of sample sizes, ranging from small samples (7 participants) to large-scale studies involving over 35,000 participants.

The main sources of evidence on loneliness are diverse and include a range of study designs. The predominant method used in the dataset is a cross-sectional study, which explore the relationships between loneliness and various demographic or psychological factors. These studies, including those by Canjuga, Železnik, Neuberg, et al. (2018) and Liu (2022), provide valuable insights into how loneliness is associated with factors such as gender, age, health status, and social context. Cross-sectional studies are essential for identifying patterns and correlations that may inform interventions and further research. In addition to quantitative studies, qualitative research has also been crucial in exploring the subjective experiences of loneliness. For example, Aedo-Neira (2022) used qualitative methods to capture in-depth narratives from individuals experiencing loneliness, providing a valuable context for understanding how loneliness is felt and expressed. Scoping reviews, such as Tragantzopoulou and Giannouli (2021), are instrumental in synthesizing existing research, mapping the landscape of loneliness studies, and identifying research gaps.

Key concepts related to loneliness

Multiple studies distinguish between loneliness and social isolation. Specifically, loneliness, the emotional feeling of being disconnected or lacking meaningful social relationships, and social isolation, the objective measure of the absence of social interactions or connections, have been

Table 1 Characteristics of the studies

Study ID	Country	Setting	Study design	Main variables	Total number of the sample	% women
Aedo-Neira 2022 [22]	Chile	Virtual	Qualitative research	Feelings of loneliness and anxiety	7	71.4
Altintas 2023 [23]	Turkey	Community	Cross sectional study	Frailty, loneliness	527	60.5
Berg-Weger 2020 [24]	United States	Community	Longitudinal descriptive study	Risk factors of loneliness, social isolation	-	-
Böger 2018 [25]	Germany	Community	Cohort study	Emotional qualities of the social network, loneliness	10,900	49.1
Bonsaksen 2021 [26]	Norway, United Kingdom, United States and Australia	Virtual	Cross sectional study	Use of video-based communication platforms, loneliness, mental health, quality of life, interaction term	836	75.7
Canjuga 2018 [27]	Croatia	Residential	Cross sectional study	Health, self-esteem, social/emotional factors	379	70.6
Canjuga 2018 [28]	Croacia	Residential Home-based	Cross sectional study	Self-care, loneliness, health condition	379	69.4
Cantarero-Prieto 2018 [29]	9 European countries	Community	Cohort study	The diagnosis of three or more chronic diseases serves as the dependent variable, while three isolation proxies (living alone, providing help to others, and participation in club activities) are used as social control variables.	37,864	7.33
Chen 2014 [30]	China	-	Text and opinion	Loneliness, social connectedness, health and well-being, social isolation, dementia, mortality risk, psychosocial interventions, community resources	-	-
Cheng 2021 [31]	China	Institutional	Cross sectional study	Depression, social isolation, mental health	7024	45
Cheung 2023 [32]	China Netherlands	Community and Home-based	Cross sectional study	Frailty, quality of life, loneliness	333	54
Creese 2021 [33]	United Kingdom	Virtual	Cohort study	Loneliness, physical activity changes, physical illness, symptoms of COVID infection, fianances, depression and anxiety	3281	80
daCruz 2022 [34]	Brazil, Italy	-	Text and opinion	Physical activity, social isolation, COVID 19, mental health	-	-
Dahlberg 2014 [35]	UK	Community	Cross sectional study	Psychological, health factors, social factors	1255	61.8
Dayson 2021 [36]	United Kingdom	Community	Qualitative research	Loneliness, isolation	37	-
deSousa 2022 [37]	Brasil	Virtual	Cross sectional study	Anxiety, depression, COVID-19	450	-
dos Santos-Orlandi 2019 [38]	Brasil	Community	Cross sectional study	Frailty, family function, depresive symptoms, loneliness	341	76.8
Dziedzic 2021 [39]	Poland	Virtual	Cross sectional study	Anxiety, depressive symptoms, irritability, loneliness	221	47.51
Gale 2018 [40]	United Kingdom	Community	Cohort study	Loneliness, social Isolation, frailty	2817	56.9
Gerino 2017 [41]	Italia	Community	Cross sectional study	Loneliness, resilence, mental health, quality of life	290	70
Gyasi 2019 [42]	Ghana	Community	Cross sectional study	Psychological distress, loneliness, social isolation	1200	63
Herrera-Badilla 2015 [43]	Mexico	Community	Cross sectional study	Loneliness, frailty	927	54.9
Jarach 2021 [44]	Europe and Israel	Community	Cohort study	Frailty, pre-frailty, loneliness	27,468	54.6

Table 1 (continued)

Study ID	Country	Setting	Study design	Main variables	Total number of the sample	% women
Jiang 2021 [45]	China	Virtual	Cohort study	Elder mistreatment, life satisfaction, loneliness, emotional closeness	8717	50.15
Joseph 2023 [46]	United States Puerto Rico	Virtual	Mix method	Frailty, physical isolation, worry about COVID-19, and loneliness	2094	57.6
Koroleva 2021 [47]	Letonia	Virtual	Case report	Social isolation, psychoemotional problems, social contacts, mental state,	1207	-
Liu 2019 [48]	China	-	Systematic review	Isolation, cognitive, cardiovascular decline	-	-
Liu 2022 [49]	China	Community - Rural areas	Cross sectional study	Personality, self-esteem, and loneliness	200	-
Llorente-Barroso 2021 [50]	Spain	Community	Qualitative research	Negative effects produced of confinement, role of ICT, stimulation of mental and physical activity	27	66.6
Lu 2020 [51]	China	Community	Mixed-methods design: integrated theory and cross-sectional study	Medication adherence, social isolation, social support, loneliness	2270	49
Luo 2024 [52]	China	Institutional	Cross sectional study	Depression, anxiety	2477	63.1
Murayama 2021 [53]	Japan	Community	Cross sectional study	Depressive symptoms, perceived isolation, fear of future isolation, subjective economic status, mutual aid relationship patterns	3941	65.6
O'Súilleabháin 2019 [54]	Germany	Institutional	Cross sectional study	Mortality, loneliness, functional Status, personality	413	46
Palacios-Navarro 2024 [55]	Spain	Home-based	Non-randomised experimental study	Cognitive impairment, quality of life, general health, perceived loneliness, depression	7	71
Pedroso-Chaparro 2023 [56]	Spain	Community	Cross sectional study	Ageist stereotypes, loneliness	182	76.4
Pengpid 2023 [57]	Thailand	Home-based	Cohort study	Loneliness, mental ill-health: self-rated mental health status, self-rated mental health status, quality of life or happiness, depressive symptoms, insomnia symptoms, brain diseases (including dementia). Physical ill-health: Self-rated physical health status, ADL disability. Life style factor: Tobacco smoking, hazardous alcohol use, physical activity/exercis, Body Mass Index. Mortality	2863	57.2
Sadatnia 2023 [58]	Iran	Community	Cross sectional study	Mental health, loneliness	211	39.8
Sha 2022 [59]	China	Institutional - Virtual	Cohort study	Loneliness, physical frailty	7546	-
Shiovitz-Ezra 2023 [60]	Europe	Community	Cross sectional study	Sleep problems, lonelines patterns	35,878	58.38
Soh 2019 [61]	Singapore	Community	Cross sectional study	Living arrangements, perceived problem, mental health, loneliness	Study 1: 135 Study 2: 122	Study 1: 53.5 Study 2: 75.4
Stephens 2022 [62]	New Zealand	Community	Cross sectional study	Loneliness, social network types, neighborhood variables, social participation	917	53.2
Tanabe 2024 [63]	Japan	Community	Cross sectional study	Physical frailty, subjective well-being, social isolation	1953	49
Theeke 2018 [64]	United States	Hospital	Randomised controlled trial	Loneliness, psychological, physiological health problems	13,812	61.3
Tilikainen 2017 [65]	Finland	Hospital	Qualitative research	Loneliness, social integration	10	40

Table 1 (continued)

Study ID	Country	Setting	Study design	Main variables	Total number of the sample	% women
Tragantzopoulou 2021 [66]	Greece	-	Scoping review	Social isolation and loneliness	-	-
Vaculíková 2023 [67]	All European Union countries, Switzerland and Israel	Residential	Cross sectional study	Loneliness, mental health, physical health	2631	62
vanOurs 2021 [68]	Netherlands	Home-based	Longitudinal Internet Studies for the Social science (LISS) panel	Mental health, loneliness	29,677	50.95
Vrach 2020 [69]	United Kingdom	-	Systematic review	Mental health, social isolation	16	-
Yang 2022 [70]	China	Community	Cross sectional study	Intergenerational emotional support, loneliness and self-esteem, and subjective well-being	728	69.9
Yang 2024 [71]	Korea	Community	Cohort study	Intensity of persistent social isolation, cognitive functions, depression, cognitive decline	6200	57.5
Zakizadeh 2022 [72]	Iran	Hospital Community	Cross sectional study	Social support, mental health, feeling of loneliness	318	44.7
Zhang 2021 [73]	China	Institutional Community	Cross sectional study	Kinlessness, lack of social contacts, subjective social isolation, health outcomes	5419	53.3

Note: The Setting categories are defined as follows: **Residential** includes nursing homes, assisted living facilities, adult day care centers, and retirement homes. **Community** covers community centers, social support programs, wellness initiatives, rural areas, and primary care services. **Home-based** refers to private residences and family environments. **Virtual** encompasses telephone interviews, online platforms, virtual support groups, mail, and WhatsApp (all settings). **Hospital** includes mental health units and general hospitals. **Institutional** refers to elder care organizations, social services, and government entities

emphasized in various studies [35, 42, 44, 45], including the scoping review by Tragantzopoulou and Giannouli (2021).

Mental health and self-esteem are frequently examined in relation to loneliness, with studies such as Canjuga, Železnik, Bozicevic, et al. (2018) investigating how loneliness impacts mental well-being, including self-esteem. Scales such as the Rosenberg Self-Esteem Scale are commonly used to assess these variables. Research consistently shows that loneliness is associated with poorer mental health, including depression, anxiety, and lower self-esteem [41, 56–58, 67]. These effects are particularly evident in older adults, who may experience compounded psychological distress due to other life changes, such as retirement, health decline, or bereavement. The impact of loneliness on self-esteem is particularly noteworthy, as it often leads to a sense of worthlessness and further exacerbates feelings of isolation.

Figure 2 (social and relational dynamics) illustrates the key factors related to loneliness and social isolation, summarizing how individual characteristics, environmental and socioeconomic factors, and social and relational dynamics interact.

The emotional and social dimensions of loneliness are also key areas of focus. Studies distinguish between emotional loneliness, which refers to the absence of close, intimate relationships, and social loneliness, which is related to the lack of a broader social network [35, 50, 54, 65, 70]. These dimensions are often interlinked with emotions such as sadness, anxiety, and frustration. For example, Aedo-Neira (2022) highlighted the importance of these variables in understanding the subjective experiences of loneliness, especially in vulnerable groups such as elderly individuals. The emotional distress caused by loneliness can manifest in various ways, including heightened anxiety, depressive symptoms, and a sense of emotional emptiness [41, 56, 58, 66, 67, 69]. Such emotional outcomes are critical for qualitative studies that aim to capture the lived experiences of individuals who are lonely, as these emotional experiences are difficult to quantify but vital for understanding the personal impact of loneliness [65].

Personality traits and environmental factors are other crucial variables influencing loneliness and are represented as an individual characteristic in Fig. 2. Research by Liu (2022) and others underscores the role of personality in loneliness, finding that introverted individuals or those with a tendency towards social withdrawal are more likely to experience loneliness [32, 47, 49, 62]. Similarly, environmental factors such as living in rural versus urban areas or in residential versus community settings can affect the extent to which individuals feel socially connected [32, 47, 49, 62, 71]. For example, rural areas may lack the social infrastructure that facilitates

Table 2 Grey literature

Authors	Year	Country	Document	Main consequences
Al Yazeedi, 2019	2019	Oman	Doctoral Theses	The impact of loneliness in physical, mental and social aspects in older women is similar to that observed in other countries around the world.
Alhambra Borrás, 2017	2017	Spain	Doctoral Theses	Design of a multidimensional intervention on risk of falling, frailty and loneliness.
Associació Benestar i Desenvolupament, 2010	2010	Spain	Report	Unwanted loneliness impacts on an emotional, physical and social level in 52% of the 415 people interviewed from Andalusia, Catalonia, Madrid and Valencia.
Bellegarde, 2017	2017	Spain	Doctoral Theses	Unwanted loneliness in older women impacts their mental and physical health, and there is a need to act to improve their quality of life.
Castro, 2015	2015	Spain	Doctoral Theses	Older people evidence loneliness that takes shape in three dimensions: the objective, the emotional and the syntonic, when they are not comfortable with relationships.
Claramonte Cluasell, 2023	2023	Spain	Doctoral Theses	Negative effects of loneliness are more common in people with a limited socioeconomic and educational level, who suffer chronic illness and who live in an urban environment.
Delgado, Losada, 2020	2020	Spain	Report	Negative effects on the physical and mental health of the elderly who suffer from unwanted loneliness have been addressed using inconsistent methodologies and with data that cannot be extrapolated. Research in this area must be encouraged.
Hernández Ascanio, 2022	2022	Spain	Doctoral Theses	It is pointed out interventions that could address loneliness and social isolation.
Kahl, 2010	2010	Batswana	Bachelor's Degree Final Project	The social impact of loneliness can be work by promoting social interaction among those who suffer from it by scheduling activities and social contact.
Lorente Martínez, 2017	2017	Spain	Doctoral Theses	People with a positive or neutral view of loneliness and who attribute their loneliness to internal and/or controllable factors improved their loneliness and/or their perceived control to deal with it after an intervention against isolation
Luna, Pinto, 2021	2021	Spain	Report	The negative effects on the physical and mental health of the elderly who suffer from unwanted loneliness can be considered a business opportunity to prevent and intervene in these cases.
Martín-María, 2019	2019	Spain	Doctoral Theses	Subjective loneliness is related to some transitory and initial health disorders.
Metzger, 2022	2022	USA	Doctoral Theses	Programming activities to work on loneliness in retired older people can have effects on the quality of life and the fight against social isolation but not on the perception of loneliness.
Montes Reula, 2021	2021	Spain	Doctoral Theses	People who live alone at home present more depressive symptoms compared to those who live with someone. Loneliness could be a factor associated with depression in older people, more anxiety symptoms and greater deterioration in social relationships.
Nagusi Intelligence Center, 2022	2022	Spain	Report	Negative effects on physical and mental health of elderly who suffer from not wanted loneliness can be considered a business opportunity to prevent and intervene in these cases.
Otero Garcia, 2012	2012	Spain	Doctoral Theses	Acting on the effects on isolation should be done according to the place of residence, specifically rural areas.
Pita, 2017	2017	Spain	Doctoral Theses	Living alone is statistically associated with older age, female, and greater independence for instrumental activities of daily living.
Rico Uribe, 2017	2017	Europe	Doctoral Theses	Loneliness is related to poorer health, frequent use of primary health services, and also mortality.
Rodríguez, Sosvilla, 2023	2023	Europa	Report	Governmental proposals of Germany, the Netherlands, England and Spain to work against loneliness are presented. It is highlighted the prevalence of loneliness according to sociodemographic characteristics.
Sala Mozos, 2023	2023	Spain	Report	Community and individual intervention proposals are presented to reverse social and health cost of loneliness in the elderly.
Schutter, 2022	2022	Nethederlands	Doctoral Theses	Loneliness and lack of social networks have a small but significant effect on mortality. Furthermore, loneliness is very prevalent in older psychiatric patients.
Sequeros Pedroso-Chaparro, 2022	2022	Spain	Report	The risk factors for suffering from loneliness are demographic, health and socio-environmental. The older you are, the worse your health, the greater the feeling of loneliness.

Table 2 (continued)

Authors	Year	Country	Document	Main consequences
Thompson, 2023	2023	United Kingdom	Doctoral Theses	The impact of loneliness is studied. Findings indicate the benefit of having an increased number of close friendships in order to protect against loneliness and improve psychological well-being.
Ulla, Gallego, 2022	2022	Spain	Report	It is described an governmental Spanish plan against Isolation and Loneliness
Wardle, 2013	2013	Canada	Final Master's Project	The impact of loneliness and aging is studied, and it is pointed out the need of rethinking housing according to these issues.
Whitehouse, 2013	2013	New Zealand	Bachelor's Degree Final Project	It shows the impact of social isolation on global cognition and cognitive domains, specially that social loneliness influences cognition
WHO, 2021	2021	Worldwide	Report	Social isolation and loneliness are harmful. They shorten the lives of older people and harm their physical and mental health and quality of life.
Yanguas, 2021	2021	Spain	Report	Unwanted loneliness can be work through proactive strategies, but may not be possible for those who have a greater sense of unwanted loneliness.

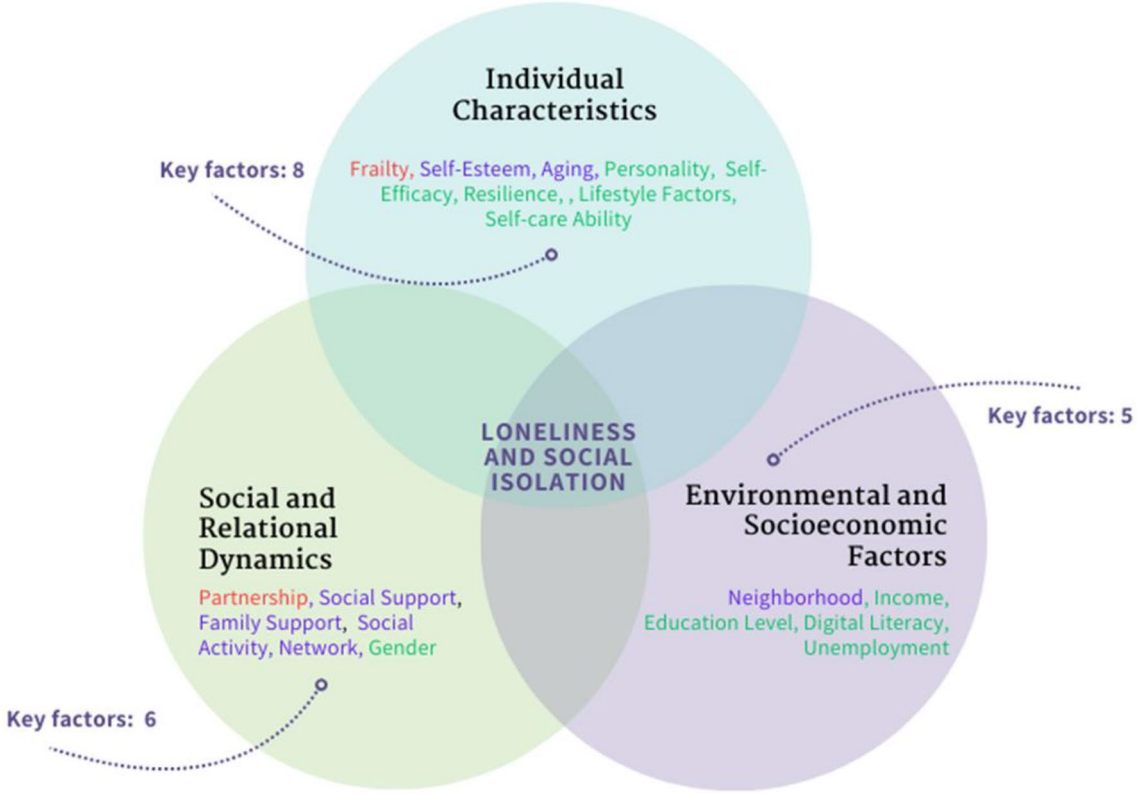

Fig. 2 Key factors related to loneliness and social isolation *Note: The colors indicate the level of frequency of articles. Green: Low frequency* [1–3], *Purple: Moderate frequency* [4–7] *and Red: High frequency* [8–11]

regular social interactions, increasing the likelihood of social isolation. On the other hand, people living in urban environments may be surrounded by large numbers of people but still experience social loneliness if they lack close personal connections or feel disconnected from their social surroundings. The type of residential setting also plays a role, as those in institutional or health care settings may feel more isolated than those in community environments due to the lack of autonomy and personal relationships (environmental and socioeconomic factors. Figure 2).

Main consequences of social isolation and loneliness

The literature reviewed reveals a strong association between loneliness and social isolation and a range of physical health issues. Many studies link these conditions

to an increased risk of cardiovascular disease, frailty, and a greater likelihood of developing chronic illnesses [23, 40, 46, 48, 57, 59, 72]. These physical health concerns are particularly prevalent in populations with limited social connections or those who experience higher levels of isolation. For example, as shown in Table 2, various studies highlight how the negative health impacts of loneliness and social isolation manifest in diverse forms, including cardiovascular issues and frailty, primarily among older adults and individuals in isolated settings. These conditions are exacerbated by prolonged isolation, underscoring the importance of social connections in maintaining physical health.

In addition to physical health, the mental health consequences of loneliness and social isolation are frequently reported in the studies included in this review. These include increased rates of depression, anxiety, sleep disorders, and cognitive decline [41, 57, 60, 69, 71, 72]. The data summarized in Table 3 suggest that loneliness often leads to a deterioration in mental well-being, particularly among older adults. Chronic loneliness can serve as a significant stressor, accelerating cognitive decline and increasing the likelihood of developing mental health disorders such as depression and anxiety. Studies consistently emphasize that the effects of loneliness are particularly pronounced in older populations, where social isolation exacerbates emotional distress and can contribute to the onset of conditions such as dementia.

The impact of loneliness extends beyond mental health, affecting overall well-being. Social isolation often leads to reduced social interactions, which subsequently lowers quality of life and diminishes social support [24, 32, 36, 41, 48, 58]. As shown in Table 3, the effects of isolation can lead to significant reductions in quality of life, where individuals experience greater loneliness and a sense of disconnection from others. This lack of social engagement further contributes to emotional and mental health issues, reinforcing the vicious cycle of loneliness. Without sufficient social interactions, individuals can experience increased feelings of helplessness and emotional distress, diminishing their overall quality of life.

An important aspect of this review was the exploration of gender differences in the effects of loneliness and social isolation. Some studies indicate that women are particularly vulnerable to the psychological effects of loneliness, reporting higher levels of depression and anxiety related to isolation compared to men [32, 35, 67, 69, 72]. This is consistent with the findings in Table 2, which indicate that women are more likely to report higher levels of mental distress associated with loneliness, especially in later life. This heightened vulnerability may be attributed to gendered social expectations, caregiving roles, and the greater emotional expressiveness often expected of women. On the other hand, men may experience different social impacts, such as the effects of retirement on loneliness [35, 40, 54, 68, 72]. As noted in Table 2, men often face challenges related to the loss of work-related social networks and changes in their roles postretirement, which can contribute to feelings of isolation.

Overall, the main consequences of social isolation and loneliness identified in the literature are far-reaching and affect both physical and mental health. As illustrated in Table 3, loneliness is linked to a range of health issues, including cardiovascular problems and frailty, as well as emotional health challenges such as depression, anxiety, and cognitive decline. The cyclical nature of loneliness reinforces its negative impact on health, leading to reduced social interactions and further deterioration in mental well-being. Additionally, gender differences must be considered, as women and men experience and respond to loneliness in different ways.

Furthermore, this scoping review also identified what is being studied in documents published in the "grey literature". In general, these documents confirmed the findings established in scientific documents collected through the databases used in this investigation. These sources provided several key insights into the issue of loneliness and social isolation, complementing peer-reviewed studies.

First, many studies have emphasized the negative impact of loneliness on the mental, social, and physical health of older adults, with particular attention given to its effects on psychiatric patients [74]. These studies reinforced the finding that isolation exacerbates physical and mental health problems, especially for vulnerable groups.

Additionally, several grey literature documents noted that interventions to combat loneliness and isolation could be effective, particularly when tailored to social relationships, physical health, and mental well-being. These interventions are essential for improving the quality of life of those affected [75]. Another notable finding was the economic implications of addressing loneliness. Although interventions may have upfront costs, they also represent an opportunity for new business ventures focused [76] on providing services for those suffering from loneliness, such as social programs or elder care services.

Finally, some grey literature sources highlighted the need for further research to consolidate findings and improve interventions [77].

Discussion

This research successfully addressed its key objectives by identifying and mapping the principal factors related to loneliness, examining the main sources of evidence and research gaps, documenting the consequences of loneliness and social isolation, and capturing the diversity of study designs and methodologies. Additionally,

Table 3 Consequences of loneliness and social isolation

Studies	Main findings	Consequences of loneliness and social isolation			
		Physical	Mental	Social	Gender differences
Aedo-Neira 2022 [22]	Older adults experienced psychological decline during COVID-19, worsened by isolation and the digital divide. Emotional, family, and social support were crucial, highlighting the need for programs and policies to close the technology gap.	Yes	Yes	Yes	-
Altintas 2023 [23]	Individuals with frailty had a significantly higher mean age than those without. Among participants, 89.1% with a serious disease and 68.9% with a seriously ill loved one were frail. The mean score on the Loneliness Scale for the Elderly was statistically significant. Additionally, a significant relationship was observed between the Tilburg Frailty Indicator, its subscales, and the Loneliness Scale for the Elderly.	Yes	Yes	Yes	Yes
Berg-Weger 2020 [24]	Loneliness and social isolation are common among older adults, adversely affecting their physical and emotional well-being. Contributing factors include living alone, depression, and inadequate social support.	Yes	Yes	Yes	-
Böger 2018 [25]	Age-related changes in social networks include fewer distressing ties and greater family satisfaction, though lower satisfaction with friendships. Loneliness both influences and results from relationship quality.	-	Yes	Yes	-
Bonsaksen 2021 [26]	Group 1: Loneliness (M = 9.3, SD = 4.4), Mental Health (M = 15.1, SD = 6.5), Quality of Life (M = 6.8, SD = 2.2); Group 2: Loneliness (M = 9.1, SD = 4.4), Mental Health (M = 14.2, SD = 5.7), Quality of Life (M = 7.0, SD = 2.1).	Yes	Yes	Yes	Yes
Canjuga 2018 [27]	Low education and health relate to loneliness in elderly homes	-	Yes	Yes	Yes
Canjuga 2018 [28]	Reduced self-care ability contributes similarly to social and emotional loneliness in both groups of elderly individuals.	-	Yes	Yes	Yes
Cantarero-Prieto 2018 [29]	Social activity participation reduces chronic disease probability (OR = 0.70), while living alone increases it (OR = 1.20). Significant differences exist by macro-area: helping others decreases chronic disease risk in the Nordic region (OR = 0.58), while club participation and living alone are significant for Continental (OR = 0.65) and Southern regions (OR = 1.46), respectively.	Yes	-	Yes	No
Chen 2014 [30]	Loneliness and aging is a growing problem in China	Yes	Yes	Yes	No
Cheng 2021 [31]	Objective and subjective social isolation independently affect mental health in older adults, with attitudes toward aging significantly mediating this relationship.	-	Yes	Yes	No
Cheung 2023 [32]	The aging out of place sample was significantly less frail than the aging in place sample, with lower scores in all frailty domains, particularly social frailty. This group also had significantly lower psychological and social quality of life scores, especially in psychological QoL. Additionally, social and overall loneliness scores were significantly higher in the aging out of place sample, with the greatest difference in overall loneliness.	Yes	Yes	Yes	Yes
Creese 2021 [33]	Loneliness linked to mental and physical health declines	Yes	Yes	Yes	Yes
daCruz 2022 [34]	Physical activity has shown excellent results for mental health, being used in different treatments and populations, when considering the elderly, one of the ways to mitigate this impact on mental health is the practice of physical activity.	Yes	Yes	Yes	-
Dahlberg 2014 [35]	Significant predictors of social loneliness included being male, widowed, and experiencing low well-being, self-esteem, income comfort, family and friend contact, activity, community integration, and receipt of community care. For emotional loneliness, significant predictors included being widowed, low well-being, low self-esteem, high activity restriction, low-income comfort, and non-receipt of informal care.	Yes	Yes	Yes	Yes
Dayson 2021 [36]	One-to-one therapeutic interventions benefit those with loneliness linked to low psychological well-being from trauma or complex issues that hinder social relationships. Peer-to-peer interventions help individuals with less complex issues affecting emotional well-being. Group-based interventions are effective for individuals seeking to improve social well-being and build community connections.	Yes	Yes	Yes	-

Table 3 (continued)

Studies	Main findings	Consequences of loneliness and social isolation			
		Physical	Mental	Social	Gender differences
deSousa 2022 [37]	Elderly individuals with a depressive profile showed anxiety during the COVID-19 pandemic, associated with low education, divorce, multiple mental disorders, and exposure to COVID-19 information. Elderly Brazilians in social isolation are at risk of developing depressive disorders during quarantine, underscoring the need for effective gerontological care and mental health monitoring.	-	Yes	Yes	Yes
dos Santos-Orlandi 2019 [38]	Frailty was associated with loneliness and depressive symptoms. Elderly caregivers had 158% higher odds of pre-frailty and 360% higher odds of frailty. Those with depressive symptoms had a 242% increased chance of frailty.	Yes	Yes	Yes	Yes
Dziedzic 2021 [39]	19.15% of participants had depressive symptoms, 14.18% had borderline states, and 58.83% reported moderate to high loneliness, significantly correlated with depressive symptoms.	Yes	Yes	Yes	Yes
Gale 2018 [40]	High loneliness was linked to a higher risk of becoming frail or pre-frail within four years, though it did not impact frailty index changes over six years. Social isolation was not generally associated with frailty risk, but among men, high isolation increased the likelihood of becoming frail.	Yes	Yes	Yes	Yes
Gerino 2017 [41]	The model indicates that resilience and mental health mediate the relationship between loneliness and quality of life (QoL). Loneliness negatively impacts QoL through these factors. Enhancing social support, resilience, and self-efficacy can reduce loneliness and improve mental health, ultimately enhancing perceived QoL and decreasing anxiety and depression.	Yes	Yes	Yes	-
Gyasi 2019 [42]	Loneliness and living alone are significant predictors of psychological distress in older adults, while social interactions and physical activity can help reduce this distress.	Yes	Yes	Yes	Yes
Herrera-Badilla 2015 [43]	Hypertension was the most common chronic disease. Depressive symptoms were present in 13.9%, and 29.1% had ADL disabilities. Frailty affected 14.1%, with loneliness reported by 13.2%. Frail individuals were older, mostly female, more likely to live alone, and reported more chronic diseases and depressive symptoms. Prefrail (17.6%) and frail (23.1%) participants had higher and significant loneliness rates than nonfrail individuals (6.9%). Regression analysis showed a significant association between loneliness and prefrail and frail status.	Yes	Yes	Yes	Yes
Jarach 2021 [44]	Participants aged ≥ 60, 47.6% were robust, 41.6% pre-frail, and 10.8% frail at baseline. After two years, 61.8% of robust individuals remained robust, while 30.8% became pre-frail. High loneliness and social isolation significantly increased the risk of robust individuals becoming frail or pre-frail. Overall, 33.4% of robust older adults deteriorated in frailty status, underscoring the need to address loneliness and social isolation.	Yes	Yes	Yes	-
Jiang 2021 [45]	Emotional mistreatment negatively impacts older adults' life satisfaction, correlating with low emotional closeness and high loneliness, which further diminish life satisfaction. However, emotional closeness with children does not significantly mediate the relationship between physical mistreatment and life satisfaction.	-	Yes	Yes	No
Joseph 2023 [46]	Frail participants experienced more isolation, COVID-19 worries, and loneliness than non-frail individuals. They faced challenges like fatigue and limited mobility, leading to increased fear and reduced social interactions.	Yes	Yes	Yes	-
Koroleva 2021 [47]	Nearly one-fifth of respondents aged 50 + reported mental health effects from COVID-19, with significant links between reduced social contacts and psychoemotional changes. The most isolated group faced three times more health irregularities.	-	Yes	Yes	Yes
Liu 2019 [48]	Depression and cardiovascular disease (CVD) are the most studied outcomes linked to social isolation. A systematic review found that poor social relationships increase CHD risk by 29% and stroke by 32%. Evidence also suggests CVD may mediate the link between social isolation and mortality. Low social participation and infrequent social contact are associated with higher dementia risk.	Yes	Yes	Yes	-
Liu 2022 [49]	Personality impacts loneliness in rural elderly	-	Yes	-	-
Llorente-Barroso 2021 [50]	ICT enhances elderly individuals' self-esteem and promotes positive emotions. It plays a crucial role during the pandemic, especially for those with higher digital literacy. However, lower digital literacy participants faced challenges due to a lack of inter-generational support, affecting their independence.	-	Yes	Yes	-

Table 3 (continued)

Studies	Main findings	Consequences of loneliness and social isolation			
		Physical	Mental	Social	Gender differences
Lu 2020 [51]	Higher social isolation is linked to lower medication adherence among elderly individuals with chronic diseases, mainly due to diminished social support. Elderly patients with multimorbidity face greater social isolation and loneliness, along with lower social support and medication adherence than their non-multimorbid counterparts. Enhanced social support improves medication adherence and reduces loneliness.	Yes	Yes	Yes	-
Luo 2024 [52]	Different types of social participation affect the mental health of older adults living alone: simple communication negatively impacts depression, while self-entertainment positively influences it. Increased simple communication reduces anxiety, whereas self-entertainment raises anxiety levels.	-	Yes	Yes	Yes
Murayama 2021 [53]	The interaction between mutual aid from family and neighbours and subjective economic status significantly predicted depressive symptoms, mainly in the non-family/neighbours group. Mutual aid was associated with lower perceived isolation and fear of future isolation, with the absence of mutual aid intensifying fear, especially among those without support.	-	Yes	Yes	Yes
O'Súilleabháin 2019 [54]	Emotional loneliness predicts increased mortality risk in older adults, particularly those living alone, while social loneliness does not. Among those not living alone, no associations with mortality were found. Functional status may amplify the risk linked to emotional loneliness.	Yes	Yes	Yes	-
Palacios-Navarro 2024 [55]	Participants demonstrated significant improvements post-intervention in all domains assessed, except cognition. Statistically significant enhancements were observed in quality of life, general health, perceived loneliness, and depression, with large effect sizes indicating high clinical relevance. The intervention is deemed a valuable tool for promoting independence and well-being among community-dwelling elderly individuals.	Yes	Yes	Yes	-
Pedroso-Chaparro 2023 [56]	Ageist stereotypes impact anxiety, depression, and comorbid symptoms only in older adults who perceive themselves as elderly, with loneliness mediating this effect. Self-identification as older activates ageist stereotypes, leading to loneliness and associated psychological distress, including anxiety, depression, and combined anxiety-depression symptoms.	-	Yes	Yes	No
Pengpid 2023 [57]	Loneliness was positively associated with the prevalence and incidence of mental ill-health (e.g., poor self-rated mental health, depressive symptoms, insomnia), physical ill-health (e.g., poor self-rated physical health, hypertension, diabetes), lifestyle factors (e.g., physical inactivity), and mortality.	Yes	Yes	-	-
Sadatnia 2023 [58]	Lower loneliness levels were reported than in previous studies, highlighting the impact of individual and sociocultural factors. A significant relationship exists between loneliness and mental health in the elderly, influenced by age, marital status, living conditions, and physical illness. Married individuals had better mental health than widowed or divorced participants. Membership in organizations correlated with improved mental health. Significant relationships were also found between mental health, social functioning, depression, and all loneliness subscales: romantic, social, and family.	Yes	Yes	Yes	No
Sha 2022 [59]	Frail participants experienced greater isolation, COVID-19 worries, and loneliness than non-frail individuals. They faced challenges like fatigue, pain, and limited mobility, expressing fear of COVID-19 and reduced social interactions.	Yes	Yes	-	-
Shiovitz-Ezra 2023 [60]	Persistent loneliness correlates with sleep issues	-	Yes	-	Yes
Soh 2019 [61]	Perceived problems and loneliness influence the relationship between spousal living arrangements and mental health. Study 1: Living with a spouse was linked to better mental health, while perceived problems correlated with lower mental health scores. Study 2: Spousal living arrangements predicted lower loneliness, which, moderated by perceived problems, differentially impacted mental health.	-	Yes	Yes	-

Table 3 (continued)

Studies	Main findings	Consequences of loneliness and social isolation			
		Physical	Mental	Social	Gender differences
Stephens 2022 [62]	Social and emotional loneliness scores were regressed on demographic variables and neighbourhood factors (satisfaction, accessibility, security, social cohesion). Neighbourhood variables significantly explained variance in loneliness. Mediation tests revealed that their effects on social loneliness were mediated by private-restricted or locally integrated networks.	-	Yes	Yes	Yes
Tanabe 2024 [63]	Subjective well-being, defined by happiness (Shiawase) and purpose (Ikigai), significantly reduces the risk of physical frailty among socially isolated middle-aged and elderly individuals. Those with high subjective well-being demonstrated a lower risk of frailty, even under high social isolation, while individuals in the high social isolation cluster exhibited a higher rate of physical frailty compared to other clusters.	Yes	Yes	Yes	Yes
Theeke 2018 [64]	Loneliness scores declined among LISTEN group participants, while scores increased for those in the attention control group after six weeks. Participants rated the intervention highly in terms of acceptability. Additionally, LISTEN participants reported fewer depressive symptoms, significant declines in systolic blood pressure, and enhanced social support 12 weeks post-intervention, suggesting that participation led to positive changes in thinking or social support behaviours.	Yes	Yes	Yes	-
Tilikainen 2017 [65]	Highlight the importance of relationship quality over quantity in understanding emotional loneliness among older individuals. In individualistic societies, loneliness is often linked to the absence of confidants or friends, whereas collectivistic cultures prioritize family interactions. Emotional loneliness frequently arises from various factors, such as the loss or absence of a partner, illustrating the complex and multifaceted nature of loneliness.	No	Yes	Yes	No
Tragantzopoulou 2021 [66]	Social isolation and loneliness linked to psychiatric and physical disorders	Yes	Yes	Yes	Yes
Vaculíková 2023 [67]	Loneliness significantly linked to sadness, depression, nervousness, and gender, with women at higher risk. Younger retirees reported high levels of loneliness (40% vs. 45%). Sadness and depression were the strongest predictors (2020: OR = 3.69; 2021: OR = 2.55). Increased loneliness was observed among older adults, particularly women, during the COVID-19 pandemic, with a decision-tree algorithm classifying 76% of cases accurately.	-	Yes	Yes	Yes
vanOurs 2021 [68]	Ageing affects both mental health and loneliness. Up to the high 70s, mental health improves and loneliness goes down. Life events, like partner loss or unemployment, worsen mental health and increase loneliness. For men, retirement boosts mental health, and highly educated women also benefit from retiring.	Yes	Yes	Yes	Yes
Vrach 2020 [69]	Social isolation and quarantine lead to increased psychological issues, such as loneliness, stress, anxiety, and depression, with long-term effects potentially resulting in PTSD, depression, and heightened suicide risk. The WHO advocates for support for isolated older adults to reduce anxiety, while Public Health England encourages maintaining social connections online. However, many older adults face challenges accessing digital resources to connect with family.	Yes	Yes	Yes	-
Yang 2022 [70]	Loneliness and self-esteem sequentially mediate the relationship between intergenerational emotional support and subjective well-being in elderly migrants, enhancing well-being by reducing loneliness and increasing self-esteem.	-	Yes	Yes	No
Yang 2024 [71]	Greater social isolation worsened mental health, particularly increasing depression and cognitive decline, with stronger effects in men and individuals over 65.	Yes	Yes	Yes	Yes
Zakizadeh 2022 [72]	Mental health in the elderly population is influenced by several factors: it declines with age and an increasing number of chronic diseases, with men reporting better mental health than women. Enhanced support from friends and reduced feelings of loneliness are associated with improved mental health, while higher loneliness correlates negatively with mental well-being. These findings underscore the significance of demographic factors, social support, and loneliness as predictors of mental health in older adults.	Yes	Yes	Yes	Yes

Table 3 (continued)

Studies	Main findings	Consequences of loneliness and social isolation			
		Physical	Mental	Social	Gender differences
Zhang 2021 [73]	Never-married participants had poorer self-rated health. Those living alone reported fewer difficulties with activities of daily living (ADLs). Subjective social isolation correlated with poor self-rated health, cognitive decline, and ADL and instrumental activities of daily living (IADL) difficulties, regardless of objective social isolation and health behaviours. Kinlessness and lack of social contacts negatively affect older adults' health.	Yes	Yes	Yes	-

it assessed the feasibility of a full systematic review and provided valuable insights for future research by highlighting common variables and methodological approaches in the field.

Loneliness, as evidence suggests, is characterized as the subjective experience of social disconnection and is increasingly recognized as a significant public health concern, particularly among older adults. It is a complex and multifaceted phenomenon influenced by individual characteristics, social dynamics, and environmental contexts. Understanding the details of loneliness and its consequences in this population is essential for designing effective interventions. In contrast, social isolation is an objective condition characterized by a lack of social interaction, contact, and relationships. Understanding this difference is critical because individuals may experience loneliness despite having social connections or, conversely, may not feel lonely even when socially isolated. The distinction between these two concepts allows for a more comprehensive understanding of how loneliness affects individuals differently depending on their social and emotional experiences.

This review synthesizes current evidence on the determinants, impacts, and potential strategies to address loneliness in ageing populations, emphasizing the need for an integrated and tailored approach.

Individual characteristics and loneliness

The experience of loneliness is deeply rooted in individual characteristics, including personality traits, mental health, and self-care abilities [24]. Research consistently highlights personality as a significant determinant of loneliness. Traits such as introversion, social withdrawal, and low emotional resilience are associated with increased prevalence of loneliness, particularly in men and women aged 60–79 years [78]. These traits often limit individuals' ability to form or maintain meaningful social relationships, intensifying feelings of disconnection.

Mental health plays a central role in exacerbating loneliness. Older adults frequently encounter compounded challenges such as declining health, bereavement, and the transition to retirement, which collectively increase psychological distress [28, 79]. This distress manifests as decreased self-esteem, heightened anxiety, and depression, creating a cyclical relationship in which loneliness exacerbates mental health issues in turn. These findings underscore the necessity of interventions that address these interconnected psychological dimensions, emphasizing the need for tools that enhance resilience and coping mechanisms in vulnerable populations.

Self-care abilities, including physical health and lifestyle factors, also intersect with loneliness. Velarde-Mayol et al. (2016) concluded that key lifestyle factors, such as physical activity, social engagement, sleep quality, and diet, were significantly associated with levels of loneliness [80]. Specifically, individuals who led an active lifestyle, maintained regular social interactions, and had healthy sleep and dietary habits reported lower levels of loneliness.

Frailty and chronic illness not only limit mobility but also reduce opportunities for social engagement, further isolating individuals [23]. These observations suggest that fostering physical health and autonomy can have a protective effect against loneliness, particularly when integrated into holistic health promotion strategies. The literature shows the importance of public health policies and community programs aimed at fostering social connections and promoting healthier lifestyle choices to mitigate loneliness across different demographics in urban areas.

Relational and social dimensions of loneliness

Loneliness is often categorized into emotional and social dimensions [25]. Emotional loneliness arises from the absence of intimate, close relationships, whereas social loneliness reflects a lack of broader social networks. Both forms of loneliness are prevalent among older individuals with severe emotional impacts, with studies exposing their interdependent nature and severe emotional impact [22]. Emotional loneliness, for example, can persist even in the presence of social interactions if those interactions lack depth or fail to meet emotional needs. Conversely, social loneliness often stems from situational factors, such as the loss of a spouse or diminished community engagement.

The COVID-19 pandemic has further highlighted the complexities of these relational dimensions [81]. The increased reliance on virtual environments for social interaction has demonstrated both the potential and the limitations of digital tools in mitigating loneliness. Although online platforms have alleviated some aspects of social isolation, they have proven less effective in addressing emotional loneliness, highlighting the need for strategies that foster meaningful and emotionally satisfying connections.

Environmental and socioeconomic influences in community-dwelling older adults

Environmental and socioeconomic factors play essential roles in shaping the experience of loneliness among community-dwelling older adults. Geographic location significantly impacts social connectivity. Rural residents often face heightened risks of loneliness due to limited social infrastructure and fewer opportunities for interaction, whereas urban dwellers may experience social loneliness stemming from feelings of anonymity and disconnection in densely populated environments [35].

Residential settings further influence loneliness dynamics. Older adults in institutional environments, such as nursing homes, are particularly vulnerable due to restricted autonomy and limited opportunities for relationship building. However, those living in community-based settings generally report lower loneliness levels, likely due to greater access to social engagement opportunities. Community-dwelling older adults face unique challenges, with an estimated 20–30% experiencing significant social isolation [82]. Barriers such as limited access to transportation, inadequate digital literacy, and reduced physical mobility exacerbate their isolation [83]. Additionally, the geographic dispersion of families and the loss of close relationships compound these challenges, highlighting the need for accessible community services and innovative digital solutions to enhance connectivity. The concept of social networks is highlighted as an important factor influencing the mental health and emotional well-being of elderly people [84, 85].

Evidence shows how socioeconomic factors, such as income inequality, access to resources, and digital literacy, compound these challenges, emphasizing the importance of policy interventions aimed at reducing disparities and fostering inclusive social environments.

Consequences of loneliness

Most studies have shown that the consequences of loneliness extend across physical, mental, and social domains. Physically, loneliness is linked to increased risks of cardiovascular disease, cognitive decline, and frailty through mechanisms such as chronic stress, poor sleep quality, and immune dysregulation [86]. Social isolation, a related but distinct phenomenon, further exacerbates these risks by limiting opportunities for physical activity and social interaction [87]. These findings highlight the critical role of physical and social engagement in mitigating the health impacts of loneliness.

Mentally, loneliness significantly affects psychological well-being, contributing to higher rates of depression, anxiety, and cognitive decline. Neurobiological research suggests that loneliness enhances vigilance to social threats and diminishes the enjoyment of social interactions, as evidenced by structural changes in brain areas associated with social perception [49]. These insights underscore the importance of addressing both the emotional and the cognitive dimensions of loneliness in intervention strategies [36].

Socially, loneliness limits community participation and reduces the size and quality of social networks. This social exclusion perpetuates a cycle of isolation, making it increasingly difficult for individuals to reintegrate into social contexts [28]. Efforts to combat this cycle must focus on reactivating social networks and fostering inclusive community engagement.

Gender perspective and loneliness

Gender significantly influences how loneliness is experienced and mitigated among older adults. Research has shown that gender can influence how social determinants affect quality of life [88]. Societal shifts, such as the increased labour force participation of women, have altered traditional family structures and intergenerational support systems, contributing to a greater prevalence of loneliness in older individuals [89]. Men and women also differ in how they benefit from social connections. For example, men derive greater quality-of-life improvements from social networks, whereas women benefit more from active social participation [88]. These differences underscore the importance of gender-sensitive approaches to designing interventions, such as strengthening social networks for men and promoting engagement activities for women.

Research gaps and future directions

Despite a growing body of evidence, several research gaps persist. Many studies rely on cross-sectional or qualitative designs, limiting insights into the longitudinal dynamics of loneliness and its causal effects on health. The small number of studies per intervention limits conclusions on sources of heterogeneity. The inconsistent use of standardized measures further complicates comparisons across studies, suggesting a need for harmonized methodologies. Additionally, although digital interventions hold promise, their role in addressing emotional loneliness remains underexplored. Intersectional analyses that consider the interplay of gender, age, socioeconomic

status, and cultural factors are also lacking, despite their importance for developing equitable interventions.

These findings underscore the need for comprehensive approaches to address loneliness, considering both its physical and psychological dimensions and its gendered impacts.

This broad range of study designs and settings reflects the multifactorial nature of loneliness and the need for diverse research approaches to fully understand its causes, consequences, and potential solutions.

The evidence is consistent with a gap in the current literature, suggesting that more rigorous studies are needed to understand the long-term impacts of loneliness and the effectiveness of interventions [77].

In conclusion, loneliness in older adults is a multifaceted issue with profound implications for physical, mental, and social well-being. This article provides a comprehensive review of the literature regarding this increasing number of phenomena. Addressing this challenge requires an integrative approach that considers individual, relational, and environmental determinants. Tailored, gender-sensitive interventions, alongside policy initiatives that reduce socioeconomic disparities and enhance social support systems, are critical. Future research should prioritize longitudinal designs, standardized measures, and intersectional frameworks to advance understanding and inform effective strategies. As the global population continues to age, addressing loneliness and social isolation must remain a priority for public health, policy, and research communities.

Strengths and limitations of this scoping review

The primary strength of this review lies in its specific and contemporary focus, analysing loneliness and social isolation among community-dwelling older adults—a population less studied than institutionalized groups. By including research conducted in the past decade, this review offers an updated perspective on a growing issue in ageing populations. Furthermore, the methodology employed, which is based on the PRISMA-ScR guidelines and Arksey and O'Malley's framework, ensures a systematic and rigorous approach. The inclusion of diverse sources, encompassing both the scientific and grey literature, alongside consideration of broad geographical contexts and varied methods (quantitative, qualitative, and mixed), enriches the understanding of this phenomenon. Additionally, this review identifies key research gaps, such as the need for longitudinal analyses and the exploration of intersectional factors, including gender, socioeconomic status, and culture.

However, this review also has notable limitations. Restricting the analysis to studies published in English and Spanish may have excluded relevant research in other languages, limiting the representativeness of findings in specific regions. Moreover, focusing exclusively on the past decade may overlook historical trends or foundational studies that provide a broader context. The heterogeneity of the included studies, particularly in terms of definitions, measurement tools, and methodological approaches, complicates the comparison and synthesis of results. Finally, the exclusion of studies without full-text availability and the limited analysis of intervention effectiveness highlight areas that warrant further exploration in future research.

Abbreviations

WHO	World Health Organization
COVID-19	Coronavirus disease of 2019
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta Analyses

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Not applicable.

Author contributions

ECT and MP conceptualized the aim and research question of the review. EC and CCH conducted the data collection and analysis. All the authors drafted and substantially revised the manuscript for publication.

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Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request. Data sharing is not applicable to this article as no new datasets were generated or analysed.

Declarations

Ethical approval

This research was a review; therefore, no ethical approval was needed, and no informed consent was needed.

Consent for publication

Not applicable. This study is a scoping review and does not involve human participants or patient data.

Competing interests

The authors declare no competing interests.

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