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REVIEW ARTICLE

Understanding Loneliness and Social Isolation in Older Adults: A Review Article

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ABSTRACT

Loneliness and social isolation are distinct but interrelated public health concerns among older adults, associated with adverse physical, mental, and cognitive outcomes and increased mortality risk. This narrative review synthesizes peer-reviewed English-language evidence identified through PubMed searches through April 2026. It examines their characteristics and patterns, risk factors, health consequences and underlying mechanisms, interventions, and policy responses. Loneliness and social isolation are influenced by factors operating at individual, interpersonal, community, environmental, and structural levels. Older adults with poor health, functional limitations, socioeconomic disadvantage, social disconnection, or limited access to support may be particularly vulnerable. Both conditions are associated with cardiovascular disease, stroke, depression, dementia, functional impairment, frailty, and all-cause mortality, although they may influence health through partly distinct physiological, psychological, behavioral, and sociological pathways. No single intervention is universally effective. Available evidence favors tailored, multicomponent, and context-sensitive approaches combining meaningful social engagement, psychological support, and efforts to reduce barriers to participation. Psychologically focused interventions may be more appropriate when loneliness predominates, whereas outreach, practical support, and opportunities for participation may better address social isolation. Technology appears most valuable when it strengthens rather than replaces human relationships. Policy responses should integrate screening and social prescribing within healthcare while supporting age-friendly communities and equitable access to social resources. Future research should evaluate culturally appropriate, accessible, and sustainable interventions, including artificial intelligence and technology-supported approaches.

Keywords: health outcomes, intervention, loneliness, older adults, social isolation

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INTRODUCTION

Loneliness is a subjective experience resulting from a perceived discrepancy between desired and actual social relationships.[1-6] By contrast, social isolation refers to the objective lack of social connections with others, often measured by the number and frequency of social interactions a person has with others.[1-6] Both are closely interconnected and can affect individuals differently. Older adults may experience loneliness without being socially isolated, social isolation without loneliness, both conditions simultaneously, or neither condition.[7,8] Distinguishing between the two is important because they have different underlying mechanisms and may require different intervention approaches.

Loneliness and social isolation are major public health concerns associated with adverse physical, psychological, and social outcomes, including cardiovascular disease, stroke, depression, cognitive decline, dementia, reduced quality of life, and an increased risk of mortality.[1,6,9-15] These associations are likely to be bidirectional, as adverse health outcomes may further impair functional ability and overall health, thereby reducing social participation and increasing vulnerability to loneliness and social isolation.[9,16-17]

Among older adults, loneliness and social isolation are common concerns. Substantial cross-country variation in loneliness prevalence exists, even within the same region. According to data from 40 countries, Eastern European countries have the highest rates of loneliness among older adults (18.7%–24.2%), whereas Northern European countries have the lowest rates (4.2%–6.5%).[18] In Thailand, approximately 22.2% of adults who were not previously lonely developed incident loneliness over a two-year follow-up period.[19] Social isolation is also widespread, affecting approximately 33% of older adults.[20] These issues are becoming increasingly relevant in Thailand because of rapid demographic and social changes driven by increased longevity and declining fertility. The proportion of adults aged 60 years and older increased from 17.8% in 2020 to 20% in 2024 and is projected to reach approximately 25% by 2030.[21,22] Moreover, adult-child labor migration from rural to urban areas has reshaped family living arrangements, contributing to smaller household sizes and more older adults living alone, which may increase vulnerability to loneliness and social isolation.[23] These demographic and social changes highlight the importance of understanding loneliness and social isolation within their broader social and environmental contexts.

Although numerous reviews have examined loneliness and social isolation among older adults, many have focused on one or the other as a separate problem. This review contributes by integrating evidence on both experiences while preserving the conceptual distinction between them. It examines how loneliness and social isolation may occur independently or concurrently and how these different patterns may require different intervention approaches. Drawing on evidence from diverse global contexts, a conceptual framework is used to explain how loneliness and social isolation may affect health through four interconnected pathways: physiological, psychological, behavioral, and sociological.

CONTENT OF REVIEW

A literature search was conducted in PubMed for peer-reviewed English-language publications on loneliness and social isolation among older adults published through April 2026. MeSH and free-text terms included “loneliness,” “social isolation,” “older adults,” “health outcomes,” “risk factors,” “interventions,” and “policy.” Relevant publications were selected for inclusion in this narrative review, and the reference lists of key publications were screened to identify additional studies. The review is structured around the following key areas related to loneliness and social isolation: characteristics and patterns, risk factors, health consequences and underlying mechanisms, interventions, and policy responses.

Characteristics and Patterns of Loneliness and Social Isolation

Loneliness and social isolation may occur independently or coexist, depending on individual circumstances and social contexts. Loneliness is a distressing subjective experience of feeling disconnected from others. A comprehensive understanding of loneliness must take into account an individual’s life course, personal experiences, and environmental circumstances.[24]

Experiences of loneliness vary across individuals, occurring occasionally for some, persistently for others, and not at all for some individuals.[3,24] Loneliness can be conceptualized as a relational phenomenon occurring at multiple levels: within oneself, in relation to others, and in connection with the broader world.[25] At the personal level, chosen solitude may be experienced as fulfilling and should not necessarily be interpreted as loneliness. At the interpersonal level, loneliness may arise either from a lack of companionship with family and friends or the absence of an intimate partner to share daily life.

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At a broader societal level, it may reflect a sense of disconnection from society, including feelings of exclusion, social disconnection, or lack of purpose in everyday life.[25]

By contrast, social isolation is typically defined as objectively limited social contact, restricted social networks, or low participation in social activities.[5,26] Its meaning and effects, however, may vary depending on whether limited contact is chosen or imposed. Some older adults may prefer a smaller social network and remain satisfied with their relationships, whereas others may experience involuntary isolation following widowhood, retirement, declining mobility, or the loss of established social roles and perceive it more negatively.[24,27]

Loneliness may also carry considerable stigma, leading some older adults to conceal their experiences because of shame or social expectations and thereby making loneliness difficult to identify.[28,29] Social isolation may similarly remain unrecognized, particularly among older adults who have limited social contact but do not describe themselves as lonely or distressed. Studies have therefore noted that identifying and engaging socially isolated older adults in practice can be challenging.[27,30]

Both loneliness and social isolation can change over time rather than remain static. Four broad loneliness trajectories have been identified: stable-low, descending, stable-high, and ascending (Table 1).[31] The stable-low and descending patterns are generally considered lower-risk trajectories, whereas stable-high and ascending patterns indicate persistent or increasing loneliness and have been associated with poorer health outcomes.[31] Similarly, four trajectories of social isolation have been described among older adults: rarely isolated, steadily increasing isolation, steadily decreasing isolation, and persistent isolation.[32] Changes in loneliness and social isolation over time have also been associated with subsequent health-related outcomes.[33] These findings highlight the importance of considering the duration, trajectory, and personal meaning of loneliness and social disconnection rather than relying solely on a single assessment.

Table 1 Loneliness trajectories in later life and associated risks[31]

Trajectory	Description	Key risk/ protective factors	Health implications	Risk level
Stable-low	Persistently low loneliness over time	Strong social support, partnership, and good health	Better cognitive resilience and slower decline	Low
Descending	High loneliness that decreases over time	Social support and adaptive coping	Recovery and improved well-being	Low
Stable-high	Persistently high loneliness	Social disadvantage, poor health, and isolation	Cognitive decline and depressive symptoms	High
Ascending	Increasing loneliness over time	Health deterioration, isolation, and stressors	Worsening mental and cognitive outcomes	High

Risk Factors Associated with Loneliness and Social Isolation

The determinants of loneliness and social isolation in later life can be broadly classified as non-modifiable (e.g., age, gender, and disability)[9,25,34,35] or potentially modifiable (e.g., health and functional status, sense of purpose, social relationships, living arrangements, and structural inequalities).[35-43] These determinants are considered across four interconnected levels: individual, interpersonal, community and environmental, and societal and structural. Table 2 provides a complementary summary of the health, psychological, sociocultural, and environmental determinants of loneliness.[44]

Individual factors: Older adults may be particularly vulnerable to loneliness and social isolation because of functional limitations, cognitive decline, sensory impairment, social disconnection, and financial strain.[9] Risk is also higher among those who are older, less educated, economically disadvantaged, or unmarried.[34] Personality traits, including neuroticism and extraversion, may further influence vulnerability,[35,36,38] while a diminished sense of purpose may partly explain the association between loneliness and mortality.[39]

Gender differences are complex and depend on how loneliness is conceptualized and the type of relationship involved.[25,35] Men may be particularly vulnerable after losing an intimate partner or workplace-based relationships following retirement, whereas women often maintain broader social networks.[5,6,34,35] Nevertheless, women report loneliness more frequently and may experience greater depression and anxiety, possibly reflecting gendered social expectations and caregiving roles.[5,6,34,36,45-47] Among women, the coexistence of loneliness and social isolation is associated with a reduced likelihood of healthy aging.[46]

Table 2 Key risk and protective factors for loneliness in older adults[44]

Domain	Risk factors	Protective factors
Health	Chronic illness, frailty, disability, sensory impairments, poor sleep, and low physical activity	Good self-rated health, physical activity, better sleep, and health literacy
Psychological	Depression, stress, cognitive decline, neuroticism, low life satisfaction, and lack of purpose	Sense of purpose, positive well-being, and adaptive personality traits (e.g., extraversion)
Sociocultural	Living alone, bereavement, small social networks, low socioeconomic status, retirement, social isolation, and digital barriers	Strong social networks, family and community support, employment/ volunteering, and social participation
Environmental	Poor access to transport/services, weak community infrastructure, and urban /rural disadvantage	Accessible environments, community cohesion, digital connectivity, and supportive living arrangements

Interpersonal factors: Social relationships and living arrangements further shape vulnerability. Older adults who are widowed, divorced, single, or living alone are at greater risk, whereas multigenerational living may reduce loneliness when older adults are meaningfully included in daily interactions.[37] Continued employment and social participation may serve as protective factors by providing structure, purpose, and opportunities for meaningful interaction, while the effect of retirement varies by individual and cultural context.[42,44]

Community and environmental factors: Housing conditions and geographical context may either facilitate or restrict social connection. Evidence from China and sub-Saharan Africa highlights a "rural disadvantage," wherein limited infrastructure and service access constrain social participation.[40,41] By contrast, an "urban disadvantage" has been observed in Thailand and Spain, where high population density coexists with social fragmentation and weaker interpersonal ties.[42,43,47] Limited digital literacy and mobility can further increase isolation in both settings.[6] These contrasting findings suggest that vulnerability is shaped less by location alone than by the accessibility and quality of opportunities for social participation.

Societal and structural factors: Structural inequalities may disproportionately affect people with disabilities, LGBTQ individuals, ethnic minorities, and immigrants. These groups may face linguistic barriers, discrimination, and systemic disadvantages that increase their vulnerability to loneliness and social isolation.[4,9]

Overall, loneliness and social isolation in later life reflect the interaction of modifiable and non-modifiable determinants across multiple levels, highlighting the need for interventions that address both individual vulnerability and broader barriers to social connection.

Health Consequences and Underlying Mechanisms of Loneliness and Social Isolation

Regarding physical health outcomes, loneliness and social isolation are associated with increased risks of cardiovascular diseases and stroke in older adults.[6,7,9,10] Loneliness has been associated with several conditions, including osteoporosis, hypertension, diabetes, kidney disease, and difficulties with activities of daily living.[43,48] Among older adults living in congregate long-term care settings, loneliness is also associated with increased frailty.[49]

In terms of mental and cognitive health, loneliness and social isolation are associated with depression and dementia.[6,7,9,10] In long-term care settings, loneliness is also linked to depression and suicidal ideation, although its impact varies with residents' desire for connection and adaptation to communal living.[49]

Loneliness and social isolation increase all-cause mortality risk through partly distinct pathways.[5,7,10,11,13,14] Social isolation is associated with a 35% increase in mortality risk, compared with 14% for loneliness, while their co-occurrence confers greater risk.[5,7] Social isolation reflects an objective lack of social contact, whereas loneliness is more closely linked to subjective experience and underlying health status.[34]

Loneliness and social isolation affect health through multiple, interconnected mechanisms spanning physiological, psychological, behavioral, and sociological pathways. **Figure 1** shows that these relationships are multidirectional, with loneliness and social isolation influencing health outcomes and mortality through four interacting mechanisms.[16,17]

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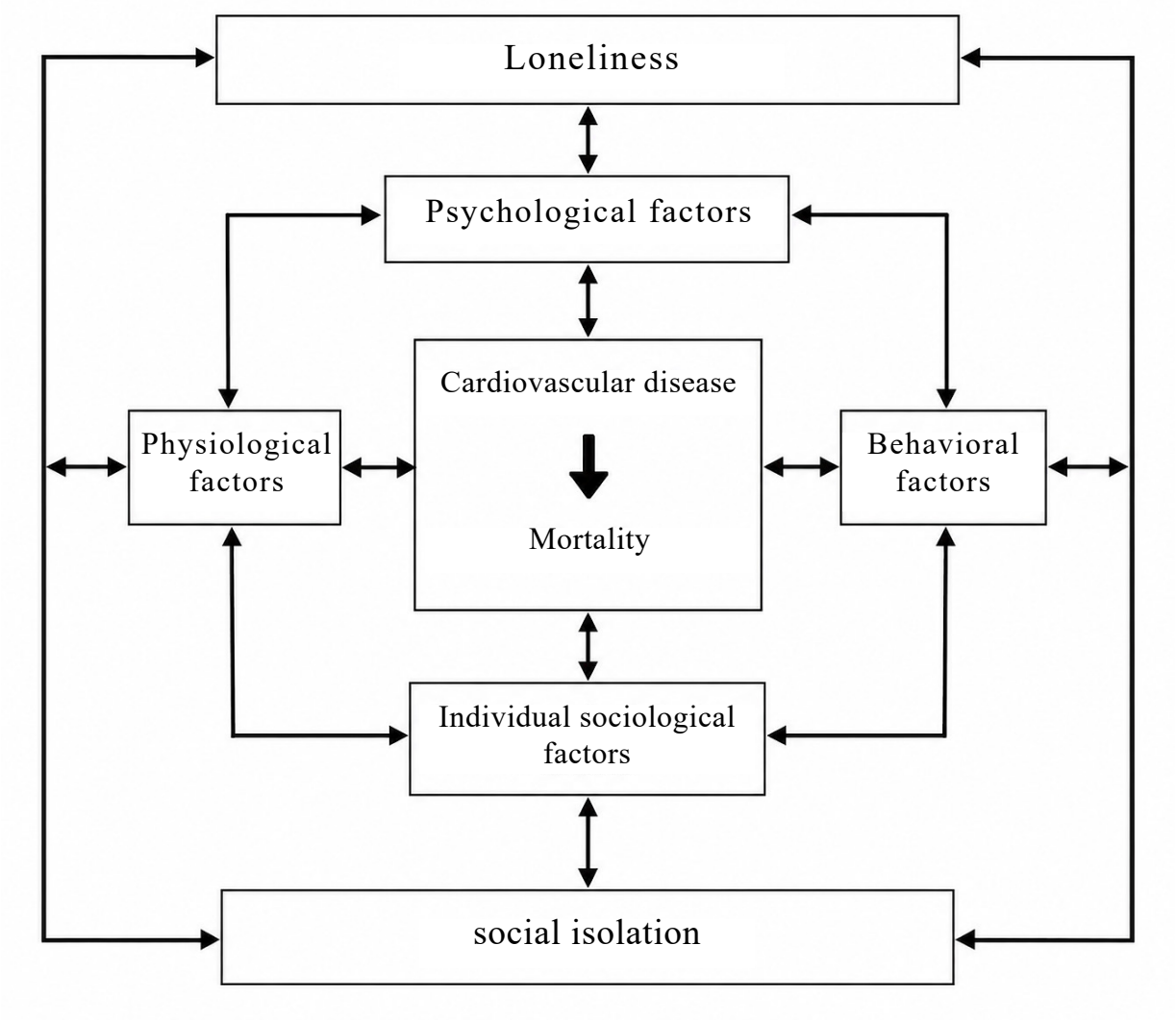


Figure 1 A theoretical framework of the relationship between social isolation, loneliness, cardiovascular disease, and mortality[16]

Physiological processes: Loneliness can trigger activation of the hypothalamic–pituitary–adrenal axis, amplifying neuroendocrine stress responses and contributing to sustained elevations in cortisol and blood pressure, while disrupting glucose regulation, metabolism, and inflammatory control.[9,13,26] In the absence of buffering factors (e.g., social support), these changes increase the risk of cardiovascular diseases and mortality.[16,50] Subjective loneliness and objective social isolation have also been linked to accelerated biological aging.[12] In addition, increased inflammatory markers associated with loneliness may contribute to sleep disturbances, impairing physiological repair processes and further increasing mortality risk.[9,16,41]

Psychological processes: Loneliness is associated with cognitive decline, depression, and an increased risk of suicide, with evidence strongly linking it to dementia.[41,51,52] Declining cognitive function can further impair communication, decision-making, and emotional regulation, thereby reducing the ability to maintain meaningful social interactions and increasing vulnerability to loneliness and social isolation.[16,26] In turn, social isolation may deprive the brain of cognitive stimulation, whereas loneliness contributes to psychological distress. Together, these factors accelerate cognitive deterioration.[53]

Loneliness and mental health are closely intertwined in a bidirectional relationship. Although loneliness can lead to depression and anxiety, preexisting depressive symptoms also increase the likelihood of severe oneliness.[6,42,54] Chronic loneliness may also induce neurobiological changes (e.g., increased sensitivity to social threats and reduced reward from social interactions), reinforcing a cycle of withdrawal and isolation.[6]

Furthermore, objective social isolation has been shown to independently contribute to cognitive decline in later life.[55] It is also associated with accelerated memory decline, with gender differences being observed: persistently high isolation is more strongly associated with memory loss in men, whereas increasing isolation over time appears to have a greater impact on women.[56]

Behavioral factors: Individuals who experience loneliness or social isolation are more likely to adopt unhealthy behaviors (e.g., physical inactivity, poor dietary habits, tobacco use, excessive alcohol intake, nonadherence to prescribed medications, and reduced participation in routine preventive health care). These behaviors increase the risks of cardiovascular diseases, cognitive decline, and mortality.[38-40] Importantly, social isolation and lack of social support can directly promote physical inactivity and reduced mobility, further compounding these health risks.[57]

Sociological factors: Social isolation is associated with reduced social participation and limited cognitive and sensory stimulation, thereby contributing to poorer cognitive function.[56,58] Isolated individuals may also face barriers to accessing healthcare (e.g., limited awareness of available services and difficulties in reaching medical facilities), thereby increasing mortality risk.[16,17] By contrast, individuals experiencing loneliness may have higher healthcare utilization, sometimes seeking contact or reassurance rather than medical treatment.[16] At a broader level, social isolation and loneliness place a significant economic burden on society; however, the magnitude of this burden remains unclear.[9]

Interventions to Address Loneliness and Social Isolation

International public health guidance recommends addressing loneliness and social isolation through coordinated, multilevel action rather than relying on a single intervention. The World Health Organization (WHO) highlights psychological support, social participation, age-friendly environments, transportation, digital inclusion, and policies that strengthen social cohesion across individual, relational, community, and societal levels.[9] The 2025 WHO Commission on Social Connection further emphasized coordinated action across policy, research, interventions, measurement, and public engagement, with social connection integrated into health and social systems.[59]

Within this multilevel framework, intervention selection should reflect whether an older adult experiences loneliness, social isolation, both conditions, or neither. Older adults who are socially isolated but do not feel lonely may require monitoring and practical support while respecting their preference for solitude. In contrast, individuals who feel lonely despite having social contact may benefit more from interventions targeting emotional regulation, maladaptive social cognition, or meaning-making. When loneliness and social isolation co-occur, multicomponent approaches combining meaningful social engagement with psychological support are likely to be more appropriate. **Table 3** summarizes these tailored strategies.[7]

Table 3 Tailored intervention strategies based on loneliness and social isolation[7]

Loneliness/social isolation	Absence of social isolation	Presence of social isolation
Absence of loneliness	Preventive programs to address the underlying risks of loneliness and isolation	Monitoring and minimal intervention. Respect preference for solitude
Presence of loneliness	Tailored intervention approaches	Interventions that increase social contacts

Interventions targeting loneliness in older adults can be broadly categorized into four mechanistic approaches: distress tolerance, cognitive engagement and restructuring, social behavioral activation, and acceptance of aging **(Table 4)**.[60] Distress tolerance and acceptance-based approaches show the most consistent effectiveness, particularly in reducing emotional loneliness, whereas cognitive and behavioral strategies demonstrate more variable outcomes.[60] Nevertheless, no single intervention has emerged as universally effective. Across reviews, the best-supported approaches are tailored and multicomponent, addressing both social disconnection and internal psychological processes, particularly emotional regulation and meaning-making, rather than focusing solely on increasing the quantity of social contact.[60-63]

At the individual and interpersonal levels, interventions appear most beneficial when they promote meaningful and active participation rather than passive receipt of support.[16,64] Volunteer activities, walking groups, dance movement therapy, and other socially engaging group activities may strengthen self-efficacy, social integration, and psychological well-being, thereby reducing

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subjective emotional loneliness.[7,64-66] Peer-delivered telephone programs may also provide accessible human contact, particularly for older adults affected by poverty or reduced mobility.[67,68] However, generic group activities and befriending programs have produced inconsistent results and may be less acceptable to individuals who do not perceive the activities as personally meaningful or who experience social anxiety.[62]

Table 4 Mechanistic intervention approaches for reducing loneliness in older adults[60]

Intervention category	Primary focus	Overall effect on loneliness
Distress tolerance	Managing negative emotions (e.g., mindfulness, meditation, and animal-assisted therapy)	Large, statistically significant reduction
Cognitive engagement	Modifying maladaptive thoughts (e.g., cognitive behavioral therapy and cognitive training)	Mixed evidence; not consistently significant
Social behavioral activation	Increasing social participation (e.g., group activities, exercise, and community-based programs)	Limited or nonsignificant overall effect
Acceptance of aging	Processing aging-related changes and life reflection (e.g., reminiscence therapy)	Small-to-moderate significant reduction

Psychological interventions play an important complementary role, particularly when subjective loneliness persists despite the availability of social contact. Cognitive behavioral therapy (CBT) and mindfulness-based interventions may reduce loneliness by addressing maladaptive thoughts and improving emotional regulation, while behavioral activation and mindfulness may also improve sleep, life satisfaction, and psychological well-being.[67,69] Reminiscence therapy, which draws on autobiographical memories often stimulated by music, photographs, or personal artifacts, has been shown to be effective in fostering emotional connection and social engagement.[70] Promoting resilience may further help older adults adapt to bereavement, chronic illness, and other adversities associated with loneliness.[71] However, the effectiveness of psychological interventions depends on the delivery format and professional expertise, and the broader evidence base remains uneven.[62,70]

Other potentially beneficial approaches include interactions with live animals, robotic pets, and virtual companions, which may provide companionship, emotional support, and a sense of purpose while facilitating interaction with others.[61,72] Their suitability, however, depends on individual preferences, health status, and living environment.[62,67,73] In institutional settings (e.g., hospitals or long-term care facilities), where opportunities for social interaction are more limited, technology-assisted interventions and physical, animal-like social robots may help reduce loneliness and depressive symptoms, although the evidence remains heterogeneous.[62,74]

Beyond these specific approaches, the effectiveness of technological interventions is mixed and context-dependent. Online communication has also demonstrated benefits in long-term care settings. However, its impact on community populations remains limited.[62] Digital communication and remote therapies (e.g., online CBT) offer scalable and cost-effective support,[75] but their benefits depend on access to suitable devices and internet services, digital literacy, ease of use, user acceptance, and cultural context.[75-77] Privacy and data-security concerns may create additional barriers, particularly when technologies involve video monitoring or the collection of personal information.[78] Importantly, evidence indicates that technology is most effective when it facilitates real-time, human-to-human interaction and strengthens existing relationships rather than attempting to replace them.[69,73,76,79] Platforms enabling real-time interpersonal interaction, including video conferencing or messaging applications, are significantly more effective at reducing loneliness than human-to-computer interactions.[74] In Thailand, older adults may continue to prefer face-to-face interactions through family and community networks, highlighting the limitations of purely digital approaches.[79] Technology should be regarded as a complementary tool that expands opportunities for connection and supports existing social relationships, rather than as a substitute for human contact.

At the community and structural levels, interventions should seek to reduce environmental and systemic barriers to participation. Age-friendly communities, community health workers, accessible transportation, inclusive public spaces, volunteer opportunities, and digital inclusion may strengthen social connection by improving access to services and creating regular

opportunities for participation.[7,9,80] The built environment also plays an important role: transit-oriented public spaces provide low-threshold opportunities for older adults to engage with society on their own terms, encouraging regular social interaction and reducing objective isolation.[7,80] However, evidence for community and societal interventions remains less developed than that for person-level approaches, partly because structural interventions are more difficult to evaluate using conventional study designs.[81]

For community-dwelling older adults, particularly those affected by poverty or digital exclusion, low-technology, human-centered approaches remain valuable. Their effectiveness is enhanced when they enable older adults to engage in meaningful activities, interact with individuals of their choice, and foster a sense of community belonging.[82] Brief, peer-delivered telephone interventions can produce sustained reductions in loneliness and improve life satisfaction.[67,68] By contrast, older adults with more complex health conditions may require more intensive, face-to-face group interventions that combine physical activity with health education to achieve meaningful social outcomes.[83]

Nevertheless, not all interventions are consistently effective. For example, befriending schemes and group activities often yield variable outcomes and may, in some cases, exacerbate social anxiety.[62] Older adults who are socially isolated but do not perceive themselves as lonely may also be less motivated to engage. For those experiencing severe isolation, access to primary care, hotlines, befriending services, and opportunities for physical or recreational activity remains important.[84]

These findings suggest that increasing the quantity of social contact alone is insufficient. Interventions should consider individual preferences and promote meaningful, emotionally supportive interactions.[7] Outcomes may vary according to participant characteristics, baseline loneliness and social isolation, health and functional status, intervention content and underlying mechanisms, delivery format, facilitator expertise, environmental context, and cultural setting.[60-63,70,79,81]

The available evidence supports tailored, multicomponent, and context-sensitive approaches. Psychologically focused interventions may be particularly relevant when subjective loneliness predominates, whereas outreach, practical support, and opportunities for participation may be more appropriate when objective social isolation is the principal concern. When both conditions coexist, multicomponent strategies combining social-skills development, stronger support networks, opportunities for engagement, and the modification of maladaptive cognitions may be most suitable.[7,60,61] Therefore, no single approach is universally effective; interventions should be matched to loneliness severity, socioeconomic circumstances, health status, social context, and cultural factors, while preventive strategies, including regular social contact, may benefit those at risk.[7,47,60,62,63,69,79,81]

Policies to Address Loneliness and Social Isolation

Loneliness and social isolation are increasingly recognized as major public health issues, prompting cross-sector initiatives, including the UK's Campaign to End Loneliness and similar programs in Denmark and Australia.[63] Although these initiatives can enhance social participation, their effectiveness varies by context, highlighting the need for locally tailored approaches.[85]

Policy efforts must extend beyond community programs to systemic integration within healthcare. This includes routine screening for social isolation in primary care and the use of "social prescribing" to connect individuals with community resources and social activities.[5,17,79] Structural policies are equally important, especially those promoting age-friendly environments, accessible public spaces, and equitable access to services and addressing broader social inequalities that drive loneliness.[6,38,80]

Despite growing attention, there are challenges that remain, including limited funding, insufficient evidence, and a lack of tailored interventions.[86] Overall, effective responses require coordinated, multilevel strategies that integrate healthcare, social support, and structural reform to address loneliness as a systemic issue.

CONCLUSION

Loneliness and social isolation in older adults remain major public health concerns associated with adverse physical and mental health outcomes and increased mortality risk. Their determinants operate across individual, interpersonal, environmental, and structural levels.

No single intervention is universally effective. Tailored, multicomponent, and context-sensitive approaches combining psychological support, meaningful social engagement, and reduced barriers to participation appear most promising. Policy responses should integrate screening and social prescribing within healthcare while

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supporting age-friendly communities and equitable access to social resources.

Future research should evaluate artificial intelligence and other technology-supported interventions, social prescribing, age-friendly digital environments, and culturally appropriate approaches, with attention to effectiveness, accessibility, acceptability, privacy, and sustainability.

Conflict of Interest

The authors declare that they have no conflicts of interest.

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Visualization: Y.S.

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