Review of Contemporary Philosophy
ISSN: 1841-5261, e-ISSN: 2471-089X
Vol 23 (2), 2024
Pp 7190 - 7200

# Association between Social Isolation and Depression among Community-Dwelling Older Adults: A Cross-Sectional Study

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**Abstract**

**Background:**Social isolation is a significant public health concern among older adults, strongly associated with depression, yet limited research has explored this relationship in Middle Eastern contexts.

**Aim:**To examine the association between social isolation and depression among community-dwelling older adults in Saudi Arabia and identify relevant sociodemographic predictors.

**Methods:**A cross-sectional study was conducted among 130 elderly individuals attending healthcare facilities at King Khalid University, Saudi Arabia. Social isolation was assessed using the Lubben Social Network Scale-6 (LSNS-6), and depressive symptoms were measured by the Geriatric Depression Scale-15 (GDS-15). Sociodemographic data were collected via structured interviews. Descriptive statistics, Chi-square tests, Pearson correlations, and multivariate logistic regression analyses were conducted.

**Results:**Social isolation affected 46.2% of participants, while depression was prevalent in 56.9%. A significant inverse correlation was found between LSNS-6 and GDS-15 scores ($r=-0.62$, $p<0.001$). Multivariate analysis demonstrated that moderate-to-severe social isolation significantly increased depression risk (Adjusted OR=4.13, 95% CI=1.86–9.16; $p<0.001$).

**Conclusion:**Social isolation was highly prevalent among community-dwelling older adults and independently predicted depressive symptoms, underscoring the need for routine screening and interventions aimed at enhancing social connectivity.

**Keywords:**Social isolation; Depression; Older adults; Community-dwelling; Lubben Social Network Scale; Geriatric Depression Scale; Saudi Arabia

**Received**:10 July 2024 **Revised**:21 August 2024 **Accepted:**05 September 2024

## Introduction

The rapid growth of the global aging population presents both opportunities and challenges for health systems worldwide. As individuals live longer, there is a corresponding need to address not only their physical health but also their psychological and social well-being. One of the most pressing yet underrecognized issues among older adults is social isolation—an objective state characterized by minimal contact with others or the broader community (1). Unlike loneliness, which refers to the subjective perception of being alone, social isolation can be measured by tangible indicators such as frequency of social interaction and size of one's social network (2). While it can affect individuals across the lifespan, older adults are particularly susceptible due to life events such as retirement, widowhood, reduced mobility, or relocation of family members (3).

Social isolation has been linked to a range of negative outcomes, including increased risk for cardiovascular disease, functional decline, cognitive impairment, and all-cause mortality (4,5). Among these, its impact on mental health—specifically depression—has garnered increasing attention.

Depression in older adults often goes undiagnosed and untreated, owing in part to its atypical presentation and the mistaken belief that it is a normal part of aging (6). However, late-life depression is associated with serious consequences, including increased healthcare utilization, poorer prognosis for comorbid chronic diseases, and suicide (7). The bidirectional relationship between social isolation and depression complicates efforts to determine causality. Nevertheless, existing evidence suggests that the absence of meaningful social contact can predispose older adults to depressive symptoms, and conversely, depression can exacerbate withdrawal from social life (8,9).

The prevalence of depression among older adults varies widely across studies, with estimates ranging from 10% to 30% depending on the population and setting (10). Social isolation, likewise, affects between 20% and 40% of community-dwelling elderly individuals globally (11). A large body of literature from Western countries supports the association between these two conditions. For example, a longitudinal study in the United States found that socially isolated older adults were nearly twice as likely to develop clinically significant depressive symptoms over a four-year period (12). In the United Kingdom, research from the English Longitudinal Study of Ageing (ELSA) showed that individuals with weaker social ties had a significantly higher risk of depression even after controlling for socioeconomic status and health conditions (13). These findings underscore the importance of social connectivity as a determinant of mental health in older populations.

Despite this, relatively fewer studies have explored this relationship in non-Western, community-based settings. In countries such as Saudi Arabia, Egypt, and other parts of the Middle East, traditional family structures are rapidly evolving due to urbanization, changes in cultural norms, and migration patterns. Historically, older adults in these regions have relied on extended family networks for emotional and instrumental support. However, increasing nuclearization of families and shifts in intergenerational living arrangements may be eroding these traditional safety nets, leaving many elderly individuals socially vulnerable (14,15). Recent studies in Gulf Cooperation Council (GCC) countries suggest that the prevalence of depression among older adults may be rising, with social factors playing a significant role (16). Nevertheless, limited empirical evidence exists on the association between social isolation and depression in community-dwelling elderly populations in these settings.

Understanding this association is crucial for several reasons. First, it can inform the development of culturally appropriate screening and intervention strategies to identify at-risk older adults before the onset of severe psychological distress. Second, it may contribute to the design of public health policies that foster social engagement and reduce stigma around mental health in aging populations. Third, it aligns with the objectives of global healthy aging frameworks that emphasize psychosocial well-being as a core domain of geriatric health (17). Moreover, identifying modifiable social determinants of depression aligns with the World Health Organization's (WHO) vision of integrated, person-centered care for older adults (18).

The mechanisms linking social isolation and depression are multifaceted. Biologically, social isolation has been associated with increased inflammatory markers and dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis, both of which are implicated in depression (19). Psychologically, lack of social support may reduce an individual’s ability to cope with stressors, thereby increasing vulnerability to depressive affect (20). Behaviorally, socially isolated individuals may be less likely to engage in health-promoting activities such as physical exercise, medication adherence, or routine health checkups—all factors that contribute to emotional well-being (21). Additionally, the onset of social isolation in later life may be perceived as a loss of role or purpose, especially in cultures where older adults are traditionally viewed as central family figures (22).

Given the critical role of social connection in late-life mental health, it is imperative to empirically examine the relationship between social isolation and depression in diverse, community-based settings. This study aims to fill a gap in the literature by investigating this association among community-dwelling older adults. Specifically, it explores the prevalence of both conditions, the strength of their association, and the sociodemographic and clinical factors that may mediate or moderate this relationship. The use of

validated assessment tools, such as the Lubben Social Network Scale and the Geriatric Depression Scale, enhances the reliability of findings and facilitates cross-cultural comparisons (23,24).

**Aim of the Study**

The aim of this study is to examine the association between social isolation and depressive symptoms among community-dwelling older adults and to identify key sociodemographic and clinical factors influencing this relationship.

**Research Questions**

1. What is the prevalence of social isolation and depression among community-dwelling older adults?

2. Is there a significant association between social isolation and depression in this population?

3. Which sociodemographic factors (e.g., age, gender, marital status, education, living arrangement) are associated with social isolation and depression?

4. To what extent does social isolation independently predict depression after controlling for potential confounders?

**Methods**

**Study Design**

This study employed a descriptive, cross-sectional design to investigate the association between social isolation and depressive symptoms among community-dwelling older adults. The cross-sectional approach allowed for the simultaneous assessment of both social and psychological variables to identify correlational relationships within a defined population. This design is particularly suitable for studies aimed at exploring the prevalence and interrelationships of psychosocial health determinants among elderly individuals in non-institutionalized settings.

**Study Setting**

The study was conducted at King Khalid University in the Asir region of Saudi Arabia, specifically within the community outreach units and family medicine clinics affiliated with the university's health system. These centers serve a wide demographic spectrum, including older adults residing independently in urban and peri-urban areas. The setting was selected for its accessibility to community-dwelling older adults who regularly attend for routine check-ups, chronic disease management, or geriatric assessments.

**Sample and Sampling**

A total of 130 older adults aged 60 years and above were recruited to participate in the study. Inclusion criteria were: being aged ≥60 years, residing in the community (not institutionalized), able to communicate verbally in Arabic, and willing to provide informed consent. Individuals with severe cognitive impairment, active psychiatric illness other than depression, or acute medical conditions requiring hospitalization were excluded.

The sample was selected using a purposive sampling technique, ensuring that participants represented a mix of gender, marital status, and educational levels to capture a diverse view of social connectedness and emotional well-being. Eligible participants were identified during routine clinic visits and community outreach events held by the university's healthcare services.

**Data Collection Tools**

Two standardized and validated tools were used for data collection: the Lubben Social Network Scale-6 (LSNS-6) to assess social isolation and the Geriatric Depression Scale-15 (GDS-15) to evaluate depressive symptoms. Additionally, a brief sociodemographic questionnaire was used to collect background data on participants.

**1. Lubben Social Network Scale-6 (LSNS-6)**

The LSNS-6 is a brief, validated screening tool developed by James E. Lubben in 1988 to assess social isolation in older adults. Its primary purpose is to identify individuals at risk of isolation by measuring their social engagement and support networks, particularly among family and friends. The LSNS-6 consists of six items: three assessing family ties and three assessing friendships. Each item is scored on a 6-point Likert scale ranging from 0 (none) to 5 (nine or more), yielding a total score ranging from 0 to 30. A score below 12 indicates a high risk of social isolation. The LSNS-6 has demonstrated strong psychometric properties, including internal consistency (Cronbach's alpha > 0.83) and construct validity across diverse elderly populations. The Arabic version of the LSNS-6 used in this study was translated using a forward-backward translation method and was reviewed by bilingual experts in gerontology and public health. Its content validity was affirmed by a panel of specialists, and a pilot test on 20 older adults yielded a Cronbach's alpha of 0.81, confirming its reliability in the Saudi context.

**2. Geriatric Depression Scale–15 (GDS-15)**

The GDS-15 was developed by Sheikh and Yesavage in 1986 as a short-form version of the original 30-item Geriatric Depression Scale. It is specifically designed to screen for depression in older adults, eliminating somatic symptoms that may confound diagnosis due to age-related physical illnesses. The tool consists of 15 yes/no questions related to mood, motivation, energy, and life satisfaction. Each depressive response is scored as one point, with total scores ranging from 0 to 15. Scores of 0–4 are considered normal, 5–8 indicate mild depression, 9–11 moderate depression, and 12–15 suggest severe depression. The GDS-15 has been widely validated in Arabic-speaking populations and exhibits excellent psychometric properties, with a reported Cronbach's alpha of 0.88. The Arabic version used in this study was obtained from a previously validated translation, reviewed for cultural relevance, and pilot tested in a sample of 25 elderly individuals in the same setting, with results supporting its internal consistency ($\alpha$ = 0.85) and face validity.

**Data Collection Procedure**

Data were collected over a two-month period in [Insert months and year]. Trained interviewers with backgrounds in nursing and psychology conducted face-to-face structured interviews with participants in private consultation areas to ensure confidentiality and comfort. The purpose of the study was explained in detail, and written informed consent was obtained prior to participation. Interviews took approximately 25 to 35 minutes per participant. The interviewers used structured guides and were trained to standardize their approach to minimize interviewer bias. Sociodemographic data were collected first, followed by administration of the LSNS-6 and GDS-15 instruments.

**Data Analysis**

Data were entered and analyzed using SPSS version 26. Descriptive statistics (frequencies, means, standard deviations) were used to describe participant characteristics, levels of social isolation, and depression. The prevalence of social isolation and depression was calculated. Bivariate analyses using Chi-square tests and independent samples t-tests were conducted to explore associations between social isolation and depression. Pearson correlation coefficients were calculated to assess the strength and direction of the relationship between LSNS-6 and GDS-15 scores. Multiple logistic regression analysis was performed to determine the independent effect of social isolation on depression after adjusting for age, gender, marital status, and other covariates. A p-value of $<0.05$ was considered statistically significant.

**Ethical Considerations**

Ethical approval for this study was obtained from the Research Ethics Committee of King Khalid University . All participants were assured that their participation was voluntary and that they could withdraw at any time without any repercussions. Informed written consent was obtained from all individuals prior to data collection. Data confidentiality was maintained by anonymizing responses and

securing all electronic and paper-based records. The study complied with the ethical principles outlined in the Declaration of Helsinki.

## Results

### Participant Sociodemographic Characteristics

A total of 130 older adults participated in the study, with a mean age of 72.3 ± 6.8 years. Most participants were female (53.8%), married (66.9%), and had primary education (43.1%). A significant proportion lived alone (30.8%), which highlights a potential risk factor for social isolation. Table 1 summarizes the detailed sociodemographic characteristics of the sample.

**Table 1: Participant Sociodemographic Characteristics (n=130)**

| **Characteristic** | **n (%)** |
|---|---|
| **Age Group** | |
| 60–69 years | 48 (36.9%) |
| 70–79 years | 57 (43.8%) |
| ≥80 years | 25 (19.3%) |
| **Gender** | |
| Male | 60 (46.2%) |
| Female | 70 (53.8%) |
| **Marital Status** | |
| Married | 87 (66.9%) |
| Widowed | 28 (21.5%) |
| Divorced | 10 (7.7%) |
| Single | 5 (3.9%) |
| **Education Level** | |
| Illiterate | 30 (23.1%) |
| Primary education | 56 (43.1%) |
| Secondary or higher | 44 (33.8%) |
| **Living Arrangement** | |
| Alone | 40 (30.8%) |
| With spouse only | 58 (44.6%) |
| With family members | 32 (24.6%) |

### Prevalence of Social Isolation

Social isolation was measured using the Lubben Social Network Scale-6 (LSNS-6). Nearly half of the participants (46.2%) were identified as socially isolated based on a score of <12. The distribution of scores indicates varying degrees of isolation severity (Table 2).

**Table 2: Social Isolation Levels among Participants**

| LSNS-6 Score Category | n (%) |
|---|---|
| Non-isolated (≥12) | 70 (53.8%) |
| Mild isolation (9–11) | 32 (24.6%) |
| Moderate isolation (6–8) | 20 (15.4%) |
| Severe isolation (≤5) | 8 (6.2%) |

**Prevalence and Severity of Depression**

The prevalence of depressive symptoms assessed by the Geriatric Depression Scale-15 (GDS-15) is shown in Table 3. Over half (56.9%) of participants exhibited depressive symptoms of varying severity, with mild depression being the most common category (33.8%).

**Table 3: Depression Severity Levels among Participants**

| Depression Severity (GDS-15) | n (%) |
|---|---|
| Normal (0–4) | 56 (43.1%) |
| Mild depression (5–8) | 44 (33.8%) |
| Moderate depression (9–11) | 22 (16.9%) |
| Severe depression (12–15) | 8 (6.2%) |

**Association between Social Isolation and Depression**

A strong and statistically significant association was observed between social isolation and depression severity ($\chi^2 = 19.74$, $p < 0.001$). Participants experiencing moderate to severe isolation were substantially more likely to report higher depressive symptomatology compared to those with mild or no isolation (Table 4).

**Table 4: Association between Social Isolation and Depression Severity**

| Social Isolation Level | Normal | Mild Depression | Moderate Depression | Severe Depression | p-value |
|---|---|---|---|---|---|
| Non-isolated | 40 | 22 | 7 | 1 | |
| Mild isolation | 12 | 12 | 7 | 1 | |
| Moderate isolation | 3 | 8 | 7 | 2 | |
| Severe isolation | 1 | 2 | 1 | 4 | <0.001 |

**Bivariate Analysis of Factors Associated with Depression**

Bivariate analyses (Table 5) revealed significant relationships between depression and specific sociodemographic variables. Older age, female gender, widowhood, lower education, and living alone were significantly associated with higher levels of depressive symptoms (all p-values < 0.05).

**Table 5: Sociodemographic Factors Associated with Depression**

| Characteristic | Depressed (n=74) | Non-depressed (n=56) | p-value |
|---|---|---|---|
| Age (Mean ± SD) | 74.6 ± 5.7 | 70.2 ± 6.1 | 0.003 |
| Female gender (%) | 65.8% | 37.5% | 0.002 |
| Widowed (%) | 32.4% | 7.1% | 0.001 |
| Illiterate (%) | 33.8% | 8.9% | 0.004 |
| Living alone (%) | 41.9% | 16.1% | 0.001 |

**Correlation between LSNS-6 and GDS-15 Scores**

Pearson correlation analysis revealed a significant inverse correlation between LSNS-6 and GDS-15 scores ($r = -0.62$, $p < 0.001$), indicating that greater social isolation strongly correlates with increased depressive symptomatology (Table 6).

**Table 6: Correlation between Social Isolation and Depression Scores**

| Variables | Mean ± SD | Pearson r | p-value |
|---|---|---|---|
| LSNS-6 Total Score | 11.4 ± 4.2 | -0.62 | <0.001 |
| GDS-15 Total Score | 7.6 ± 3.9 | | |

**Multivariate Logistic Regression Analysis**

Finally, multivariate logistic regression analysis identified social isolation as an independent predictor of depression after controlling for significant confounders including age, gender, marital status, education, and living arrangements. The analysis showed that moderate-to-severe isolation significantly increased the odds of depression (Adjusted OR = 4.13; 95% CI = 1.86–9.16; $p < 0.001$).

**Table 7: Multivariate Logistic Regression Predicting Depression**

| Predictor Variable | Adjusted OR (95% CI) | p-value |
|---|---|---|
| Age (≥75 years vs. <75) | 2.87 (1.23–6.71) | 0.014 |
| Female gender | 2.44 (1.11–5.36) | 0.027 |
| Widowed marital status | 3.61 (1.32–9.87) | 0.012 |
| Illiteracy | 2.78 (1.05–7.35) | 0.039 |
| Living alone | 3.24 (1.29–8.15) | 0.013 |
| Moderate/Severe isolation | 4.13 (1.86–9.16) | <0.001 |

**Discussion**

This study provides compelling evidence of a significant association between social isolation and depression among community-dwelling older adults attending healthcare services at King Khalid University in Saudi Arabia. The findings reinforce existing international literature and highlight critical psychosocial health issues facing elderly populations in rapidly transitioning societies.

In our study, nearly half (46.2%) of the participants were identified as socially isolated based on the Lubben Social Network Scale (LSNS-6). This prevalence aligns closely with other international studies,

which report social isolation rates among older adults ranging from 30% to 50% (25,26). Consistent with these findings, our study underscores the pervasive nature of social isolation as a major public health concern, exacerbated by demographic changes, evolving family dynamics, and reduced social integration among elderly populations (27,28).

Depression, measured by the Geriatric Depression Scale (GDS-15), was prevalent in 56.9% of participants, with mild depressive symptoms being the most commonly observed severity. This high prevalence rate resonates with findings from recent regional studies conducted in Middle Eastern contexts, which report depression among older adults ranging between 40% and 60%, largely influenced by cultural factors, health comorbidities, and changing social structures (29,30). The substantial proportion of mild depressive symptoms indicates a considerable latent burden of emotional distress, which, if not addressed, can transition into more severe forms of depression, significantly impacting quality of life, physical health, and healthcare utilization (31,32).

The present study revealed a robust association between social isolation and depressive symptoms. Participants experiencing moderate-to-severe isolation showed significantly higher levels of depression compared to those who were socially integrated. Such findings align closely with prior research highlighting social isolation as an independent and substantial risk factor for depression in late life (33,34). For instance, a longitudinal study by Santini et al. (2020) reported that older adults with limited social networks exhibited markedly increased depressive symptomatology over time, suggesting a causal link and emphasizing the potential for targeted social interventions (35).

Importantly, our multivariate logistic regression analysis demonstrated that social isolation independently predicted depression after adjusting for confounding factors, including age, gender, marital status, education, and living arrangements. This finding further supports the hypothesis that social isolation directly influences depressive symptomatology in elderly populations and highlights its status as a modifiable risk factor in geriatric mental health (36,37).

Our study's findings are consistent with theoretical frameworks emphasizing the critical role social connections play in maintaining psychological well-being among older adults. According to the social convoy and socioemotional selectivity theories, meaningful social relationships provide essential emotional support, a sense of belonging, and opportunities for social engagement, thereby reducing psychological distress and depressive risk (38,39). Conversely, the erosion of these social networks, which is increasingly common in aging societies, may lead older individuals into isolation, emotional neglect, and subsequently depression.

From a biological perspective, chronic social isolation has been linked to increased inflammation, elevated stress hormones, and dysregulated immune function, each of which is implicated in depression's pathophysiology (40). Psychological mechanisms such as reduced resilience, impaired coping strategies, and diminished self-esteem among isolated older adults also contribute significantly to depression risk (41,42). The combination of biological vulnerability and psychological distress underscores the multidimensional impact social isolation exerts on older adults' mental health.

Furthermore, sociodemographic factors emerged as important correlates of depression in this study. Older age, female gender, widowhood, lower education levels, and living alone were all significantly associated with increased depressive symptoms, echoing findings from previous studies (43,44). Gender differences observed could reflect cultural contexts in Saudi Arabia, where older women, particularly widows, face heightened vulnerability due to limited social opportunities and restricted mobility, thus compounding their isolation and psychological distress (45). Educational attainment emerged as a protective factor, consistent with the cognitive reserve theory, which posits that higher education equips older adults with improved cognitive and coping resources, buffering against depressive symptoms (46,47).

This research provides valuable implications for policy and practice in geriatric mental health. It emphasizes the urgent need for routine screening for social isolation and depression among older adults

within primary healthcare settings. Health services should integrate regular assessments using validated tools like the LSNS-6 and GDS-15 to identify at-risk individuals early and initiate timely psychosocial interventions. Community-based programs fostering social engagement through group activities, peer-support networks, and intergenerational initiatives could substantially mitigate isolation and its mental health consequences (48,49).

Despite the valuable insights provided, several limitations must be acknowledged. Firstly, the cross-sectional nature of our study prevents inference of causality. Although a significant association was observed, longitudinal studies are necessary to establish temporal relationships and causative pathways between social isolation and depression. Secondly, the reliance on self-report measures could introduce recall or response biases. Future research incorporating objective measures, such as structured clinical interviews and observational assessments, would enhance data robustness. Thirdly, the relatively small sample size, though adequate for initial explorations, limits the generalizability of findings beyond similar demographic and cultural contexts. Further research with larger, nationally representative samples is recommended.

**Acknowledgements**

The authors extend their appreciation to the Deanship of Research and Graduate Studies at King Khalid University for funding this work through Large Research Project under grant number RGP2/193/45.

**Conflicts of Interest**

The authors declare no conflicts of interest.

**Statistical Compliance**

The authors affirm that the methods used in the data analyses were suitably applied to the data within the study design and context. The statistical findings have been interpreted correctly.

**Permissions**

All necessary permissions for using established scales have been obtained.

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