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Prevalence and related factors of social isolation in older Iranian adults: a community-based study

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A – Study Design, **B** – Data Collection, **C** – Statistical Analysis, **D** – Data Interpretation, **E** – Manuscript Preparation, **F** – Literature Search, **G** – Funds Collection

Summary **Background.** Social isolation is a common and serious health issue in the older community-dwelling adults that leads to negative consequences such as suicidal thoughts, psychological distress, as well as a decline in welfare, health and quality of life.
Objectives. This study aimed to determined the prevalence of social isolation and related factors in older Iranian adults.
Material and methods. This cross-sectional study was performed on 290 older community-dwelling Iranian adults using a multistage sampling method in Shahroud, Iran. Social isolation was measured using the Lubben Social Network Scale-18 (LSNS-18) with a score higher than 36. Data was analysed using descriptive and inferential statistics (multivariate logistic regression). The significance level was set at 0.05.
Results. The prevalence of social isolation was 57.9%. Marriage history (married or deceased spouse – divorced), higher education and living arrangements (living with a spouse or with a spouse and children) were factors associated with lower social isolation; however, social isolation was higher in older adults with two or more children ($p = 0.03$).
Conclusions. A high percentage of older Iranian adults suffer from social isolation. It is suggested that older adults not live alone, get married and have academic education as much as possible, and it is necessary to take extensive measures to reduce this social issue.
Key words: aging, aged, risk factors, social isolation, Iran.

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Background

Today, the concept of social isolation is of special importance in aging studies [1]. Older adults are at greater risk of social isolation [2]. Social isolation is defined as the lack or absence of regular social relationships with relatives, friends and acquaintances and the lack of social relations with society as a whole [3, 4]. The prevalence of this social problem in the United States was estimated at 24% for those 65 years and older, and approximately 7.7 million individuals were socially isolated, including 1.3 million individuals (4%) who were severely socially isolated [5]. Moreover, up to 50% of older adults are estimated to be at risk of social isolation on a global scale [6]. A study in Iran also showed that 15.9% of older adults were at serious risk of social isolation [7]. Indicators of social isolation are mostly evaluated using factors such as the size of an individual's social network, the number of interactions with family, friends and neighbours and the degree of social involvement [8].

Recent studies have shown that perceived social isolation is a significant risk factor for cognitive disorders, loneliness, sleep disturbance, fatigue, falling and feelings of anxiety and depression [9–12]. Studies have also shown that social isolation increases the risk of cardiovascular diseases, such as coronary artery diseases, stroke and high blood pressure [13]. Both loneliness and social isolation are associated with behaviours resulting in health such as smoking, alcohol consumption and physical inactivity [8]. The results of a cohort study showed that social isolation increased mortality by 60–70%, and married persons have lower mortality rates than unmarried persons [14]. A review study has shown that some of the main social structures associated with suicide include marital status (being single, separation, divorce or death of a spouse), living alone, social isolation and loneliness. However, loneliness, which was investigated in most studies, had a significant effect (60%) on suicidal thoughts and attempts at suicide [15]. Low health literacy and high social isolation are also risk factors for mortality [16].

There are many recognised risk factors for social isolation in older adults, especially those 75 years of age or older, including being alone, insufficient financial resources, lower mental and physical health, belonging to minority groups and not having a child [17]. Factors such as retirement, widowhood, loss of friends, diseases and increased geographical dispersion affect family members and their friends. When older adults are forced to relocate due to reduced mental and physical abilities, the feeling of isolation increases [18]. Older adults face problems with reduced social participation, reduced social support and feelings of loneliness due to hearing and vision loss [19]. James Lubben, a social network scale designer, in a paper entitled "Social Support and Social Isolation in older adults", said: a consequence of paying attention to social isolation will be to create a community that emphasises strong social relationships, a safe and friendly environment for older adults, leading to policies and programmes that better address social isolation, support research on social isolation and focus on social relationships of older adults for health care. Older adults will be considered

a critical factor in health care. Reduced social isolation is related to cognitive, memory and executive functions late in life" [20].

In the current study, the validated scale (the Lubben Social Network Scale-18 (LSNS-18)) was utilised for the first time in Iran. In addition, the importance of the issue of social isolation is undeniable, as mentioned, so the difference and superiority of this research compared to previous studies conducted in this field is significant.

Objectives

The present study was aimed to examine the prevalence and related factors of social isolation in older community-dwelling Iranian adults.

Material and methods

Study design, settings and participants

In this cross-sectional analytical study, the study population was adults 60 years of age and older who were referred to Shahroud health centres. Inclusion criteria were those 60 years of age and older, obtaining a score of 24 and above on the Mini–Mental State Examination (MMSE) for literate individuals and a score of 7 and above on the Abbreviated Mental Test Score (AMTS) for illiterate individuals [21, 22]. The exclusion criterion was severe physical diseases that disrupted completing the questionnaires.

According to the Lubben study, the sample size for this study was calculated to be 290 older adults (with a 10% error rate, and a power of 80%) [20]. The standard equation below was used to determine the study sample size.

$$n = \frac{z^2 * (p * 1 - p)}{d^2}$$

Data collection

A multistage sampling method was used; thus, among the 11 health centres in Shahroud, 6 centres were randomly selected as clusters. In the second stage, according to the sample size and the number of older adults with files from the centre using a proportionate systematic random sample, 1 out of every 20 cases was randomly selected with an interval sampling of $k = 20$.

In the present study, MMSE and AMTS were used to investigate the cognitive status of the older adults; LSNS-18 and a demographic information form were used to investigate the social isolation of the older adults [23]. After explaining the study's objectives, the older adults were invited to study. First, the selected tools were completed by the older adults. Older adults with a score of 24 or higher on the MMSE questionnaire and a score of 7 or higher on the AMTS questionnaire, indicating the absence of mental disorders, were selected to continue in the research.

Demographic information form

The demographic information form included age, gender, occupation, years of study, insurance status, number of children, marital status and living arrangement status.

Lubben Social Network Scale-18 (LSNS-18)

LSNS-18 was designed to identify social isolation in older adults and is used in social and health research. The main version of LSNS-18 consists of 18 questions divided into 3 categories: family, friends and neighbours, and each subset evaluates network size, number of relationships and level of mutual support. This tool is classified as both a subjective and objective scale for measuring social isolation [24]. LSNS-18 is based on a 5-point Likert scale. Each item has 6 options to choose from, and each option is assigned a score (0, 1, 2, 3, 4 and 5), respectively. We totalled the scores of the items on each subscale. The score was 0–30 for each subscale, and the total score for all subscales was 0–90. The higher scores indicated a stronger social network, and the lower the score, the smaller the social network.

The lower a person's social network is, the more they are prone to social isolation. Summing up a minimum score of 2 for every 18 questions gives a cut-off point of 36 out of a total score of 90 and a cut-off point of 12 for each of the subscales of family, friends and neighbours. The prevalence of social isolation was calculated by considering a cut-off point of 12 for each subscale and 36 for the whole scale. A lower score indicates greater social isolation [24]. Validation of LSNS-18 was done in the Persian language and has good validity and reliability. Cronbach's alpha coefficient for the family, friends and neighbours subscales and the total score was set at 0.72, 0.83, 0.84 and 0.82 [25]. An internal consistency method based on Cronbach's alpha coefficient was used to assess the reliability of LSNS-18 in the present study ($\alpha = 0.83$). The questionnaires were completed individually in a calm environment, without environmental stimuli. The older adults completed the questionnaires themselves or, if incapacitated, assisted by a trained individual.

Data analysis

Data was analysed using descriptive (mean, standard deviation, frequency and percentage) and inferential (the relationship between variables such as age, gender, education, marital status, number of children, occupation, housing status, living arrangements and insurance status) statistics, and social isolation was examined using multivariable logistic regression. The significance level was set at 0.05.

Ethical considerations

This study was approved by the ethics council of Shahroud University with the code of ethics IR.SHMU.REC.1397.078. Before starting the study, the implementation method was explained to all the participants, and they were assured that their information would be kept confidential. An informed consent form was obtained from the participants.

Results

Among the 290 participants in the study, 113 participants (54.8%) were female. The mean age of the study participants was 67.50 ± 5.37. Table 1 shows the demographic characteristics of the participants.

The highest prevalence of social isolation is on the neighbour scale (71.4%), and the lowest prevalence of social isolation is on the family scale (22.8%). The overall prevalence of social isolation is 57.9% ($n = 168$) (Table 2).

The results of Table 3 showed that the variables of education level, marital status, number of children, insurance status, and living arrangements are significant predictors of social isolation. The participants with over 12 years of education compared to illiterate individuals ($p = 0.03$), those married ($p = 0.02$) or with a deceased spouse ($p = 0.002$) compared to single individuals and those living with a spouse ($p = 0.008$) or with spouse and children ($p = 0.03$) compared to those who live alone have significantly lower levels of social isolation (i.e., these level of exposures are protective). The study results of the independent variable of the number of children show that those with more than 2 children are more likely to be socially isolated than those with less than or equal to 2 children ($p = 0.03$).

Table 1. Demographic characteristics of study participants

Variable		*n*	%
Gender	female	131	54.8
	male	159	45.2
Marital status	single	22	7.6
	married	195	67.2
	deceased spouse – divorced	73	25.2
Employment	official employee – retired (such as faculty member, teacher, banker, etc.)	127	43.8
	self-employed	52	17.9
	worker (builder, gardener, sweeper, plumber, etc.)	10	3.4
	housewife – unemployed	101	34.8
Living arrangement	alone	66	22.8
	with spouse	171	59.0
	with children	22	7.6
	with spouse and children	26	10.7
Housing	personal	248	85.5
	rental	42	14.5
Insurance	no	10	3.4
	yes	280	96.6
Years of education	illiterate (0)	45	15.5
	less than high school (1–8 years)	119	41.0
	high school (9–12 years)	38	13.1
	higher education (> 12 years)	88	30.3
	Mean ± SD		
Age (years)	67.50 ± 5.37		
Education (years)	7.43 ± 5.26		
Number of children	3.52 ± 1.70		

n – number, % – percent, SD – standard deviation.

Table 2. Prevalence of social isolation by LSNS-18 in older adults

Social isolation Subscales	Prevalence of social isolation		
	F	%	CI: (95%)
Family	66	22.8	18.2–27.9%
Neighbours	207	71.4	65.8–76.3%
Friends	176	60.7	54.9–66.1%
Total scale	168	57.9	52.1–63.5%

F – frequency, % – percent, CI – confidence interval.

Table 3. Role of different independent variables in social isolation in the logistic regression model

Independent variables		Adjusted odds ratio (CI)	*p*
Education level (years)	Illiterate	1	
	1–8	1.15 (0.27–1.50)	0.72
	9–12	0.86 (0.71–1.35)	0.78
	> 12	0.14 (0.34–0.97)	0.03
Marital status	single	1	
	married	0.16 (0.09–0.55)	0.02
	deceased spouse – divorced	0.48 (0.40–0.70)	0.002
Number of children	≥ 2	1	
	< 2	1.95 (1.05–3.59)	0.03
Living arrangement	alone	1	
	with spouse	0.24 (0.08–0.68)	0.008
	with children	1.32 (0.41–4.25)	0.62
	with spouse and children	0.15 (0.04–0.53)	0.03

CI – confidence interval, *p* – *p*-value.

Discussion

The results of the present study showed that the prevalence of social isolation was 57.9%, and the prevalence of this issue on the family, neighbour and friend subscales was 22.8%, 71.4% and 60.7%, respectively. The results of a study by Ha et al. showed that the prevalence of social isolation in older adults using the LSNS-18 was 47% in the United States [26]. A study conducted in Singapore using the LSNS-6 also showed that 45.5% of older adults were at risk of social isolation [27]. A comparison of the prevalence in this study with the present study shows an increasing trend in the prevalence of social isolation in different years. On the other hand, sociological and cultural differences can be considered to be related to the difference in the obtained results.

The results of the current study showed that the prevalence of social isolation on the family subscale was lower than other subscales. It must be taken into consideration that the family is the most stable social foundation, and its social support is the most vital type of social network in individuals who have intimate relationships, and when they need to consult or talk with someone, the family is always present [28]. The family creates social support in one's old age. These results are consistent with the study by Burnette and Myagmarjav which showed that social isolation on the family subscale was less than neighbours and friends [29]. The results show the importance of the family structure in communities.

A significant relationship between marital status and social isolation of older adults was reported, and thus the prevalence of social isolation in a single person is higher than married individuals or those divorced or with a deceased spouse. Paying attention to this issue will lead to more studies concerning the issue of marriage in pre-old age. One of the problems that being single can cause in old age is social isolation. Therefore, cultural and social institutions should pay more attention to marriage at the community level. A study conducted in London (2017) showed that older adults living with a spouse or partner feel less lonely than single individuals [30]. The present results are consistent with the results of previous studies [15, 31]. Older married adults typically exchange various forms of support with their spouses. Spousal support is recognised as a significant source of health and longevity [32].

A significant relationship was observed between the prevalence of social isolation and the level of education, and thus the prevalence of social isolation in those with over 12 years of education is lower than for illiterate individuals. This may be because the higher the education, the greater the amount of communication with friends, and the greater the likelihood that close friends will be present when they need any help. On the other hand, having awareness and knowledge about social issues will increase attention to the importance of these issues. Applying these results emphasises the importance of higher education at the community level. As the results of previous studies showed, higher social isolation is significantly associated with lower levels of education [33, 34]. The results of a previous study also showed that being single, low education and low income were all associated with social isolation [5]. These results are consistent with the present study.

In this study, the chance of social isolation among housewives or the unemployed and workers is lower than office employees or retired individuals on the neighbour scale, and this relationship is significant, a result that may be due to the fact that office employees, for many years due to working conditions, had to be away from home and neighbours. Therefore, in retirement, this relationship with the group of neighbours is still lower, and as a result, the prevalence of social isolation is higher on this subscale. Since official employees or retirees are more likely to be socially isolated on the subscale of neighbours than housewives and workers, maintaining more relationships with neighbours should be recommended in the group of employees-retirees. Among the studies conducted, no study investigated social isolation and social network in terms of employment status by specifying the type of job. A study by Röhr et al. showed that official employees have a lower average social isolation score than non-employed individuals [35].

The study results on the entire scale showed that older adults who live with their spouse or with their spouse and children compared to those who live alone have less chance of social isolation. Those who are single will have less social support in old age due to not having a spouse or child. In this regard, it should be noted that loneliness and living alone are significantly associated with a higher risk of mental health issues in older adults [36]. Due to marriage and having children, they have more scope for relationships with more friends and neighbours, which will alleviate the situation of loneliness and enhance the scope of communication with family, neighbours and friends, thus the prevalence of social isolation increases in individuals who are alone. A previous study found that those who live alone feel lonely more, while those who have a partner feel loneliness much less [37]. In this regard, the results of a study by Kotian et al. showed that older adults who live without a family were more likely than others to be socially isolated [38]. The present finding shows the crucial role of marriage and family support in reducing social isolation [5, 39]. Therefore, this issue should be further promoted in society, and the need to pay more attention to the effect of marriage on the state of social isolation in old age should be addressed.

A significant difference was reported between the chance of social isolation and the number of children on the entire scale. As shown, the prevalence of social isolation in older adults with more than 2 children is higher than the number of children being less than or equal to 2 ones. This finding is probably due to that older adults that live with a higher number of children will be more involved in family relationships and communication with their children than others, and thus they neglect socialising with their friends and neighbours. In large families, children also eventually leave the family after marriage, and in this situation, older adults face crises such as social isolation. In this regard, people with fewer children are less affected by problems. Iranian families generally have nuclear structures. In Iranian families, religious values and cultural and traditional norms emphasise the strength of its structure, children's obedience to and respect for parents and observance of Islamic religions. However, like other developing countries, these traditional attitudes and cultural norms seem to have changed recently [40]. Therefore, the prevalence of social isolation will increase. The importance of having more social relationships with others on a person's social network, including neighbours and friends, should be considered. Existing studies have addressed the effect of having and not having a child in the field of loneliness and social isolation, and in this regard, the present study is different from other studies. A study by Bachrach on infertility and social isolation in older adults showed that a strong relationship was found between not having a child and the possibility of social isolation and those without children who also feel more lonely [41]. It should be noted that studies on those co-residing with family members (such as children or grandchild) show that older adults receive more social support from their family members, which can be a deterrent to loneliness and isolation [42].

Limitations and strengths of the study

Since the LSNS-18 was used as a self-report questionnaire, the results of the present study may be subject to response bias. This study was also conducted on a sample of older Iranian adults. It should be noted that Iranian society is known for its traditional and religious beliefs in the Middle East, and its people respect older adults, so the results cannot be compared and generalised to other countries and cultures. This study was conducted in health centres, so individuals received at least government health support. In the field research, the prevalence of social isolation may be different.

Despite these limitations, due to the importance of social isolation, the LSNS-18 tool was validated and used for the first time in Iran, which is an advantage and difference of this study compared to previous studies conducted in Iran. The advantages of the LSNS-18 include the following: few scales focus on the social support structure (i.e. the size of the social network), but this tool pays attention to these structures. LSNS-18 scoring is fast and easy. It also covers many communication fields, including family, friends and neighbours. Although it is designed specifically for older adults, it is also used to evaluate social networking in individuals with brain disorders [20].

Conclusions

According to the results of the present study and the high prevalence of social isolation in older Iranian adults, healthcare systems must take measures to reduce this and adjust the related factors. For example, all older adults should be covered by insurance, and it may not even be possible for older adults to live alone. Increasing literacy has an effect on reducing social isolation, and the education system should pay attention to the importance of the level of literacy on social issues in old age. Since official employees or retirees are more likely to be socially isolated on the neighbour scale than housewives and workers, it is recommended to maintain more relations in the group of employees-retirees with neighbours.

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