



## **A Negative Association between Social Support and Depression in the Elderly Population of Amirkola City**

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### **Authors' contributions**

*This work was carried out in collaboration between all authors. Author MF designed the study, wrote the protocol, and wrote the first draft of the manuscript. Author SRH designed the study, wrote the protocol, author RGC edited the draft of the manuscript, author AB analyzed the study. Author FK managed the experimental process. Authors FP and NG managed the literature searches. All authors read and approved the final manuscript.*

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## ABSTRACT

**Introduction:** Depression is one of the most common psychiatric disorders in old age. The aim of the study was to investigate the relationship between social support and depression in elderly population of Amirkola city, northern Iran. Also, a few studies have been conducted to determine whether there is any association between social support and depression in different cultural settings, e.g. in western countries.

**Methodology:** This cross sectional study came from the Amirkola Health and Ageing Project (AHAP), that was undertaken among 1612 older people aged 60 years and over (881 males and 731 females) in Amirkola. The sampling method was done using the census records. Depression was assessed via the shortened 15 item version of Geriatric Depression Scale (GDS) and social support measured by the shortened 11 item version of the Duke Social Support Index (DSSI).

**Results:** The prevalence of depressive symptoms was 43.4%. The mean social support score in the subjects without depressive symptoms was  $28.32 \pm 2.79$  which has been significantly higher than those with depressive symptoms  $25.86 \pm 3.44$ . Linear regression analysis displays the variables in the final model like social support, age, gender, education, living status; social support was negatively the most associated variable with depression ( $\beta$  for social satisfaction = -0.245,  $P < 0.001$  and for social interaction 0 -0.199  $P < 0.001$ ). Thus for the males, those who are younger, those who are more educated, those who are married and those who are employed, their social support scores were higher.

**Conclusions:** Lack of social support is negatively associated with depression in the elderly people in Iran.

*Keywords: Depression; social support; elderly.*

## 1. INTRODUCTION

Due to reduced fertility and mortality rates of all ages, the ageing population in the world is growing. Consequently, issues related to ageing have to be considered worldwide. In the USA, it is expected that the proportion of the population over the age of 65 will increase to 20.3% in 2050 from 12.7% in 2000 [1]. Like the rest of the world, Iran's rate of population growth over 60 years is increasing now. The older population in Iran is increasing and is estimated to reach 9.2% of the total population by 2020 [2,3].

The limited support of family and friends is one of the issues that affect the lives of older people. The elderly need to have contact with others to provide themselves both emotional and physical assistance [4]. Social support is a multidimensional concept that has been defined in different ways. Social support is a broad concept which is commonly divided into instrumental and emotional support. Social support refers to the number of an individual's social relationships and the quality of the resources that these relationships bring [5]. This study reveals that a common way to view social support is as emotional and instrumental support [6]. Also, social support can be classified in five categories. These supportive resources can be

emotional support, esteem, tangible, informational, and network. Emotional support refers to interaction that leads individuals to feel cared for loved and valued. Esteem support offers unconditional positive regard that builds the feeling of self-worth and competence. Tangible support deals with material resources or direct aid to a needy one. Informational support includes information about stressful events such as medical procedures or physical symptoms. Network support is the feeling of membership in a group of people with similar interests and social activities [7].

Social support has a strong impact on health and quality of life of the elderly [8-11]. Depression is one of the most common psychiatric disorders in old age and approximately 1 out of every 6 individuals suffers from depression [12,13]. Depressed older adults are more likely to have low social support [14-18]. Also, loneliness has long been known to have positively association with depression. Living alone and decreased social participation and engagement decrease positive emotions and endanger the mental health of an elderly person [19,20].

Social support depends upon the different social, economic, geographic factors, cultural features, and demographics. Although the influence of social support on depression is widely accepted,

the social support for elderly people may differ among different societies and countries. The culture of Iran urges them to support customs and traditions and keep close communication among relatives. This culture stresses the importance of paying proper regard to the elders and valuing their words of wisdom. Gray hair and beard have always signified great respect for elders and reverence for the wisdom of old age, too. The cultural background encourages members to take care of their parents in old age. Due to the great respect for the elderly, leaving ageing parents alone or in a nursing home is strongly criticized in Iran [21].

So the information about depression and social support among elderly in Iran is limited to a general study (n=100). In Tehran, capital of Iran, it has shown that all types of social support have an inverse relationship with anxiety and depression in the elderly population [22]. The aim of this report was to describe the prevalence of depressive symptoms in a large population representative sample of older adults living in Mazandaran, northern Iran and to investigate the relationship between social support and depressive symptoms.

## 2. METHODOLOGY

### 2.1 Participants

This cross-sectional study was conducted on 1612 participants 60 years and over in Amirkola Health and Ageing Project (AHAP). It is an ongoing cohort study which commenced in 2011 in Amirkola City, Mazandaran, northern Iran [23]. The total population of 60 years and older in Amirkola was estimated to be 2234. The older people were recruited in the study via general invitation in the mosques, health centers, and also flyers and posters were distributed throughout the city. A total of 1616 people (73%) participated in the study. They were visited in their own town of residence by experienced interviewers to complete the questionnaires. The next day they were gathered together in the Social Determinants of Health Research Center, Medical University of Babol, Amirkola, to complete further questionnaires and examinations. Four people were responsible for the interview. Among the interviewers, two of them earned bachelor's degrees in Midwifery; one in Nutrition and the other one in Social Medicine. All participants were informed of the details and the questionnaires were completed by interviewing the elderly participant or his

companion. The details of the recruitment of participants were described previously [23]. The AHAP study was approved by the Medical Ethics Committee of Babol University of Medical Sciences and informed consent was obtained from all the subjects.

In this research, the following data were provided by the two types of questionnaires: Geriatric Depression Scale (GDS) and Duke Social Support Index (DSSI) and some demographic characteristics which were analyzed. Four participants were excluded from the analysis because they completed neither the GDS nor DSSI, leaving 1612 persons in the analysis.

### 2.2 Variables

#### 2.2.1 Dependent variable

Depressive symptoms were measured using Geriatric Depression Scale (GDS). It is a valid questionnaire [24] which contains 15 questions and each question is scored 0 or 1. Of the 15 items, 10 indicate the presence of depression when answered positively, while the rest (question numbers 1, 5, 7, 11, 13) indicate depression when answered negatively. A cut-off of five or more symptoms is defined as having depressive symptoms. Depressive symptoms were divided into mild (5-8), moderate (9-12), and severe (13-15). Using this cut-off, the reported test sensitivity is 92% and specificity is 89% [24-26]. GDS was also validated for an Iranian population by previous researchers [27]. Cronbach's alpha for this questionnaire was reported 0.81 in the elderly population of Amirkola City.

#### 2.2.2 Independent variable

Social support was measured using the shortened version of the DSSI. It consists of 11 questions and 2 subscales: social interaction (4 items) and social satisfaction (7 items). Using a Likert type scale, the items were scored as: 1 point for (rarely / very dissatisfied), 2 points for (sometimes / dissatisfied), 3 points for (most of the times / satisfied). Total social support scores ranged from 11-33. A higher score was an indication of higher levels of social support. Internal consistency of the scale was 0.77 and test-retest reliability was considered 0.70-0.81 [28]. DSSI is used to measure four dimensions of social support: network size, social interaction frequency, instrumental support and subjective support [29]. In this study, the validated Persian

version of DSSI was used [30]. The Cronbach's alpha of DSSI was 0.69 in Amirkola's population study.

**2.2.3 Covariates**

To assess the role of social support on depressive symptoms, the participant's age, gender, education, employment, marital status, and living arrangement obtained from the self-completed questionnaire were controlled.

**2.3 Statistical Analysis**

At first, descriptive analyses were conducted to compute the percentages, means and standard deviations of all variables. T-tests were used to identify the significant differences between groups. Logistic regression analysis was performed to assess the relationship between risk factors and the presence of depressive symptoms; odds ratios (OR) and 95% CI were presented. This was done by using the explorer linear regression. Significance levels were set at  $p < 0.05$  and all tests were two-tailed. All analyses were conducted using SPSS software version 18.

**3. RESULTS**

Table 1 shows the demographic characteristics of the participants. Among the 1612 older people who participated in this study, 881 (54.6%) were males and 731 (45.4%) were females. The mean age of men and women was  $69.96 \pm 7.68$  and  $68.66 \pm 7.02$ , respectively. Many of the participants (35.4%) were in the age group of 60-64 years and mostly (85.2%) were married.

Of the 1612 subjects, 700 (43.4%) had five or more depressive symptoms, 441(63%) participants were classified having mild depression, 177(25.2%) moderate, and 82(11.8%) severe. Women had a much higher mean depression score than men ( $5.90 \pm 3.58$  vs.  $3.46 \pm 2.94$ ).

In a population study, the mean social support score was  $27.48 \pm 2.98$ . Table 2 shows the mean social support scores according to various socio-demographic characteristics. The results proved that ( $p < 0.05$ ) was considerably higher mean social support scores for those males below 65 years old, those with higher education, those who were married and employed and those who were living with others rather than living alone. Also, the mean social support score was

estimated higher in people without depressive symptoms ( $28.32 \pm 2.79$ ) than those with symptoms ( $25.86 \pm 3.44$ ).

Fig. 1 shows the mean social support scores according to severity of depressive symptoms between genders. Using t-test, there is a clear decrease in social support scores with increasing levels of depressive symptoms in both sexes ( $P < 0.05$ ). Also, the mean of social support in all categories reaches higher level in males than in females ( $p < 0.05$ ).

**Table 1. Demographic characteristics of the participants in the study N=1612**

Variables	N	%
<b>Age</b>		
60-64	571	35.4
65-70	335	20.8
≥71	706	43.8
<b>Education level</b>		
<9 years	1476	91.5
≥9 years	136	8.5
<b>Marital status</b>		
Married	1374	85.2
Single	238	14.8
<b>Living arrangement</b>		
Alone	107	6.6
With others	1495	93.4
<b>Gender</b>		
Male	881	54.7
Female	731	45.3

\* Single population includes divorced, unmarried and widowed individuals

Table 3 displays the results of linear regression model. Assumptions for regression analyses were confirmed by checking for linearity between variables based on plotting and curve-fitting procedures and by assessing the normal distribution of graphically residuals. Having depressive symptom is considered as a dependent variable and four other variables (social support, age, living alone and education level) as predictor variables. It is concluded that social satisfaction ( $\beta = -0.245$ ,  $p < 0.001$ ), social interaction ( $\beta = -0.245$ ,  $p < 0.001$ ), high age ( $\beta = -0.092$ ,  $p < 0.001$ ) and high level of education ( $\beta = -0.055$ ,  $p < 0.05$ ) is negatively related to depressive symptoms in elderly population. Living alone is positively associated with depressive symptoms ( $\beta = 0.110$ ,  $p < 0.001$ ).

The relationship between the presence of depressive symptoms and social support and other variables were studied in a logistic

regression model, in which the presence of depressive symptoms as a dichotomous variable is defined as having five or more symptoms (see Table 4). As the social support score increased, the prevalence of depression significantly decreased. The elderly population with DSSI (21-25) experienced lower chance of having depressive symptoms ( $\beta=0.24$ , CI: 0.13-0.58,  $P=0.001$ ) than those with DSSI (11-10). The subjects with DSSI (26-30) had lower chance to have depressive symptoms ( $\beta=0.19$ , CI: 0.09-0.41,  $P<0.001$ ) than those with DSSI (11-10). Compared to the participants with the lowest scores (11-20), *individuals* with highest scores of social support (31-33) had odds ratio (OR) of 0.1 (95% confidence interval, CI: 0.05-0.22). The logistic regression analysis confirmed that females versus males had higher risk of depressive symptoms ( $\beta=1.64$ , CI: 0.01-2.68,  $p=0.04$ ). Therefore, the elderly widowed population experienced more risk for depressive symptoms than the married population ( $\beta=1.73$ , CI: 0.1.12-2.68,  $P=0.01$ ). And elderly population with high level of education had lower risk of depressive symptoms than the illiterate population ( $\beta=0.44$ , CI: 0.0.21-0.1,  $P=0.02$ ). The elderly population who were employed had lower risk for depressive symptoms than the unemployed population ( $\beta=0.20$ , CI: 0.1.11-0.3,  $P<0.001$ ). The results for age group does not display a clear pattern but those aged 80 to 84 years have a lower prevalence of depressive symptoms than those aged 60 to 64 years (OR=0.52, 95% CI: 0.32-0.83,  $P= 0.007$ ). There is not any relationship between living alone and depression in the logistic regression model.

#### 4. DISCUSSION

The aim of the present study was to investigate the relationship between social support and depression in the elderly group living in Amirkola, northern Iran. We found that social support plays a key role in depression among population with more social support which had a negative predictor of depressive symptoms.

**Table 2. Total score of social support in the population based on demographic variables**

Variables	Mean	SD	P value
<b>Age</b>			
<65	28.24	2.90	0.000
≥65	27.06	3.43	
<b>Education level</b>			
<9 years	26.84	3.36	0.000
≥9 years	28.65	2.83	
<b>Marital status</b>			
Married	27.79	3.08	0.000
Single	25.66	3.91	
<b>Living arrangement</b>			
Alone	25.70	3.94	0.000
With others	27.60	3.21	
<b>Employment</b>			
Employed	27.78	3.44	0.000
Unemployed	27.41	3.20	
<b>Gender</b>			
Male	28.15	3.00	0.044
Female	26.67	3.46	

\* Single population includes divorced, unmarried and widowed individuals

Our findings are consistent with the studies in western populations (countries with aging populations). Fauth et al. [18] studied 779 elderly Swedish people and found that although age, gender and co-morbidity are associated with depression; social support has to be the predictor of changes in depressive symptoms [20]. A study in 4219 Australian's older people showed that social support was a negative predictor of depression [31]. And other studies display negative associations between social support and depression [32,33]. The evidence confirms the benefits of social support in a patient's recovery of depression [34].

How can we explain the negative relationship between depression and social support?

**Table 3. Predictors of depression symptoms in a linear regression model**

Variables	β Standardized coefficient	t	P value
Constant		14.86	0.000
Social interaction	-0.199	-8.34	0.000
Social satisfaction	-0.245	-9.92	0.000
High age	-0.092	-3.72	0.000
Living alone	0.110	4.67	0.000
High education level	0.055	-2.25	0.025

**Table 4. Odds ratio and 95% confidence interval for associations between socio-demographic variables and depressive symptoms in older people, Amirkola**

Variables	Group	OR (odds ratio)	CI 95% (95% confidence interval)	P value	
<b>Social support score</b>	11-20	1		0.000	
	21-25	0.27	0.131-0.588	0.001	
	26-30	0.19	0.094-0.412	0.000	
	31-33	0.10	0.048-0.224	0.000	
<b>Gender</b>	Female/male	1.64	1.011-2.686	0.045	
	<b>marital status</b>	Married	1		0.112
		Widowed	1.73	1.125-2.681	0.013
		Divorced	1.26	0.154-10.370	0.826
	Separated	0.72	0.037-14.198	0.831	
	Wife died	1.62	0.901-0.290	0.107	
<b>Living alone</b>	Yes/No	0.95	0.556-1.608	0.860	
	<b>education level</b>	Illiterate	1		0.099
		Primary	0.86	0.666-1.120	0.269
		Secondary	0.50	0.213-1.200	0.122
		High school	0.44	0.213-0.910	0.027
	University	0.57	0.260-1.290	0.181	
<b>Age</b>	60-64	1		0.010	
	65-69	0.77	0.570-1.04	0.093	
	70-74	1.22	0.886-1.693	0.221	
	75-79	0.88	0.627-1.252	0.494	
	80-84	0.51	0.322-0.832	0.007	
	85-99	0.68	0.358-1.309	0.252	
<b>Employment</b>	unemployed	1		0.000	
	housewife	0.47	0.295-0.756	0.002	
	With career history and retired	0.41	0.218-0.795	0.008	
	Employed	0.20	0.111-0.391	0.000	
	unknown	0.49	0.106-2.314	0.372	
<b>Constant</b>		5.51		0.008	

The stress-buffering hypothesis states that people with more functional support are better protected from the negative consequences of psychological stress [35]. The hypothesis stresses that greater social support is associated with enhanced quality of life [36]. Social support also increases the ability to cope with the stressors via receiving informational and emotional support. If it is improved, it may result in fewer physiological and psychological symptoms of illness [37]. Social support has contributed to a sense of acceptance that leads to an increase in self-esteem through the stability, predictability, and control that it provides [38]. Self-efficacy has also been found to affect mental well-being and functioning through the individuals' beliefs in his or her ability to overcome specific challenges [39]. Social support may also have a significant impact on older people's health behaviors either health promoting or health damaging behaviors.

Furthermore, those who lack social connections engage in health damaging behaviors that may lack the resources to change their behavior successfully [40].

It is better to have a social support among the elderly people with higher levels of education. The result has been confirmed in most previous studies [4,41,42]. It is noted that people with higher education have a greater sense of community and the ability to organize and participate in various forums and are in more interpersonal communication. Thus, they have more opportunities to find friends and people who can support them [4].

In the present study, social support scores are higher in men than women. This is consistent in some studies [4,43,44], but not with other studies [22,45,46]. Due to cultural differences in some societies, women have greater concerns about

their relationships in the society. Most men rely on their wives. In our study, women especially the older ones have less active participation, social activities and interpersonal relationships.

Like other studies, social support declines through increasing age [33,46,47]. Due to changes in the body and physiologic capacities because of aging, older seniors have been more prone to disability compared to younger seniors who have lower participation in the society. This society prefers to retire the elderly against their will and to continue their previous activity, as well.

Depending on the relationship between social support and marital status, married people have a higher mean social support score ( $p < 0.001$ ) than the unmarried. This finding has been matched with the results of other studies [4,44,46-48]. Elderly men and women who live with their life partners, can live in an appropriate supportive atmosphere and have better interpersonal relationship. However, in the studies by Cumming and Bakhshai, there is no significant relationship between these two variables [41,49].

In this study, the mean score of social support is higher for the employed individuals as compared

to the unemployed ones ( $p < 0.05$ ). This is similar to the results revealed by Melchiorre and Kuhirunyaratn [42,46].

The important question is how social support among elderly people in the Iranian society has highly increased. This reason is explained with cultural context of the study. Also, the results show 93.4% of elderly people live with their family and only 6.6% of them live alone. Most Iranian family members take the main responsibility of caring for elderly parents. The culture of leaving elderly people in nursing home is not prevalent in Iran [21], especially in Mazandaran province. Depending on the review of culture and contextual factors, many studies on the process of family members' decision about taking elderly people to nursing homes can be treated differently in many countries [50,51]. Family members' struggle to put their parents into a nursing home is a challenging phenomenon in Iranian society. Many Iranian family members have experienced the concerns after taking their elderly parents to nursing home [21]. Many studies revealed that the mean of social support in elderly people who lived with their family is higher than those living alone [41,46].

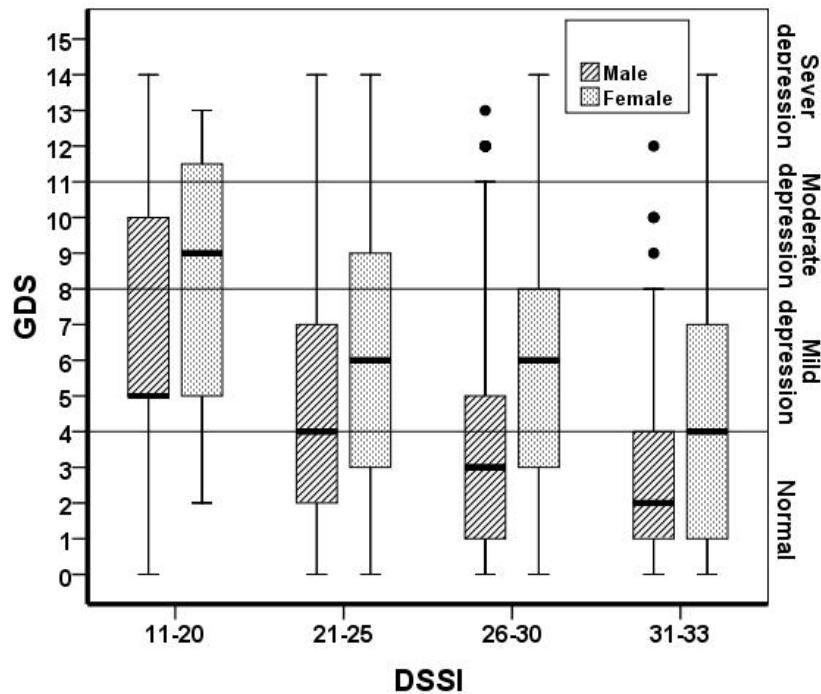


Fig. 1. The mean of social support in male/female elderly population with depressive syndrome

Social support is a circuit process and especially influenced by cultural and social contexts. Therefore, these results are involved in the interaction of Iranian culture. Based on Iranian religious and culture, providing care to elderly people is a sacred duty. Most Iranians are willing to provide care to their elderly family members in their own homes [52]. The culture of placing elderly people in nursing home is not present in Iran [53]. Most Iranians provide the regular, continuing contact and care for their elderly family members. According to Iranian culture, it is expected that the elderly people receive high family support and respect. The role of family caregivers' support also has been emphasized by other studies [54].

The strengths of this study include the large sample size, the high response rate and the use of validated scales to measure depressive symptoms and social support. We acknowledge, however, that we relied exclusively on a self-reported depressive symptom scale and not a full psychiatric assessment which is needed to make a diagnosis of depression.

## 5. CONCLUSION

Social support has been negatively associated with depressive symptoms in older people living in northern Iran. This extends the task on this topic previously done in Europe, North America, Australia and Japan to new geographic, religious and cultural settings. By increasing the social support of older people we can attain the potential to reduce depression, irrespective of a society's particular social characteristics.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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