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## Prevalence of depressive symptoms in older people of Amir-Kola city in 2012: results from AHAP study

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### ABSTRACT

Depression is one of the most common disorders in the elderly. The problem in the elderly remains largely obscured and left untreated though leads to exacerbation of the disorder. The present study aimed to determine the prevalence of depressive symptoms in the elderly population of Amir-Kola city in 2012. 1600 elderly individuals living in Amir-Kola city were entered in the cross-sectional study. Information such as age, sex, duration of disease, marital status, income, etc. was acquired. Depressive symptoms was obtained with a 15-items Geriatric Depression Scale questionnaire. The effects of risk factors on the prevalence of depressive symptoms were evaluated statistically with chi-square test and Logistic regression analysis. 905 participants (56.6%) had normal condition, and 695 participants (43.4%) had some symptoms of depression. Of these, 437 (27.3%) had mild depression, 177 (11.1%) moderate depression and 81 (5.1%) showed symptoms of severe depression. Variables, female sex ( $p < 0.0001$ ), diabetes ( $p < 0.004$ ), lack of common life with spouse ( $p < 0.002$ ) and having cognitive impairment ( $p < 0.0001$ ) significantly affects the prevalence of depression.

### INTRODUCTION

The aging process is a gradual loss of body functions including the cardiovascular, respiratory, genitourinary, endocrine and immune systems. Aging will become a healthy person, the weak one with a reduction in the physiological capacities and increased susceptibility to many diseases and eventually death [1]. Today, aging is a global phenomenon, and this is important because of the increasing elderly population in the world; according to the World Health Organization, the number of elderly in the countries of Southeast Asia, including Iran, in 2000, was about 7% of the total population and by 2030 this figure will reach 15% [2].

Mood disorders, especially depression and dementia are common psychiatric disorders in old age; its prevalence has been reported 30% to 50% in the elderly living in nursing homes [3].

Although increasing age alone is not a factor for depression, however the loss of a loved one especially the spouse, separation from children-especially in modern societies and even in our country that extended families were placed by nuclear families-, suffering from chronic physical illness, use of medication, and cognitive deterioration, all of them prone elderly person to depression [4]. The cause of depression in the elderly as in younger individuals is psychosocial and biological [4]. Depression is a disease that has a tendency to recur and become constant [5, 6].

Onset of depression in the elderly and young people is different. Anxiety, slowing the flow of thought and activity was more common in the elderly [3]. The most common symptoms of depression in the elderly are lethargy, fatigue, lack of concentration, impatience, frequent waking from sleep, loss of appetite and physical pain can occur [7].

In 2000, depression was allocated to rank fourth on the burden of disease and at the same time it is predicted that will rise by 2020 in the second place and in 2030 the first place at all ages and both sexes in high societies [8].

Due to more physical complaints than psychological symptoms of depression, repeated visits to various physicians may occurred and if not diagnosed, result in misplaced treatments [3, 7]. On the other hand, the risk factors for developing geriatric depression include being female, social isolation, marital status of the elderly widowed, divorced or separated, the lower socio-economic status, with a debilitating disease, uncontrolled pain, insomnia, and functional impairment and cognitive disorder [9]. In addition, depression resulting in increased taking medication, increased patient cost for prescription and non-prescription drugs, overconsumption of alcohol, increased health care costs and the duration of hospitalization [10].

Despite the high rate of depression in the elderly, in most cases it is neglected. The reality is unfortunate because depression is a disorder that nowadays there are effective treatments. On the other hand, decreased mental ability and grief is not considered part of the normal aging process and the mood disorder should be considered as important.

The present study aimed to determine the prevalence of depressive symptoms in elderly residents of Amir-Kola city, northern part of Iran in 2012.

## MATERIALS AND METHODS

This cross-sectional study came from the Amir-Kola Health and Ageing Project (AHAP) that was undertaken among 1600 older people aged 60 years and over (870 males and 730 females) in Amir-Kola, a small town in northern Iran [11]. The sampling method was census. The study was approved by the Ethical Committee of the Babol University of Medical Sciences. The study was carried out in accordance with the Declaration of Helsinki. Eligible subjects provided written informed consent, after receiving a complete description of the study. Subjects were not paid for their participation.

The presence of depressive symptoms were assessed by Geriatric Depression Scale (GDS) questionnaire. GDS questionnaire is a screening test in the elderly which has three versions of 30 questions, 15 questions and 7 questions. In this study, 15 questions are used. The questionnaire, based on the scores obtained, the individuals were divided into groups of normal (score from zero to four), mild depression (scores between 5 and 8), moderate depression (scores 9 to 11) and major depression (scores 12 to 15). Cognitive status was examined using Mini-Mental State Examination (MMSE) questionnaire. MMSE is a short 30-point practical-clinical questionnaire which is used for screening purposes. In this test, a score 20-24 suspected of cognitive impairment and a score below 20 a sign of cognitive impairment are identified.

In addition to this, data on age, sex, marital status, education, living status, history of diseases such as diabetes, having a supportive and caring, job, employment at the time of the study, along with the income of the elderly were completed by the researcher.

The prevalence of depressive symptoms in older people was calculated based on the GDS questionnaire. To assess the association between variables we used chi-square test. To determine the role of different variables on depressive

symptoms in the elderly, a logistic regression model was used. A p-value equal or less than 0.05 was considered statistically significant.

## RESULTS

Of total; 870 (54.4%) males and 730 (45.6%) were females, most participants were married (1364 subjects; 85.3%), and widowed (162; 10.1%) and in the second place, respectively. In addition to these, 1493 (93.3%) older people had someone in the family who take care of them; and in terms of education, 1037 (64.8%) were illiterate and 429 (26.8%) participants had primary education (Table 1).

**Table 1: The distribution of the elderly in Amir-Kola city by demographic variables and some socio-economic indicators: 2012**

Variable	Group	Number	Percent
Gender	Male	870	54.4
	Female	730	45.6
Marital status	Married	1364	85.3
	Widow	162	10.1
	Divorced	4	0.3
	Separated	2	0.1
	Spouse died	68	4.3
Having someone to support and maintain	Yes	1493	93.3
	No	107	6.7
Education	Illiterate	1037	64.8
	Primary	429	26.8
	Guidance	29	1.8
	High school	60	3.8
	College	45	2.8

Scores of GDS; 905 (56.6%) older people had a normal condition, and 695 (43.4%) of them had some symptoms of depression. Of these, 437 (27.3%) had mild depression, 177 (11.1%) with moderate depression and 81 (5.1%) also showed signs of severe depression.

In this study, there were significant relationship between depressive symptoms and female gender ( $p < 0.0001$ ), the absence of caregiver ( $p < 0.0001$ ), not living with spouse ( $p < 0.0001$ ), diabetes ( $p < 0.0001$ ), illiteracy ( $p < 0.0001$ ) and cognitive impairment ( $p < 0.0001$ ) based on chi square test (Table 2).

**Table 2: Demographic variables and some socio-economic indicators affecting the prevalence of depressive symptoms of the elderly in Amir-Kola city: 2012**

Variable	Group	Number	Depressive symptoms %	p-value
Gender	Male	870	29.2	< 0.0001
	Female	730	60.4	
Having caregiver	Yes	1493	42.1	< 0.0001
	No	107	61.7	
Living with spouse	Yes	1314	39.8	< 0.0001
	No	279	60.9	
Employment	Employed	1102	42.6	0.693
	Unemployed	449	43.7	
Diabetes	Diabetic	374	55.3	< 0.0001
	Non-diabetic	1226	39.8	
Literacy	Literate	563	36.6	< 0.0001
	Illiterate	1037	47.2	
Age	60-64	568	42.4	0.06
	65-69	332	38.9	
	70-74	281	49.8	
	75-79	252	46.4	
	≥ 80	167	40.7	
Cognitive status	Normal	1095	36.2	< 0.0001
	Impaired	505	59.2	

196 (43.7%) of 449 unemployed elderly and also, 469 (42.6%) of 1102 employed elderly had symptoms of depression. Significant differences between the two groups in the prevalence of depression in elderly were not seen (using chi-square:  $P = 0.693$ ; odds ratio = 0.956). Men and women were analyzed separately.

489 (47.2%) participants of the total 1037 illiterate elderly people had symptoms of depression. And 177 (41.3%) of 429 participants with primary education, 8 (27.6%) of 29 subjects with secondary level, 11 (18.3%) of 60 subjects with a high school education and 10 (22.2%) of 45 subjects with university education, has been signs and symptoms of depression. Education has significant effects on the incidence of depression in elderly, and with increasing level of education, the prevalence of depression was reduced.

As well, to determine the variables that affect depressive symptoms, logistic regression model was used. In this model female gender (OR = 3.701), not living with spouse (OR = 0.424), diabetes (OR = 1.875), illiteracy (OR = 1.546) and cognitive impairment (OR = 2.562) had the most significant role in the development of depressive symptoms.

## DISCUSSION

According to the study, 43.4% of older people in Amir-Kola city have depressive symptoms. Based on GDS criteria, 27.3% of the studied community had mild depression, 11.1% moderate depression and 5.1% of them showed signs of severe depression.

Luppa et al. (2012) investigated the prevalence of depression in a population older than 75 years as a systematic review and report the prevalence of depression in the range of 4.6 to 9.3% and the prevalence of depressive disorders in 4.5 to 37.4% [12]. Argyropoulos et al. (2012) reported the prevalence of depression in the elderly in urban areas of Greece of 45% (36% moderate and 9% severe) [13]. Imran et al. (2009) estimated the prevalence of depression in elderly patients in hospital outpatient clinic clients in Malaysia, 13.9% [14]. Rajkumar et al. (2009) reported the incidence of depression among the elderly Hindi rural community 10.64-14.76% [15]. In addition, the prevalence rates of depression in elderly Australians is 8.2% [16], elderly Pakistani 22.9% [17], a Chinese community 7.83% [18], and public health centers for the elderly in Brazil 31% (severe depression at a rate of 4%) [19] was announced.

Considering its importance, some research in our country to estimate the prevalence of depression in geriatrics is done. Manzouri et al. (2009) showed that 63.7% of elderly Isfahani had depression (40.7% moderate depression and 23% severe depression) [20], Kashfi et al. (2010) reported the elderly over 60 years under the Social Welfare of Shiraz, in which 65% have mild depression, 25.83% with moderate depression and 9.17% had severe depression [21]. In another study by Mobasheri et al. (2010) carried in the elderly, 64.9% of people had mild depression, 15.8% of them were moderately depressed 3.5% of them suffered from severe depression [22]. Also, Gharanjik et al. (2011) estimated that the incidence of mild depression in the elderly over 60 Turkmen was 20%, moderate depression 10% and severe depression at 3% [23]. The prevalence of depression has been reported 9.5% of the general population in the age range of 18-70 years in Rasht [24].

A review of the research is clear that the prevalence of depression in the elderly is very different. It seems that this difference is due to certain methodological differences in research design, sampling methods and the quality of different studies, and finally the prevalence of depression varies according to geographical differences and different demographic population. For example, differences in sampling, especially in relation to the introduction of people with dementia and evaluations of elderly at home under the care of a nurse, could have an important role in the development of depression. Failure to provide information related to the prevalence of cognitive impairment among the participants in research is one of the limitations of this research. Also the elderly living at home and under the care of a nurse can affect the research results that most studies have not provided an explanation in this regard; because the prevalence of depression in these elderly is about 3 to 4 times higher than elderly living in the community [25].

According to the study, 29.2% of the men and 60.4% of the women had symptoms of depression and gender factor was effective in the prevalence of depression. It seems that the existing differences among males and females are due to gender differences, biological agents, modes of perception and a higher incidence of mental stress in women. Nowadays, there is no doubt that at a later age, the incidence of depression is higher in women [12, 13, 18,23]. The

role of environmental impact is important in terms of social factors such as life's roles, supports and life events with psychological factors to the difference between the sexes in the prevalence of depression [26]. Of course, some have declared that the difference between the two groups was superficial and that gender differences may be rooted in help-seeking or symptom reporting behaviors; because women are more likely to talk about their feelings, and that men tend to deny the existence of problems; as those suffering from drug or alcohol declined it [27, 28].

According to the study, depression in elderly who have a disease like diabetes was significantly more than the elderly without the disease. The burden of medical problems associated with an increased incidence of depression in the elderly, so every physical illness can trigger depression and depression may also leads to the deterioration of the disease. Argyropoulos et al. 2012, at the evaluation of the prevalence of depression in the elderly in urban areas of Greece reported that depression in the elderly with chronic diseases is more common than in healthy individuals (50.8% versus 27.5%) [13]. In another study in the elderly referred to an outpatient clinic in Malaysia, elderly people with the disease which leads to restriction in the activity and their movement, was revealed a higher risk for depression [14].

According to the results, 60.9% elderly who lived without spouse and 39.8% elderly who lived with spouse had the signs and symptoms of depression. Accordingly, a life with spouse has a protective role in the prevention of depression. In the research of Kashfi et al. (2010), marital status was also known as a variable affecting the level of depression [21]. In the research of Manzouri et al. (2009), depression in elderly who were living alone due to the death of a spouse, divorce or separation, was greater [20].

According to the study, elderly with financial independence compared with those who have been sponsored by their children or pension Relief Committee revealed a lower risk of depression (respectively 26.3%, 68.1% and 64.7%). Income is one of the factors associated with depression. Kashfiet al. (2010) reported that the lower the income of the people, the more they become depressed [21]. These findings have been reported in other studies [14, 17].

In the present study, among illiterate elderly 47.2% and among elderly with literacy 36.6% revealed signs and symptoms of depression. Accordingly, illiteracy is a risk factor for the onset of depression. Gharanjik et al. (2010) investigated the Turkmen elderly, and revealed a significant relationship between depression and education level [23]. Manzouri et al. (2009) in Isfahan is also revealed a significant relationship between depression and education level, occupation and economic situation [20]. However, in the study of Kashfiet al. (2010) there was no significant correlation between level of education and degree of depression [21].

Based on the present results, the same frequency of depression in elderly age group was registered. In the research of Kashfi et al. (2010) depression was reduced with increase age of elderly [21]. It seems to comply with the changes caused by geriatrics, in the early years is far more difficult than the terminal years of life. Taban et al. (2005) also found no association between depression and age [29].

Among those without cognitive impairment 36.2% and among those with cognitive impairment 59.2% showed symptoms of depression, which was significantly higher among those with cognitive impairment. The role of cognitive impairment in depression requires further investigation. Concurrent with the increased prevalence of cognitive impairment with age, differentiating depression and dementia is more difficult. On the other hand, there are arguments that dementia is a risk factor for depression or depression is considered only as the primary feature of dementia [30]. Also, the dementia due to psychological reactions associated with behavioral and cognitive changes may be a risk factor for depression.

Despite some strengths in the present study, such as adequate number of samples, valid questionnaires and multiple variables, it seems that more research in assessment of depression in older people based on different studies using different criteria for estimates of the disorder or country and regional studies are still needed in this field.

## CONCLUSION

Considering the high prevalence of depressive symptoms in the elderly, screening program for early diagnosis and treatment of older people with depressive symptoms is necessary.

Declaration of Interest: The authors declare they have no competing interests.

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