Prevalence of Depression in an Elderly Population: A Population-Based Study in Iran

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Objective: Depression among elderly in Iran has not been well studied. Little is known about the true rates of depression, it correlates or how well it is treated. This research is part of a series examining health status of older people using the Geriatric depression scale-15 (GDS-15).

Methods: One thousand and nine hundred seventy five (1975) older people living in Razavi Khorasan province were studied using the cluster sampling method. The Persian version of GDS-15 was completed based on filling in questionnaires and after recognition of sample size of each city. Admission and data analyzing was followed by examining the relationship between depression and place of living (rural and urban), education, gender, type of living (alone or with family), occupation, source of income, and supporting system (such as charities, etc).

Results: The subjects' mean (±SD) age was 71.14 (±7.78) years (range: 60-98) and 52.9% of the subjects were female. According GDS score, 23.5% of the subjects suffered from depression. The GDS score was significantly related to type of living (alone or with family), source of income, and supporting system (such as charities) ($p<0.01$). The depression scores in elderly with family support was significantly higher than those living with personal wealth and retirement salary ($p<0.01$).

Conclusion: Depression may be related to some factors including living alone and to source of income, and supporting system. National programs should be developed in community centers focused on Finding and decreasing depression among the elderly population.

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Introduction

Depression is a common mental disorder which characterized by depressed mood, loss of motivation, lack of physical energy, inability to feel pleasure, disturbed sleep, feelings of hopelessness, helplessness and worthlessness, and finally poor concentration. Age is an independent and important variable that can influences the presentations, symptoms, and the natural course of disease (1-4). Depression can severely affect people aged 60 years and more, and particularly is more common in those who are also afflicted with other general medical conditions (5). Depressive symptoms are often masked by the somatic complaints, or even considered as a normal aging process and therefore unrecognized, under-diagnosed and inadequately treated (6-8). On the other hand, it has to be added that old patients tend not to request help to mental health centers (9,10). Therefore this problem adversely affects their health, ability to overcome disease, and so is associated with poor clinical outcome (11-13).

Numerous studies have examined depression in the general community, but studies of

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depression in the elderly have generally been small and limited. Estimates of the prevalence of major depression in samples that include older adults range widely, depending on the definition and procedure used for counting a case of depression. In a review the prevalence of major depression ranges from 0.9% to 9.4% in private households, from 14% to 42% in institutional living, and from 1% to 16% among elderly living in private households or in institutions; and clinically relevant depressive symptom 'cases' in similar settings vary between 7.2% and 49% (14).

The main predictors of depressive disorders and depressive symptom cases are female gender, somatic illness, cognitive impairment, functional impairment, lack or loss of close social contacts, and a history of depression (14). Estimates derived from use of standardized assessments that rely on DSM criteria suggest that the prevalence of depression declines with age but yet, it is high (15). A study in Malaysia showed that 54% of the elderly respondents were found to have depressive symptoms (16). The prevalence of major and minor depression in Canada were 2.6 percent and 4 percent, respectively, and were higher for females, specifically those in institutions, those who reported that their health problems limited activities, and those with chronic health conditions (17). Careful attention to measurement issues related to depression among older adults may clarify the extent to which reported differences in risk according to ethnicity reflect differences in diagnostic practices. As epidemiological and clinical studies in the world consistently indicate that depression adversely affected the quality of life in old age, we decided to determine the prevalence of depression in a sample of Iranian elderly people.

Materials and Methods

Subjects were all recruited from the free volunteers living elderly people, who could participate in questioning (without significant cognitive problems, psychosis or other deficit in reality testing), in Razavi Khorasan province in north east of Iran (with total elderly population of 463329) in 2008. To avoid bias, socioeconomic questions were set in the final part of questionnaire. A sample of 2000 people was selected, after the initial consultation with the statistical consultant and by using cluster sampling.

To start, with the aim of specific group sampling, 109 first priority groups (20 elderly people in each group) from a list of groups in Razavi Khorasan health centre were employed after informed consent. The next sorting of specific subgroups was proceeded by questioning the head of family (group) in each subgroup and continued (from right to left house number in every streets) up to the point on the city map, where all the subgroup samplings were selected and considered.

The information resulting from interviews, inspections and completion of the data forms were used for this research. The team in charge of questioning included health care officers and medical students. The questionnaire form used for this study was the Iranian version of the Geriatric Depression Scale-15 (GDS-15). The Iranian version of GDS-15 has been found to be an internally consistent measure for major depression in older dwellers in Iran. Alpha, split-half coefficients and test-retest reliability were 0.9, 0.89, and 0.58, respectively. Using Receiver operating curve (ROC) analysis, the optimum cutoff score for GDS-15 was 7.8, yielding a sensitivity of 0.9 and a specificity of 0.84 (18).

Two thousands subjects were selected (and the researchers went to their home), which the GDS-15 form was completed for 1975 persons (by them or by the researchers for uneducated people). The GDS has been developed to assess depression in geriatric populations by Yesavage and Brink (19,20). Sheikh and Yesavage subsequently created a shorter version that consists of 15 items from the original scale that showed the highest correlation with depression (20,21). The GDS-15 has been validated in Iran (18). According to the GDS-15, in screening part, if the score of patient is 8 points or less, the patient is not at risk. The GDS-15 was completed based on filling in questionnaires and after recognition of sample size of each city. Admission and data analyzing was followed by examining the relationship between depression and place of

living (rural and urban), education, gender, type of living (alone or with family), occupation, source of income, and supporting system (such as charities).

Data are expressed as means (± SD) for continuous variables and as frequencies and percentages for categorical variables. Differences in depressive status were analyzed by the chi-square test for categorical variables.

Results

The subjects' mean (±SD) age was 71.14 (±7.22) years (range: 60-98) and 52.9 of the subjects were women. Demographic data of the study population are shown in table 1. As shown in table 2, according GDS-15 score, 23.5% of the subjects suffered from depression.

Table 1. Population demographics

	Mean Years or Number(%)
Age	71.14 ± 7.22
Male	69.00 ± 7.12 70.01 ± 7.24
Female	
Gender	1975 (100%)
Male	917 (46.4)
Female	1045 (52.9)
Unknown	13 (0.7)
Educated	378 (19.5)
Male	250 (27.6)
Female	128 (12.4)
Urban	1118 (57.6)
Male	514 (56.6)
Female	604 (58.5)

Table 2. Prevalence of depression in Iranian elderly population according to the Geriatric depression scale-15 (GDS-15)

	Frequency (1875 total)	Percent
With depression	440	22.3
Without depression	1435	72.2
Total	1875	94.9
Missing data	100	5.1
Total	1975	100

Relations between gender, place of living (rural and urban), education, and type of living (alone or with family), occupation, source of income, supporting system (such as charities), and the GDS-15 scores were determined by chi-square test in males, females and combined subjects (Tables 3-5). The GDS-15 score was significantly related to type of living (alone or with family) and source of income and supporting system (such as charities). The percentage of depression was higher in subjects living alone than those living with others ($p<0.001$). The depression scores in elderly with family support was significantly higher than those living with personal wealth and retirement salary ($p<0.001$). There were no significant differences between depression rates among women vs. men, rural vs. urban, educated vs. illiterate elderly people. Also the rate of depression among different occupation was not significantly different.

Discussion

This study was a cross sectional survey to determine the prevalence of depression in a sample of Iranian elderly people. In Iran, culture and lifestyle are different from those in the industrial countries, so that we intended to examine the effect of some demographic factors on depressive symptoms of community living elderly population in this country. The GDS-15, a simple and highly reliable and valid measure, with good sensitivity and specificity for depression in elderly people (22,23) was used in this study. According GDS-15 score, 23.5% of the subjects of this study were screened for depressive

Table 3. Relationship between depression and demographic variables in Iranian elderly population

		Without depression GDS< 8	With depression GDS>8	† P
Gender (% M/% F)		47.3 /52.7	43.6 / 56.4	0.176
Place of living (%rural/% urban)		43 / 57	46.6 / 53.4	0.179
Education (%illiterate/% educated)		81.3 / 18.7	80.9 / 19.1%	0.0902
Type of living	Alone (%)	75.9	24.1	0.001
	With family (%)	76.7	23.3	
	With others (%)	68.6	31.4	
Occupation	Employee (%)	77.8	22.2	0.433
	Laborer (%)	81.2	18.8	
	Self-employed (%)	82.6	17.4	
	Farmer or Shepherd (%)	74.9	25.1	
	Unemployed (%)	76	24	
Source of income	Charity (%)	69.1	30.9	0.0018
	Retirement salary (%)	78.2	21.8	
	Family support (%)	79.2	20.8	
	Personal wealth (%)	79.4	20.6	
	Others (%)	77.8	22.2	

† Chi-Square test was used

Table 4. Relationship between depression and demographic variables in Iranian elderly male population

		Without depression GDS< 8	With depression GDS>8	† P
Place of living (%rural/% urban)		42.9/57.1	53.1/46.9	0.012
Education(%illiterate / % educated)		71.4/28.6	76.6/23.4	0.159
Type of living	Alone (%)	75	25	0.066
	With family (%)	77.8	22.2	
	With others (%)	100	0	
Occupation	Employee (%)	78.8	22.2	0.888
	Laborer (%)	77.6	22.4	
	Self-employed (%)	80.9	19.1	
	Farmer (%)	75.7	24.3	
	Unemployed (%)	78.1	21.9	
Source of income	Charity (%)	65.7	34.3	0.000
	Retirement salary (%)	81.4	18.6	
	Family support (%)	76.8	23.2	
	Personal wealth (%)	83.9	16.1	
	Others (%)	79.1	20.9	

† Chi-Square test was used

Table 5. Relationship between depression and demographic variables in Iranian elderly female population

		Without depression GDS< 8	With depression GDS>8	†P
Place of living (%rural/% urban)		43/57	41.5/58.5	0.687
Education (%illiterate / %educated)		89.8/10.2	83.9/16.1	0.011
Type of living	Alone (%)	76	24	0.001
	With family (%)	75.4	24.6	
	With others (%)	65.6	34.4	
Occupation	Employee (%)	0	0	0.097
	Laborer (%)	90	10	
	Self-employed (%)	100	0	
	Farmer or shepherd (%)	72.2	27.8	
	Unemployed (%)	74.8	25.2	
Source of income	Charity (%)	71.4	28.6	0.001
	Retirement salary (%)	74.6	25.4	
	Family support (%)	80.4	19.6	
	Personal wealth (%)	73.8	26.2	
	Others (%)	76.5	23.5	

† Chi-Square test was used

illness (GDS-15 score 8 or higher). The prevalence of depressive symptoms is difficult to evaluate on account of several epidemiological problems such as the various definitions of depression and different cut-off points of the scales, which often prevent comparisons between studies. Furthermore, the selection bias due to differences in populations studied, and to the high risk of refusal to participate among the depressed subjects are other difficulties (24). Also biases have been reported (i.e., underreporting of symptoms in older individuals, men, and those with high verbal intelligence) using GDS-15, but it is not clear whether these biases are specific to this scale or would also be noted with other self report measures (20). However, the reported prevalence of depression varies enormously in different countries. A study in Taiwan (25), using GDS-15, has shown that the prevalence of depression was 12.78 per cent but the recent survey in Thailand, with interview by trained psychiatrists found that the one-month prevalence of late-life clinically significant non-major depression among the community-dwelling elderly was 8.8% (26). In a cross-sectional survey among community-dwelling Japanese frail elderly, 23.1% of the participants had a GDS-15 score of 10 or higher (27), and another study in Turkey (28) determined that 16% of the elderly people scored 14 or higher on the GDS. Using a cut-point of 5.6 for the GDS-15, 29.0% elderly appeared to have depression (Indonesia: 33.8%, Vietnam: 17.2%, Japan: 30.3%) (29). As we mentioned before, different methods as well as different background might be related to this wide range. However, despite of different cut-off point, the prevalence of depression in Iranian elderly was very close to Japanese.

The GDS-15 score was significantly related to type of living. People who were living alone had more depressive symptoms. This investigation confirms previous studies from other countries concerning the relevance of risk factors for depression in the elderly (30-35). When tackling the depression of elderly people, it is important to look at the family context, as this is a factor strongly linked

to the depression.

As the result showed, the GDS score was significantly related to source of income and supporting system. Furthermore, depression was found to be related to poorer financial status which means there are significant differences between depression scores in elderly who gave their salary from charity and who had their own retirement salary. The latest finding might be related to sense of autonomy and being more independent. There are some studies that confirm this finding. A study concluded that there was a significant increase in the risk of depression status associated with the lack of social support in Japanese elderly people in an urban community (26). Other researches have shown the role of the social support network and economy in elderly depression in Hokkaido (36), Japan (37), Seoul (38,39), and Hong Kong (40,41).

In present study, there was no significant difference between prevalence of depression in male and female, which is similar to South Africa's study (42). However, some researchers believe that elderly depression was more common in women (33,43). It might be because of this facts that in female (not in male), dependency affected depression directly (17) and in our study 77.8% of the subjects were living independent.

Prevalence of depression was nearly equal among rural and urban elderly population in our study. There are some controversial results in literatures. In Saudi, living in a remote rural area and limited accessibility within the house and poor interior conditions were also significantly associated with high depressive symptoms (44). In a study urban residents were 3.8 times more likely to be depressed than their rural counterparts (34). In addition another survey showed that depression was more common in people who lived in urban areas (26). Additional research into the differences in the prevalence of depression between urban and rural elderly would provide a more in-depth understanding of this problem and help to identify more effective treatment plans for different elderly populations.

Another result of this study showed that the prevalence of depression was nearly equal in educated and illiterate elderly population. some studies have shown subjects with low education levels had statistically significantly higher depressive symptoms than highly educated persons (21,36,45); the authors pointed that the association between low educational level and depression may be due to difficulty in understanding certain questions so this differences could be factitious.

Prevalence of depression was not different in our elderly population with different occupational states. In another study, only employment status was found to be significantly associated with depression (46). Another survey reported that one of personal characteristics that correlated strongly with depression was unemployment (44), but a study had shown that self-reported marital separation or divorce and physical disability affecting employment were strongly associated with high depression scores, whereas the normative stresses of aging (widowhood, retirement, social isolation) were not (24). But our study did not assess these correlations.

Limitation of the study

We have not studied other risk factors for depression in late life including widowhood (45,47), physical illness (48-50), impaired functional status (51-53), and heavy alcohol consumption (54-56). Also the associations between cognitive impairment and depression were not assessed and sever cognitive and somatic problems in the elderly also excluded several cases. Cultural issues also were an important factor to control that we could not control its impact on our patients. Another limitation of the present study was the absence of clinical interview by trained psychiatrist. However it is difficult to determine how this limitation might influence on our findings.

Conclusion

Depressive symptoms are common among community-dwelling elders in Iran, and with its identical demographic characteristics, we suggest depression may be related to some factors including living alone and to source of income, and supporting system. National programs should be developed in community

centers focused on screening depression among the elderly population.

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