Iranian J Publ Health, Vol. 42, No.6, Jun 2013, pp.559-569

Original Article

Depression, Prevalence and Some Risk Factors in Elderly Nursing Homes in Tehran, Iran

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(Received 18 Jan 2013; accepted 20 Apr 2013)

Abstract

Background: The most common geriatric psychiatric disorder is depression, known to be a multi factorial disorder. However, the influence of common preventable factors is yet to be discovered. This study was designed to evaluate the prevalence of depression and some possible risk factors in elderly residents of nursing homes in Iran.

Methods: Data on demographic characteristics, nutritional and health status of 244 residents aged 60 years or older were collected from seventeen nursing homes in Tehran, Iran, during 2010 to 2012. Depression was assessed and classified according to the 15-item GDS. Univariate and then multivariate complex sample survey ordinal regression analysis was performed to investigate the association between depression and the risk factors.

Results: The average age of the 244 cases studied was 75.8 (±8.7) years, 53.3% were female (of whom 74.2% were housewives), 43.4% illiterate, and 32.0% were divorced or were living separately. The percentages of non-depressed, mild, moderate and severe depression were 9.8%, 50.0%, 29.5% and 10.7%, respectively. Multivariate analysis showed that dissatisfaction with personnel of nursing homes and food quality had odds ratios of 2.91 (1.33-6.36) and 2.64 (1.44-4.87), corresponding to greater odds of having a higher grade depression. Moreover, those who rested or walked had significantly higher risk of a more severe depression in comparison with those who did not (OR of 2.25 (1.50-3.38) and 1.98 (1.24-3.18), respectively), however, studying had a protective odds ratio of 0.17 (0.13-0.22).

Conclusion: Depression was very common in our sample and their lifestyle influenced its prevalence.

Keywords: Depression, Elderly, Nursing homes, Iran

Introduction

Depression is a major mental health problem in the elderly population (1-3). Despite considerable interest and the fact that depression is known to be highly prevalent in elderly nursing home (NH) residents, few studies exist on its incidence and risk factors. There is no consensus regarding the prevalence of depression in later life, which partly is due to a lack of diagnostic criteria for elderly.

Older people are prone to psychiatric disorders through vicissitudes of life such as social isolation, malnutrition, economic problems and emotional depression. The prevalence of depression in NH population is very high, no matter how depression was defined, and prevalence rates among NH residents were found to be up to three to four times higher than in community-dwelling elderly (4, 5). Also many illnesses that are common in older adults are known to be associated with depression symptoms (6). Studies on the relation between depression and diabetes have led to new conclusions such as, an association between clinical depression with a 65% increased risk of diabetes in elderly people (7). Major and minor depressions seem to be implicated in this relation (8).

In modern industrialized countries traditional forms of support for the elderly are often replaced by new formal and informal support systems. This shift happened as a consequence of demographic and social changes in the 19th and 20th centuries (9) and is accompanied by an increase of the proportion of elderly in especially industrialized societies. United Nations' estimates show that in 2000, individuals aged 60 years or older represented 10% of the world's population (about 600 million people), and by the year 2050, with more than 2 billion people, this group will represent 22% of the world's population. Furthermore, the population of individuals aged 80 years or older is projected to more than triple during the 2000-2050 periods (10).

High rates of depression among American long-term NH residents, at admission and during the first year, indicate a need to monitor and treat large numbers of elderly for depression (11). It is not known if depression has the same high prevalence in NHs in Iran or not.

Our country (Iran) has undergone a period of rapid demographic transitions that increased the proportion of older people in the society. As the population aging happens, the need for long-term care will soar.

Major depression is a serious illness that affects the person's family, life style, productivity at work, sleeping, eating habits and general health, and increases the need of NH care (12). Although mild and severe depression are prevalent in older medical inpatients, prognosis and risk factors of these two disorders are not yet clear (13, 14). Reduced associations between demographic indices and depression as stays in NHs progress, suggest that other factors have increased roles in depression etiology (11).

Accordingly, the present study was designed and implemented to determine the prevalence of depression in the elderly, as well as investigation of association of depression with other important socio-demographic variables and risk factors in residents of Nursing Homes (NH) in Tehran.

Materials and Methods

During the period of 2010 to 2012, data were collected from 244 elderly, aged 60 years and older, residents of seventeen nursing homes in Tehran, Iran. Totally, there were 2500 elderly residents in 44 public and private nursing homes, 1000 of which were residents in one of the two largest nursing homes in Tehran, Kahrizak and Hasheminejad. According to following calculations, initially up to 192 elderly were found to be suitable for the study. Therefore, we decided to randomly select 60 and 40 elderly from the two larger centers, and the other 90 from the rest of the nursing homes. Then, we planned to randomly select about 15 homes from the 42 smaller homes and in each nursing home randomly select about 6 elderly. However, in almost all nursing homes we could randomly select and interview more elderly to finish the corresponding working day. So, totally we interviewed 244 elderly. Our random selection of the nursing home provided a reasonable geographical scatter of Tehran.

The size of the required sample was calculated using $n = Z^2_{1-\alpha/2} \times p \times (1-p)/d^2$ with $p = 0.50$ as the estimation of moderate or severe depression in elderly and taking $\alpha = 0.05$ and the precision as 0.075 (d=0.075).

Primarily, the sample size was calculated to be 171 and after correction for the finite number of population under study (2500 elderly) it decreased to 160. As the framework of sampling scheme

from the nursing homes was generally cluster sampling, we used 1.2 as design effect and the final size of sample was computed as 192. It is worth mentioning that the sample size calculation for the study of association between depression and the other risk factors under study were also calculated, but the one that was described was the maximum number and was chosen for the present study. Data on demographic characteristics, nutrition, health status, activities of daily living (ADL), and depression were collected via face-to-face interviews, conducted by professional interviewers. Using a 15-item Geriatric Depression Scale (GDS) (13), elderly subjects were classified in four categories. The scores of 0 to 3 were classified as "not depressed", 5 to 8 as "mild depression", 9 to 11 suggesting "moderate depression" and 12 to 15 were categorized as "severe depression" (15).

The demographic characteristics included gender, educational level, marital status, birth place, previous job, number of children, the number of visits per month, who more visit elderly/month, things more bring for elderly, exposure to sunlight, how expend elderly his/her times in nursing homes, smoking status, supplementation use by elderly, follow a special diet, it is thought by elderly who is depressed? Do elderly people with chronic disease, as (blood pressure, renal, digestive or coronary heart disease), how is dental health, sleeping hours during day or night, satisfaction of NH food quality, eaten food status, satisfaction of NH personnel, and number of elderly dwelling rooms, that potential correlates with depression, were investigated.

The implementation of this project has been approved by the Medical Ethics Committee of Tehran University of Medical Sciences.

Statistical analysis

Data were entered into SPSS (17.0) and checked for the outliers. We analyzed the data using this software and STATA (release 11.0, StataCorp, College Station, TX). After preliminary description of data, the association of depression with demographic characteristics and other risk factors were assessed using univariate and then multivariate ordinal polytomous regression. The depression was as ordered dependent variable with scores of 0 to 3 as "not depressed", "mild depression", "moderate depression" and "severe depression"; as explained above. In addition, the Spearman rho correlation of coefficient was calculated between variables.

Because of the sampling method, Complex Sample Survey (SVY) ordinal regression analysis was performed using STATA. The selected nursing homes (clusters) were defined as sampling units.

Multivariate ordinal logistic regression analysis, using a backward stepwise method was employed to identify independent risk factors of depression after adjusting for the confounders, taking into account, the data structure. A *P*-value of less than 0.05 was considered as significant.

Results

A total of 244 elderly in seventeen NHs in Tehran, Iran were studied during 2010 to 2012, including 53.3% [130] female and 46.7% [114] male, the mean (±SD) age of which was 75.8 (±8.7) years. Majority (45.9%) were 60 to 74 years old. Totally, 138 (56.6%) were educated, of whom 26.7% [65] had diploma or university education. 166 (68.0%) were married and 32% [78] were single or divorced. Most of the female elderly (74.2%) were housewives. In addition, 58.7% of men were self-employed. 57.8% [141] had at most 2 children and 80.2% were non-smoker (Table 1).

In the present study only 24 (9.8%) of the elderly were not depressed, the rest had some degree of depression; 50.0% mild, 29.5% moderate and 10.7% severe. Therefore, 40.2% [98] were moderately or severely depressed. The percentage of moderate and/or severe levels of depression was not significantly different from the others ($P>0.05$; Table 1) in these subcategories: females (42.3%), 60 to 74 year olds (49.0%), married (42.2%) or illiterate cases (43.4%), male subjects with a history of working as a laborer (75%), females who worked outdoors (48.5%), elderly who had 3 children and more (42.7%) and non-smokers (41.8%).

Table 1: Demographic characteristics of the study population according to depression status

Demographic characteristics		Depression				Total n (%)	*P**
		Not n (%)	Mild n (%)	Moderate n (%)	Severe n (%)		
Sex	Male	7 (6.1)	64 (56.1)	33 (29.0)	10 (8.8)	114 (46.7)	0.80
	Female	17 (13.1)	58 (44.7)	39 (30.0)	16 (12.3)	130 (53.3)	
Age groups	60_74 yr	10 (8.9)	55 (49.1)	36 (32.2)	11 (9.8)	112 (45.9)	0.62
	75_84 yr	11 (12.5)	44 (50.0)	25 (28.4)	8 (9.1)	88 (36.1)	
	≥85 yr	3 (6.8)	23 (52.3)	11 (25.0)	7 (15.9)	44 (18.0)	
Marital status	Married	19 (11.4)	77 (46.4)	50 (30.1)	20 (12.1)	166 (68.0)	0.07
	Single	5 (11.9)	23 (54.8)	13 (31.0)	1 (2.48)	42 (17.2)	
	Divorced	0 (0)	22 (61.1)	9 (25.0)	5 (13.9)	36 (14.8)	
Education	Illiterate	10 (9.4)	50 (47.2)	32 (31.2)	14 (13.2)	106 (43.4)	0.49
	Primary or high school	6 (8.2)	37 (50.7)	23 (31.5)	7 (9.6)	73 (29.9)	
	Diploma or university	8 (12.3)	35 (53.8)	17 (26.2)	5 (7.7)	65 (26.7)	
Job	Male						0.04
	Worker	0 (0)	1 (25.0)	3 (75.0)	0 (0)	4 (3.7)	
	Employee	5 (16.7)	17 (56.7)	7 (23.3)	1 (3.3)	30 (28.4)	
	Self-employed	2 (3.1)	37 (57.8)	18 (28.1)	7 (10.9)	64 (58.7)	
	Other	0 (0)	7 (70.0)	2 (20.0)	1 (10.0)	10 (9.2)	
	Female						0.57
	House wife	13 (13.7)	45 (47.4)	25 (26.3)	12 (12.6)	95 (74.2)	
	Employed	4 (12.1)	13 (39.4)	12 (36.4)	4 (12.1)	33 (25.8)	
No of children	0-2	15 (10.6)	72 (51.1)	40 (28.4)	12 (9.9)	141 (57.8)	0.55
	≥3	9 (8.7)	50 (48.5)	32 (31.1)	12 (11.7)	103 (42.2)	
Smoking (pack-year)	Non-smoker	20 (10.3)	93 (47.9)	60 (30.9)	21 (10.8)	194 (80.2)	0.65
	0-19	4 (12.5)	17 (53.1)	7 (21.9)	4 (12.5)	32 (13.2)	
	≥20	0 (0)	11 (68.8)	4 (25.0)	1 (6.2)	16 (6.6)	
Total		24 (9.8)	122 (50.0)	72 (29.5)	26 (10.7)	244 (100.0)	

***** SVY ordinal regression

Of these cases, 16.0% had diabetes, 23.1% hypertension, 3.8% renal disease, 5% digestive problems. 27.2% had no teeth or good prosthesis, 72.5% were following a special diet, only 3.7% consumed some kind of vitamin and mineral supplements and 15.6% had no visitors. Analysis showed no significant difference in the grade of depression between the cases mentioned above and the rest (P>0.05). However, 19.8% who suffered from heart disease were found to be less depressed (P=0.03). Also the mean hours of sleeping was 7.4 (±2.4) and had no correlation with the degree of depression (P=0.12). As Table 2 shows, of the elderly who used to study, 71.4% were mildly depressed and none had higher grade of depression, however, 30.2% of elderly who did not study or could not read, were moderately and 11.0% were severely depressed (P<0.0001). In univariate analysis, the percentage of moderate and severe depression was calculated to be slightly higher (P=0.08) in elderly who rested and lay, in comparison with the others (45.3% versus 31.9%). However, depression was more severe in elderly who used to walk (P= 0.02). Of the elderly who were not satisfied with the NH personnel, 46.7% and 26.7% were moderately and severely depressed, respectively, as opposed to those who were satisfied, with only 28.4% moderate and 9.6% severe cases of depression (P=0.0008). The elderly who were satisfied with the quality of the food, suffered lower grades of depression compared to those who were not satisfied (P=0.002).

Table 2: Free time activity, satisfaction from the personnel and food quality, and sun light exposure of the study population according to depression status

Characteristics		Depression				Total n (%)	*P**
		Not n (%)	Mild n (%)	Moderate n (%)	Severe n (%)		
Studied in their free time	No	22 (9.4)	116 (49.4)	71 (30.2)	26 (11.0)	235 (97.1)	<0.0001
	Yes	2 (28.6)	5 (71.4)	0 (0)	0 (0)	7 (2.9)	
Watched TV	No	3 (4.2)	37 (52.1)	22 (31.0)	9 (12.7)	71 (29.3)	0.17
	Yes	21 (12.3)	84 (49.1)	49 (28.7)	17 (9.9)	171 (70.7)	
Spoke with others	No	2 (4.1)	26 (53.1)	14 (28.6)	7 (14.3)	49 (20.3)	0.30
	Yes	22 (11.4)	95 (49.2)	57 (29.5)	19 (9.9)	193 (79.7)	
Prayed	No	14 (12.7)	50 (45.5)	29 (26.4)	17 (15.4)	110 (45.5)	0.67
	Yes	10 (7.6)	71 (53.8)	42 (31.8)	9 (6.8)	132 (54.5)	
Rested	No	11 (11.7)	53 (56.4)	23 (24.5)	7 (7.4)	94 (38.8)	0.08
	Yes	13 (8.8)	68 (46.0)	48 (32.4)	19 (12.8)	148 (61.2)	
Helped the others	No	23 (10.4)	113 (51.1)	61 (27.6)	24 (10.9)	221 (91.3)	0.13
	Yes	1 (4.8)	8 (38.1)	10 (47.6)	2 (9.5)	21 (8.7)	
Walked	No	18 (37)	67 (51.2)	33 (25.2)	13 (9.9)	131 (54.1)	0.03
	Yes	6 (5.4)	54 (48.7)	38 (34.2)	13 (11.7)	111 (45.9)	
Satisfied with food quality	No	22 (10.1)	115 (53.0)	61 (28.1)	19 (8.8)	217 (88.9)	0.002
	Yes	2 (7.4)	7 (25.9)	11 (40.8)	7 (25.9)	27 (11.1)	
Satisfied with the personnel	No	1 (6.6)	3 (20.0)	7 (46.7)	4 (26.7)	15 (6.1)	0.0008
	Yes	23 (10.0)	119 (52.0)	65 (28.4)	22 (9.6)	229 (93.9)	
Sun light exposure	0	9 (8.3)	50 (46.3)	32 (29.6)	17 (15.7)	108 (44.3)	0.11
	0.1-2 hr	14 (12.8)	53 (48.6)	33 (30.3)	9 (8.3)	109 (44.7)	
	2.1-4 hr	1 (4.4)	15 (65.2)	7 (30.4)	0 (0)	23 (9.4)	
	4.1-7.5 hr	0 (0)	4 (100)	0 (0)	0 (0)	4 (1.6)	

***** SVY ordinal regression

A negative correlation (Spearman's rho=-0.13) between sunlight exposure and the severity of depression was observed, which meant the elderly who had more sunlight exposure in their free times, were less depressed, but the correlation was not significant (*P*=0.11). Besides, the grade of depression was not significantly different (*P*>0.05) in the elderly who watched television or listened to the radio, spoke with others, prayed or helped the others, compared to those who did not.

The factors with a *P*-value less than 0.10 were entered into a multivariate SVY ordinal polytomous regression model performing a backward elimination procedure. The results of multivariate analysis showed that (Table 3) dissatisfaction with the NH personnel had an odds ratio of 2.91 (1.33-6.36), and lower quality of food, an odds ratio of 2.64 (1.44-4.87) in increasing the severity of depression.

Table 3: Independent risk factors of depression in study population

Risk factor		OR (95% CI)	*P**
Satisfaction with the personnel	Yes	Referent	-
	No	2.91 (1.33-6.36)	0.01
Studying	No	Referent	-
	Yes	0.17 (0.13-0.22)	<0.0001
Walking	No	Referent	-
	Yes	2.25 (1.50-3.38)	0.001
Resting	No	Referent	-
	Yes	1.98 (1.24-3.18)	0.007
Satisfaction with food quality	Yes	Referent	-
	No	2.64 (1.44-4.87)	0.004

* Multiple SVY ordinal logistic regression

Also, the elderly who were used to rest or walk in their free time had significantly higher chance of suffering from more severe depressions, compared to those who did not (OR: 2.25 (1.50-3.38)

and 1.98 (1.24-3.18), respectively). On the other hand, studying had a protective odds ratio of 0.17 (0.13-0.22).

Discussion

The primary purpose of this study was to determine the prevalence of different grades of depression and related independent risk factors in elderly residents of selected NHs in Tehran, Iran.

Demographic data showed that out of 244 subjects in this study, 114 (46.7%) were male and 130 (53.3%) were female, 45.9% were aged between 60 and 74, 36.1% between 75 and 84, and 18.0% were 80 years old or above (Table 1).

Results of the current study showed that only 9.8% of the elderly were not depressed, 50.0% were mildly and 40.2% were moderately or severely depressed. Analysis showed that not being satisfied with the personnel of nursing homes had an odds ratio of 2.91 (1.33-6.36), and low quality of food, an OR of 2.64 (1.44-4.87) in increasing the grade of depression. However, studying and reading had a protective OR of 0.17 (0.13-0.22) but those who rested or walked had significantly higher chance of having higher-grade depression in comparison with those who did not ($P<0.05$).

In our survey, the results of multivariate analysis showed a correlation between depression and dissatisfaction of the elderly with the NH's staff (Table 2). Therefore, transforming the nursing home into a setting that provides an improved quality of care can increase satisfaction among elderly residents. Since good behavior of the nursing home personnel can provide support to the elderly, it is essential to make stronger efforts to educate and train the staff about the needs and problems of the elderly and the appropriate approaches to solve them. It is recommended that a psychologist hold some sessions exclusively for the staff in contact with the residents (16).

The results regarding the behavior of the nursing homes' personnel in this study, was similar to the survey by Drageset et al., showing that the subject's relationships with others comprise an important component of mental health. In other words, social support is an important resource for better health-related quality of elder's life, independent of the level of sense of coherence. Therefore, clinical nurses and other personnel in nursing homes should recognize that social support is associated with health-related quality of life and should pay attention to the importance of social support for the elderly residents in daily practice (17, 18).

The results of another research in NH' elderly residents in Singapore have demonstrated that significant risk factors that were found to be associated with depression were period of residency longer than 2 years, known history of depression, pain, and no or lack of social contact (19).

On the other hand, our survey indicated that there was a significant relation between depression and food quality of the NH ($P= 0.003$).

Most NH' elderly residents were not interviewed about the quality of food service due to a cognitive impairment. Simmons et al, 2009, has shown that 65% of 163 residents complained about the poor quality of food service in the NH. As a result, the elderly who were dissatisfied, ate less, had more cognitive impairment, and had more depressive symptoms (20).

The results regarding the effects of resting in the elderly, was similar to that of Kupfer's research showing that the examination of brain activity during rest can provide valuable insights into how the brain functions during self-reflection, which could be abnormal in individuals with major depression (21).

Several researches have reported high prevalence of depression and depressive syndromes in elderly residents of nursing homes; as much as three to four times higher than the community-dwelling elderly (22-28). Using the short form of Geriatric Depression Scale, a more detailed and beneficial scoring system in rating depression, we classified the status of depression in elderly subjects into three groups: mild, moderate, severe or major depression. In this study we used a cut off for depression at 4 points to include also cases of minor depression and subsyndromal depression, which are not fully included by a cut off at 5 points (29). The values of "mild depression" are

therefore higher than in the study by Doumit and Nasser (22). In psychiatric epidemiology, higher prevalence of depression in women is extensively documented and has been reported in many studies using various diagnostic tools and interview methods (30, 31).However, the results of the present survey, as many previous researches, showed that depression is more common in later life (2, 5, 16, 32).

The results showed no significant difference between depression rates in women and men. Only 13.1% of 130 females and 6.1% of 114 males were not depressed. The rates of moderate and severe depression in females were higher than males as opposed to the rate of mild depression that was higher in men (n= 64, 56.1) compared to women (n= 58, 44.7) (Table 1).

Etemadi et al. showed that signs of depression and somatic disorders were most commonly seen among the elderly residents of nursing homes, and psychological symptoms such as depression were more prevalent in women. Sadeghi in Kashan, and Mohamadi in Kerman, also showed the higher rates of depression among females (16, 33).

Moreover, the results of the study conducted by Matteson showed that psychiatric disorders and emotional problems had prevalence rates of 25.3% and 17.8% in women and men, respectively (34). In our study, no correlation was found between depression and the sleeping hours of elderly subjects, but it showed that depression was more common among subjects who spent their free times, resting in their rooms, in comparison with the elderly who left the room and enjoyed outdoors (*P*=0.007; Table 3). Many studies have investigated the relationship between depression and insomnia. At the beginning of the 20th century, study of Kraepelin E., 1909, conducted on 143 elderly, showed that there was a close connection between these two conditions, as insomnia has been traditionally regarded to as a psychopathologic symptom, especially of depression (35-37).

Results of this study showed significant relation between depression and walking of the subject (*P*=0.001), lack of satisfaction from NH personnel (*P*=0.01) and food quality of the nursing home (*P*=0.004) but not with sunlight exposure (*P*=0.10) (Table 2 and 3).

A significant association was found between depression and satisfaction of the subjects with the NH's staff (Table 3). Therefore, transforming the nursing home into a setting that provides an improved quality of care can increase satisfaction among residents. Since good behavior of the nursing home staff can provide support to the residents, it is essential to make stronger efforts to educate and train the staff about the needs and problems of the elderly and the appropriate approaches to solve them. It is recommended that a psychologist hold some sessions exclusively for the staff in contact with the residents (16).

Our survey indicated that there was a significant relation between depression and food quality of the NH (*P*= 0.004). From 217 elderly who were not satisfied with quality of the food, n= 115 (53.0) subjects suffered from mild depression, n=61 (28.1) subjects had moderate depression and n=19 (8.8) subjects were diagnosed with severe depression (Table 2).

Most NH residents were not interviewed about the quality of food service due to a cognitive impairment. Simmons et al., 2009, showed that 65% of 163 residents complained about the poor quality of food service in the NH. As a result, the subjects who were dissatisfied, ate less, had less cognitive impairment, and had more depressive symptoms (20).

As stated above, sunlight exposure was not found as one of the significant independent risk factors for depression in this study. Analysis showed that the elderly with more exposure to sunlight may be less depressed (*P*= 0.11). As from 99 cases without exposure to sunlight, n=50 (46.3) suffered from mild, n= 32 (29.6) from moderate and n= 17 (15.7) from severe depression (Table 2). The results of the current survey, regarding sunlight exposure were not similar to prior researches, showing that those who are not depressed may spend more time outside, thus receiving a more adequate supply of environmental illumination (38-41). However, lack of sunlight may lead to some degree of depression.

Several studies in Iran investigated the maximum current prevalence of MDD (Major or severe depressive disorder). Major depression in this study is the group with severe depression and part of the moderately depressed. Using the Beck questionnaire and DSM-III based clinical interview, the prevalence in urban population of Shahreza city in Isfahan province was reported to be 13.6%; while the minimum reported prevalence of MDD was 0.25% in rural population of Meibod in Yazd, using SCL-90 questionnaire and DSM-III-R based clinical interview. Meta-analysis of these studies showed that women were 1.95 (95% CI: 1.55-2.45) times more likely to have MDD, compared to men (42).

According to findings of World Mental Health (WMH) Survey Initiative, lifetime prevalence of Major Depression Disorder (MDD), between low and middle income countries, was 7.2% in Iraq (43), 14.6% in Ukraine (44), 3.5% in China (45) and 3.3% in Nigeria (46). The rate among high income countries such as Spain (47), Japan (48) and USA (30) was 10.5%, 6.7% and 16.2%, respectively. The prevalence of MDD for twelve months was estimated to be 2% in China (49), 2.9% in Japan (50) 8.3% in Ukraine, 5.7% in New Zealand (51), 3.9% in Spain, 3.7% in Mexico (52) and 1% in Nigeria (46).

Since depression often coexists, with other psychological and neurological disorders, and worsen clinical picture and is associated with increased mortality (53). Discovering the environment's impact and risk factors within the context of these disorders may lead us, not only to better understanding of these disorders, but also to the development of targeted interventions to enhance everyday functioning and quality of life of elderly.

Conclusion

Depression was very common in our sample. Results of the current study showed that 50.0% of the elderly were mildly and 40.2% were moderately or severely depressed. The lifestyle of the elderly and their dissatisfaction with personnel and food quality of nursing home influenced its prevalence.

Ethical considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc) have been completely observed by the authors.

Acknowledgements

This research has been supported by a grant (No.: 88-1-27-4656) from Tehran University of Medical Sciences. The authors would like to thank the Social Welfare of Iran, staff of all the nursing homes and everyone who helped us in this project, all dear elderly residents in nursing homes all over Tehran and Kahrizak, especially those enrolled in to this study. The Authors are also grateful to Mr. Mahmoud Yousefifard PhD student of Department of Physiology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran for his invaluable help. The authors declare that there is no conflict of interest.

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