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Assessment of Nutritional and Depression Status in Free-Living Elderly in Tabriz, Northwest Iran

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ABSTRACT

Background: Malnutrition and depression are the common health problems in elderly population. Poor nutrition might have a strong effect on the incidence of depression. The aims of this study were to assess the nutritional and depression status and the possibly relationship between these variables in the urban free-living elderly in Tabriz, northwestern Iran.

Methods: This cross-sectional study was carried out on 184 elderly people (male=97; female=87) with age 60 years or elder in 2012. All subjects entered to the study voluntarily from those attending to daily care centers for elderly people. Mini Nutritional Assessment (MNA) tool and Geriatric Depression Score (GDS) were used to evaluate nutritional status and depression scores, respectively. Continuous variables were expressed as mean ± standard deviation (SD) and qualitative data were presented as frequency (percent). Spearman's correlation was employed to determine the relationship between variables.

Results: Up to 50% of subjects had poor nutrition status. About 14% of elderly people had serve depression and 28.3% had mild depression. There was a positive significant correlation between MNA and GDS tests in both gender ($r=0.416$; $P<0.001$).

Conclusion: There was no acceptable level of nutritional status and mental health in the elderly people. Further studies are needed to evaluate the other factors that can effect on the quality of life in this population.

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Introduction

"The ageing process is of course a biological reality which has its own dynamic, largely beyond human control"[1]. According to the World Health Organization (WHO) report, the population of elderly people have showed a fast grow in the world. Therefore, the health and fitness of this group will be one of the important issues in health care systems[2]. In Iran, proportion of people aged 60 and over was 5.4 percent in 1975. It is estimated that this will rise to 10.5% and 21.7% in 2025 and 2050, respectively[3]. Good nutritional and psychological status can promote the quality of life in, elderly people and can decrease the mortality and morbidity[4].

Malnutrition and obesity are the common health problems in elderly population[5,6]that can lead to unfavorable outcomes[7]. The prevalence of malnutrition in elderly people had been 20% in western societies and even it was reported 37% in nursing homes and hospitals[8]. In Iran, the rate of malnutrition in free-living elderly was reported 12%[9].

One of the frequent mental disorders in the elderly population is depression[10, 11]. In 2000, depression was the fourth causes of diseases and the second by 2020[12, 13]. The rate of depression differ between elderly population (from 0.9% to 49%) [14]. Inappropriate quality of life and poor nutrition might have a strong effect on the incidence of depression[15, 16]. Depressive symptoms are more prevalent in undernourished individuals[17, 18].

Considering the importance and vulnerability of elderly population and due to lack of studies in this field and in the region, the present study was conducted to assess the nutritional and depression status and the possibly relationship between these variables in the urban free-living elderly in Tabriz, Iran.

Materials and Methods

Sampling and participants

This cross-sectional study was conducted on 184 urban free-living elderly aged 60 years or older in 2012. The regional Ethics Committee of Tabriz University of Medical Sciences approved the protocol of study. After explaining the study, a written informed consent was taken from eligible participants.

Sample size was determined based on the information derived from a similar study[19,20]. Considering a confidence level of 95%, Z=1.96, d=0.05 and using formula $N= [(Z)^2(S^2)] /d^2$, 184 samples was calculated. Participants were elderly people who refer to the daily care center in Tabriz city and were voluntarily to take part in the study.

Educated reviewers collected demographic characteristic of subjects (age, gender, disease) through face-to-face interviews. Excluded criteria were subjects with Alzheimer disease and other cognitive disorders.

Nutritional and depression status assessment

For assaying the nutritional status several methods were suggested. Mini nutritional assessment (MNA) is one of the reliable, feasible and non-invasive screening tests for evaluating of nutritional status in elderly people[21, 22]. This questionnaire composed of 18 different questions and anthropometric measures for ranking participants in three levels (malnutrition with scores less than 17, at risk of malnutrition with 17 and 23.5 scores and normal status with 24 and 30 scores). The Geriatric Depression Scale (GDS) composed of fifteen close questions. A score of 0 to 5 points classified as normal, 6 to 9 points and above 10 points as mild and serve depression, respectively[23].

Anthropometry

Body weight was measured without shoes and light clothing by using a Seca scale (Seca, Hamburg, Germany) to the nearest 0.1 kg. Heights were also measured using a stadiometer(Seca) without shoes to the nearest 0.1 cm. Body mass index (BMI) was calculated as weight (kg)/height (m2). Mid upper-arm and calf circumference were measured with a non-elastic tape on the non-dominant relaxed arm midway between the tip of the acromion and the olecranon process and on the thickest part of the undressed calf, respectively.

Statistical analysis

SPSS software (version 16.0, Chicago, IL, USA) was used for statistical analyzing of the data. Normality of data was evaluated using the Kolmogorov-Smirnov test. Continuous variables were expressed as mean ± standard deviation (SD) and qualitative data were presented as frequency (percent). Chi-square test was used for comparison of nominal variables and spearman's correlation was employed to determine the relationship between variables in total and in males and females. *P*-values less than 0.05 considered as significant.

Results

Demographic characteristics of participants are shown in Table 1. Of 184 elderly people with mean ages of 69.4 ± 7.9 years and mean BMI of 28±4 (kg/m^2), about 52% were males. The results of Chi square test showed that difference in proportion of two genders was non-significant.

Table 2 shows the results of MNA and GDS instruments in both genders. According to MNA test 6% of elderly people were malnourished and about 46% of them were at risk of malnutrition. Females had high level of malnutrition than males but these results was not significant (*P*=0.057).

Table 1: Demographic characteristics of free-living elderly (n=184)

Characteristics	Free-living elderly		Total
	Male	Female	
Age(yr) (mean ± SD)	69.9 ± 8	68.0±7.0	69.4 ± 7.9
Gender [n(%)]	97 (52.7)	87 (47.3)	184 (100)
Weight (kg)	73.7±1.2	72.1±1.1	73 ±1.1
Height (cm)	165±7	153±7.0	160±9
BMI (kg/m^2)	26.7±3.7	30.5±4.9	28.5 ± 4.7
Mid-arm circumference (cm)	27.6 ±3.8	30.2±4.0	28.8 ± 4.2
Calf circumference (cm)	33.7±4.3	36.3±4.7	34.9 ± 4.6

The results of GDS test showed that about 14% and 28 % of subjects had serve and mild level of depression, respectively. In addition, female participants had about five-time high level of serve depression as compared to the males. There was positive correlation between MNA and GDS test (r= 0.42, *P*< 0.001). This correlation in females were stronger than males (r=0.54 vs r=0.24).

Table 2: Results of mini nutritional assessments and Geriatric Depression Scale

Characteristics		Males n (%)	Females n (%)	Total n (%)
Nutritional status	Malnutrition	2 (2.1)	9 (10.3)	11(6)
	At risk	46 (47.4)	40 (46.0)	86 (46.7)
	Normal nutrition	49 (50.5)	38 (43.7)	87 (47.3)
Depression level	Normal	66 (68.0)	46 (46)	106 (57.6)
	Mild depression	27 (27.8)	25 (28.7)	52 (28.3)
	Severe depression	4 (4. 1)	22 (25.3)	26 (14.1)

36.4% and 31.4% of participants with malnutrition and at risk of malnutrition respectively, have been consumed more than three drugs per day. There was a significant association between number of daily intake drugs, MNA and GDS scores (r=0.20, *P*=0.012 and r=0.19, *P*=0.010 respectively).

Regarding number of meals, about 82% of participants had three meals and 16.8% two meal consumed daily. There was a significant correlation between MNA test and number of meals (*P*<0.001, r=0.310).

Discussion

Elderly population need especially care services to maintain high level of quality of life due to the physiological changes in this period of life[24, 25]. In aging, fat mass increase and fat free mass decreases[26, 27].

In this study, we assayed nutritional and depression status of free-living elderly. The results of numerous studies regarding the prevalence of malnutrition in different elderly population were different. In Mokhbe-

ret al., study[17], prevalence of malnutrition in 1565 free- living elderly people was reported 11.5%. Vedantam et al., survey[28] that conducted on 227 free living elderly people reported that 14% of them were malnourished. Johansson et al.,[29] showed that about 14% of 579 home living elderly were malnourished. In Kirtana Pai survey[30], only 2% of free-living elderly people (n= 102) were malnourished similar to Soini et al., survey[31]. Ribeiro et al.,[32] reported that the percent of malnutrition in 236 elderly with aged 60 or older was 1.3% that was low in comparison to our study.

In our study, high percent of participant were at risk of malnutrition (about 47%). In KirtanaPai study[30], 14.7% of free-living elderly (n=102) participated in the study were at risk of malnutrition and in Ribeiro et al.,[32] this rate was 25%.

Regarding GDS scores, about half (42%) of participants were considered being depressed. In two studies 22% and 21.3% of elderly people were depressed, respectively[17, 5]. In our study females were more depressed and malnourished compared to males. These results were in accordance with the results of several studies[33-36]. It may be due to the lack of economic independence and knowledge of women in communities and their householder life style.

Between MNA and GDS scores, there was an acceptable association (r= 0.416, $P<$ 0.001). This result in Smoliner study[5] was r=0.313; $P=$ 0.006. Mokhber et al.,[17] showed that there was significant difference between the prevalence of malnutrition in depressed and non-depressed individuals ($P=$ 0.047). Malnutrition and depression prevalence in our study were high as compared with western societies[37, 38]. Chewing problems and decreased appetite significantly affect food intake in these patients[23, 26, 35, 39]. In other words, nutritional status can be one of the most important factors affecting in the incidence of depression in elderly.

Good nutrition seems to play a crucial role in maintaining the fitness of elderly. Considering healthy diet (the consumption of fruits, vegetables and meat, drinking enough amounts of liquid, use of vitamin and mineral supplements and increasing physical activity) can improve nutritional status and prevent the occurrence of brain lesions in elderly people[40, 4]. In addition, useful strategies that increase the quality of life in this group should be considered. This study had some limitations such as small sample size and it did not assay other factors associated with fitness of this population.

Conclusion

Elderly people in urban areas of Tabriz had not acceptable nutritional status. The status of depression was remarkable in the studied group. It can be suggested that the health professionals should acknowledge these problems for promotion the quality of life in elderly people. Future studies with large sample size are needed to evaluate these parameters in rural elderly population with considering the other factors such as social and biological parameters.

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Conflict of interest

The authors declare there is no conflict of interests.

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