

Investigation of the relationship between depression and nutritional status of elderly patients in home care

Evde bakım gören yaşlı hastaların nutrisyonel durumları ile depresyon düzeyleri arasındaki ilişkinin incelenmesi

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Abstract

Aim: Malnutrition and depression are common geriatric disorders. The aim of this study was to determine the prevalence of malnutrition and depression in the elderly, as well as assess the association between depression and malnutrition.

Methods: A cross-sectional study was conducted with 86 elderly patients in the external consultation unit of a public specialty hospital in Malatya. Nutritional status was classified by the Mini Nutrition Assessment (MNA). Depression was assessed using the Geriatric Depression Scale (GDS). Functional autonomy indicators were obtained by Katz Index.

Results: A total of 86 patients, 27 females and 59 males, were included in this study. Among them, 12.8% were classified as in adequate nutritional status, 50.0% were classified as being at risk of malnutrition and 37.2% as malnourished. In this study, depression rate was determined as 79.1% according to the GDS. MNA scores, hand grip strength and folic acid levels of the group diagnosed with depression were statistically significantly lower ($p < 0.001$, $P = 0.03$, $P = 0.04$, respectively).

Conclusion: We suggest routine screening of depression symptoms in addition to the nutritional disorders for the early diagnosis and treatment of malnutrition and depression, however, further studies including more patients are needed.

Keywords: Depression, Malnutrition, Home care

Öz

Amaç: Depresyon ve malnütrisyon yaygın görülen geriatrik sendromlardır. Bu çalışmanın amacı evde bakım gören yaşlı hastalarda malnütrisyon ve depresyon sıklığını belirleyip, malnütrisyon ve depresyon arasındaki ilişkinin incelenmesidir.

Yöntemler: Kesitsel olarak planlanan çalışmada Malatya devlet hastanesine bağlı evde sağlık hizmetlerinden yararlanan 86 yaşlı hasta dış konsültasyonla değerlendirildi. Hastaların nutrisyonel durumları Mini Nütrisyonel Değerlendirme testi (MNA) depresyon düzeyleri Geriatrik Depresyon Ölçeği (GDS) ile, fonksiyonel durumları KATZ'ın Günlük Yaşam Aktiviteleri indeksi aracılığıyla değerlendirildi.

Bulgular: Araştırma kapsamındaki 86 hastanın, 27'si kadın, 59'u erkekti. Hastaların nutrisyonel durumları incelendiğinde %12,8'inin normal, %50,0'sinin malnütrisyon riski altında ve %37,2'sinde ise malnütrisyon olduğu tespit edildi. Bu çalışmada, GDS'ye göre katılımcıların %79,1'inde depresyon saptanmıştır. Depresyon tanısı alan grubun MNA skorları, el kavrama gücü, folik asit seviyeleri depresyon tanısı almayan gruba göre istatistiksel olarak anlamlı derecede düşüktü (sırasıyla, $P < 0,001$, $P = 0,03$, $P = 0,04$).

Sonuç: Sonuç olarak, rutin tarama malnütrisyonun erken teşhisi ve tedavisi için beslenme bozukluklarına ek olarak depresyon belirtileri olabilir, daha geniş örnekleme grubu ile çalışması önerilebilir.

Anahtar kelimeler: Malnütrisyon, Depresyon, Evde bakım

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Introduction

Since the second half of the twentieth century, the population growth rate has decreased in many countries in parallel with the decrease in the birth rate. This situation, defined as demographic aging, has led to a decrease in the share of children and youth in the population and an increase in the proportion of the elderly population. Turkey is one of the countries that experiences the most rapid demographic aging [1]. The most important social reflection of the demographic aging process is the increase in the need for health and social care in the society. This situation has pushed developed and developing countries to make future plans and develop new care models to meet their long-term needs. As a result of this search, home care appears to be the most effective model [2].

Home Health Services provide physical examination, medical care, treatment, rehabilitation services, and social and psychological support to individuals who need home care due to various diseases, their family members and caregivers [3]. In our country, patients who are more than 65 years of age constitute most of the population and they benefit the most from home health services provided by the Turkish Ministry of Health since 2011 [4,5].

Geriatric syndromes are clinical conditions that may develop due to many different causes, usually present with atypical symptoms and do not belong in a specific category of disease. Depression and malnutrition are common geriatric syndromes. Even though early diagnosis in both syndromes is important in preventing the risk of possible morbidity and mortality, it is often neglected [6-8]. Elderly people who benefit from home health services are generally people with comorbidities, decreased functional and cognitive capacity, dependent in performing activities of daily living. This issue makes this particular patient group prone to geriatric syndromes. Studies on the incidence of malnutrition and depression in elderly patients receiving home health care are extremely limited but it has been reported that the quality of life of the patients who get routine health checks by the home health service is much better [9]. This study was conducted with the aim to determine the prevalence of and relationship between malnutrition and depression among elderly patients receiving home health services in Malatya.

Materials and methods

The universe of this descriptive, cross-sectional study consisted of 101 patients over 65 years of age monitored by the Malatya Provincial Health Directorate Home Health Services as this study took place. No sampling method was used in the study. The aim was to reach the whole universe. 86 (85.14%) patients who volunteered to participate in the study and who had sufficient cooperation and orientation were included in the study.

Data collection tools

The data of the research were collected through the lab results and personal information forms (socio-demographic characteristics, chronic diseases, habits). Mini Nutritional Assessment Test (MNA), Hand Grip Strength Test, Activities of Daily Living Index and Geriatric Depression Scale Charlson

Comorbidity Index were used to evaluate the comorbidities of the patients.

Mini Nutritional Assessment test

Turkish validity and reliability of the test was analyzed by Sarıkaya et al. [10]. Normal nutritional status corresponds to 23.5-30 points. Patients are considered under the risk of malnutrition between 17-23 points and malnourished below 17 points.

Hand Grip Strength Test

Hand grip strength of the patients was assessed by a dynamometer (Creative Health Products Inc., T-18). Measurements were determined by testing the dominant hand of the patient three times and taking the highest value recorded. <20 kg in female patients and <30 kg in male patients were accepted as low hand grip strength [11, 12].

KATZ's Activities of Daily Living Index: The index, which is valid and reliable in Turkey, consists of 6 questions regarding bathing, dressing, toilet, movement, discharge and nourishment activities. Patients with total scores between 0-6 points, 7-12 points and 13-18 points are considered dependent, semi-dependent and independent, respectively [13].

Geriatric Depression Scale

Turkish validity and reliability of this test was analyzed by Ertan et al. [14]. Patients with a score of above 5 are considered depressed.

Charlson Comorbidity Index

In this index, which is used to define and rate comorbidity, comorbid diseases are scored according to severity, as 1, 2, 3, 4 from mild disease to severe disease status. Comorbidity grading is done by adding up scores of comorbid diseases [15].

Research ethics

An ethics committee approval was received from the Non-Interventional Research Ethics Committee of İnönü University before beginning the research (Decision Number: 2019/3-19). A written permission was obtained from Malatya Provincial Directorate of Health to carry out the research.

Statistical analysis

SPSS 21.0 (Statistical Package for Social Sciences) statistical software was used to analyze the data obtained as part of the research. Research data showed normal distribution according to Kolmogorov-Smirnov test and homogeneous distribution according to Levene's test ($p>0.05$). Pearson correlation analysis, ANOVA, t test were used in the analysis of the data. $p<0.05$ was considered statistically significant.

Results

The descriptive characteristics of the patients in the study and the distribution of MNA and GDS scores according to these characteristics are presented in Table 1. The average age of the patients was 80.15 (7.98) [min=65, max=100] years; 77.9% were aged 85 and over. 31.4% of the participants were women and 63.9% were single. 62.8% of the group was illiterate, 91.9% were dependent in performing activities of daily living. The Charlson Comorbidity Index score of 10.5% of the patients was above 5. The distribution of average MNA scores differed according to the educational level of the patients and the group that created the difference included patients who had received

primary and higher education ($P=0.02$). MNA score distributions differed according to the age of the patients and the differing group was that with members older than 85 years ($P=0.029$). The average MNA scores of the participants who were dependent in activities of daily living were significantly lower ($P<0.001$). There was no difference between the comorbidity status and mean MNA scores of the patients ($P=0.64$). The distributions of average GDS scores according to gender, marital status, age, education level and comorbidity status of the participants were not statistically significant ($P=0.55$, $P=0.77$, $P=0.03$, $P=0.81$, $P=0.54$, respectively).

Table 1: Distribution of average MNA and GDS scores according to some descriptive characteristics of patients

		n	%	MNA Mean (SD)	t/F	P-value	GDS Mean (SD)	t/F	P-value
Gender	Female	27	31.4	17.07 (5.3)	0.95	0.34	7.40 (3.46)	-0.60	0.55
	Male	59	68.6	18.23 (5.2)			7.88 (3.36)		
Age	65-74	19	22.1	19 (4.81)	3.714	0.029	6.57 (4.54)	1.119	0.353
	75-84	37	43.0	18.44 (4.68)			7.49 (2.86)		
	Over 85	30	34.9	15.95 (5.71)			8.76 (2.92)		
	Illiterate	54	62.8	18.06 (4.98)	3.734	0.028	7.79 (2.85)	0.203	0.816
Education	Literate/Elementary school	24	27.9	16.14 (5.83)			7.83 (4.35)		
	Above primary school	11	9.3	21.75 (2.79)			7.00 (3.85)		
Marital status	Married	31	36.0	18.69 (4.92)	1.089	0.279	7.87 (3.08)	0.283	0.778
	Single	55	63.9	17.40 (5.42)			7.65 (3.57)		
KATZ	Dependent	79	91.9	17.55 (5.32)	-	0.003	7.86 (3.24)	1.182	0.240
	Semi Dependent	7	8.1	21.50 (2.41)	3.616		6.28 (4.25)		
Charlson	1-2	28	32.6	17.16 (5.46)	0.442	0.644	7.64 (2.66)	0.617	0.542
	3-4	48	55.8	18.21 (8.08)			8.08 (3.41)		
Comorbidity Index	5 and above	9	10.5	17.11 (4.87)			6.77 (4.89)		

SD: Standard deviation

The average MNA score of the patients in the study was 17.87 (5.25) [min: 6.50 - max: 28.00]. Among all, 37.2% were malnourished, and 50.0% were under the risk of malnutrition. The average GDS score of the patients was 7.73 (3.38) [min: 1.00 max: 14]. 79.1% of the participants had depression and 95.0% had low hand grip strength (Table 2). Figure 1 shows the relationship between hand grip strength and MNA scores of the patients. As the nutritional status of the patients in the study worsened their hand grip strength decreased. There was a negative correlation between the MNA scores and the hand grip strengths of the patients ($r=0.37$, $P<0.001$).

Table 2: Some descriptive characteristics of patients

		n	%
Nutritional status	MNA	32	37.20
	Risk of MNA	43	50.00
	Normal	11	12.80
Depression	Yes	68	79.10
	No	18	20.90
Hand grip	Low hand grip strength	82	95.30
	Normal	4	4.70
KATZ	Dependent	79	91.90
	Semi Dependent	7	7.10

SD: Standard deviation

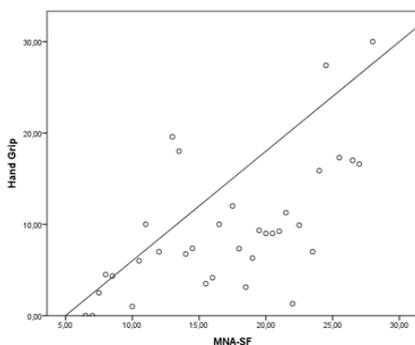


Figure 1: Relationship between hand grip strength and MNA scores

Table 3 shows the correlation between the average scores of KATZ index and GDS, MNA and Hand Grip scores of the patients. As the dependency level of the patients in activities of daily living increased, nutritional status worsened ($r=0.21$, $P=0.04$) and hand grip strength weakened ($r=0.24$, $P=0.02$).

Although the dependence level of the patients included in the study increased their susceptibility to depression, the result was not statistically significant ($r=0.15$, $P=0.16$).

Table 4 shows the correlation between the average GDS scores of the participants, MNA and Hand Grip scores. There was a negative correlation ($r=-0.37$, $P<0.001$) between nutrition and depression score. In other words, as the nutrition score of the participants decreased, that is, shifted towards malnutrition, their susceptibility to depression increased. There was a negative significant correlation between hand grip strength and depression score ($r=-0.243$, $P=0.01$).

As shown in Table 5, the average values of hemoglobin, albumin, B12, ferritin and creatinine were non-significantly ($P=0.44$, $P=0.33$, $P=0.83$, $P=0.39$, $P=0.19$, respectively), and folic acid levels were significantly lower in the depressed group of patients ($P=0.04$). Body mass index, upper arm and calf circumference values of patients did not differ between the groups with and without depression ($P=0.92$, $P=0.39$, $P=0.82$, respectively). The average MNA score and hand grip strength of the patients with depression were significantly lower than those without ($P=0.05$, $P=0.03$, respectively).

Table 3: Correlation between KATZ index averages, GDS MNA and Hand Grip averages

		MNA	Hand grip	GDS
KATZ	r	0.21	0.24	-0.15
	P-value	0.043	0.02	0.16
	n	86	86	86

Table 4: Correlation between GDS average scores, MNA and Hand Grip average scores

		MNA	Hand Grip
GDS	r	-0.37	-0.24
	P-value	<0.001	0.012
	n	86	85

Table 5: Comparison between depression status of patients and various parametric variables

	Depression mean (SD)	Depression existent mean (SD)	t	P-value
Hemoglobin	12.60 (1.74)	12.15 (2.21)	0.79	0.44
Albumin	3.78 (0.32)	3.69 (0.37)	0.85	0.33
B12	392.38 (213.16)	380.92 (201.78)	0.21	0.83
Folic acid	9.41 (5.63)	6.70 (4.67)	2.08	0.04
Ferritin	117.03 (67.40)	105.60 (97.52)	1.42	0.39
Creatinine	1.27 (0.64)	1.06 (0.57)	1.31	0.19
BMI	29.17(4.87)	28.90 (7.14)	0.09	0.92
Upper middle arm circumference	22.75(6.55)	27.00 (3.00)	0.86	0.39
Calf circumference	39.562 (6.44)	39.00 (9.39)	0.22	0.82
MNA-SF	20.55 (3.89)	17.16 (5.36)	3.01	0.05
Hand grip	14.02 (14.02)	8.72 (7.20)	2.81	0.03

SD: Standard deviation

Discussion

Although the studies conducted with patients over the age of 65 receiving home health care in Turkey are limited, in the available studies, malnutrition and risk of malnutrition rates are reported as 33.1-48.3% and 38.2-39.3%, respectively [16,17]. In a study conducted with elderly patients receiving home health care in Finland, malnutrition rate was reported as 3.0% and malnutrition risk rate as 48.0 % [18]. Although the rate of malnutrition in this study was similar to other studies in our country, it was quite high compared to the that in Finland. Sarcopenia is the loss of skeletal muscle mass and strength with advancing age. Since muscle function is affected by malnutrition early in the process, hand grip strength is recommended to be used as an early diagnosis tool in malnutrition. Bentli et al. [19] reported that hand grip strength decreased as nutritional status deteriorated. In this study, consistent with literature, a positive correlation was determined between hand grip strength and MNA scores. In a systematic review, sarcopenia was reported in at least one-twentieth of the elderly living at home and in one-

third of the elderly living in nursing homes [20]. In our study, 95.3% of the patients were determined as having low hand grip strength. This rate was significantly higher compared to other studies with geriatric patients in literature. The fact that malnutrition rate and low hand grip strength were very high in our study compared to other studies in literature might be due to most patients being bedbound. 91.3 % of the patients in this study were dependent in performing activities of daily living. Their nutritional status worsened as their dependency level increased and their hand grip strength weakened.

The average GDS score of the participants was 7.73 (3.38) and depression was identified in 79.1 % of the participants. The depression rate of the patients in the study was quite high compared to other studies in the literature. In the study they conducted at the nursing home, Göçer et al. [21] determined the depression rate in the study group to be 61.9%, while Balcı et al. [22] reported the depression rate as 7.9% in their study they conducted with elderly people living in the community. As the nutritional score of the patients in the study decreased, shifting towards malnutrition, their susceptibility to depression increased. This result was consistent with the other studies in literature [19,23]. As the hand grip strength of the participants decreased their susceptibility to depression increased. Wangh et al. [24] reported a relationship between sarcopenia and depression. Other studies in literature have reported that depression is affected by the increase in dependence in activities of daily living [23]. Although the dependence level of the patients included in the study increased their susceptibility to depression, the result was not statistically significant. The distributions of average GDS scores according to gender, marital status, age, education level and comorbidity status of the participants were not statistically significant. In contrast to our study, in their study on people older than 60 years who live among society, Balcı et al. [22] reported that women, individuals with low educational levels and those with chronic diseases had increased susceptibility to depression.

MNA score distributions differed according to the age of the patients in the study. The group that differed included individuals over 85 years of age. In a similar study, Saka et al. [25] determined that malnutrition rate was higher in the group with individuals over the age of 85. The average MNA scores of the participants who were dependent in activities of daily living were significantly lower. However, there was no difference between the comorbidity status and average MNA scores of the patients. Yıldız et al. [26] also reported that the increase in the level of dependency in daily living activities adversely affected nutritional status. Similar to other studies in literature, when we categorized the patients in the study according to their educational level, we determined that the nutritional status of the group that had received primary and higher education was better than the illiterate and literate group [22].

Limitations

Our study was conducted at a single center, which limits the generalization of our findings to other institutions or populations with different resources.

Conclusion

Home health care is quite new for our country. Therefore, the number of studies related to this subject in the

literature is very few. In this study, the prevalence of malnutrition and depression was determined to be quite high among elderly patients receiving home health care services. Routine screening of elderly patients who benefit from home health care services in terms of nutritional status and depression, providing nutritional education especially to informal caregivers, and having interdisciplinary teams that include nutrition experts and psychologists may improve the quality of life as well as reduce mortality and morbidity of elderly patients receiving home health care. Additionally, early diagnosis of malnutrition and depression may be beneficial in terms of cost effectiveness in health expenditures.

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