ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

Evaluation of Malnutrition Status and Effective Factors in Elderly Patients in Internal Medicine Clinic: Descriptive Research

Dahiliye Servisinde Yatan Yaşlı Hastalarda Malnütrisyon Durumunun ve Etkili Faktörlerin Değerlendirilmesi: Tanımlayıcı Araştırma

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ABSTRACT Objective: One of the most important geriatric syndromes frequently encountered in old age is nutritional disorders. Malnutrition can also be seen frequently in hospitalized elderly patients. This study was planned to evaluate the malnutrition status and malnutrition factors associated with the hospitalization in elderly patients who applied to a university hospital internal medicine clinic. **Material and Methods:** Malnutrition status of 100 elderly patients admitted to the Internal Medicine Clinic of Akdeniz University Medical Faculty Hospital was evaluated and the factors that may affect the malnutrition status were investigated. Demographic characteristics and health status of individuals were examined, and some anthropometric measurements were made. Mini Nutritional Assessment-Short Form (MNA-SF) was applied to determine the nutritional status of the elderly. Geriatric Depression Scale-Short Form (GDS-SF) was used to determine the depression level of the patients. **Results:** In the nutritional status assessment with the MNA-SF scale, it was determined that 21% of the elderly patients had malnutrition, 53% had a risk of malnutrition. There was a statistically significant differences between malnutrition status and body weight (p<0.0001), upper middle arm circumference, and height (p<0.05) was found in the elderly, but no relationship was found between malnutrition status and body mass index (p>0.05). A statistically significant relationship was found between malnutrition status and depression status determined by GDS-SF (p<0.0001). **Conclusion:** It is thought that the evaluation and follow-up of the nutritional status of the hospitalized elderly with anthropometric measurements and malnutrition screening tests can help improve their quality of life, treatment of existing diseases and recovery processes.

Keywords: Aged; malnutrition; depression; geriatrics; anthropometry

ÖZET Amaç: Yaşlılıkta sıklıkla karşılaşılan en önemli geriatrik sendromlardan biri beslenme bozukluklarıdır. Hastanede yatan yaşlı hastalarda da malnütrisyon sıklıkla görülebilmektedir. Bu çalışma, bir üniversite hastanesi dahiliye polikliniğine başvuran yaşlı hastalarda, servise yatış anındaki malnütrisyon durumu ve malnütrisyonla ilgili etmenleri değerlendirilmek amacıyla planlandı. **Gereç ve Yöntemler:** Akdeniz Üniversitesi Tıp Fakültesi Hastanesi İç Hastalıkları Kliniğine başvuran 100 yaşlı hastanın malnütrisyon durumu değerlendirildi ve malnütrisyon durumuna etki edebilecek faktörler araştırıldı. Bireylerin demografik özellikleri ve sağlık durumları incelendi, bazı antropometrik ölçümler yapıldı. Yaşlıların beslenme durumunu belirlemek için Mini Nutrisyonel Değerlendirme-Kısa Form [Mini Nutritional Assessment-Short Form (MNA-SF)] uygulandı. Hastaların depresyon düzeyini belirlemek için Geriatrik Depresyon Ölçeği-Kısa Formu [Geriatric Depression Scale-Short Form (GDS-SF)] kullanıldı. **Bulgular:** MNA-SF ölçeği ile beslenme durumu değerlendirmesinde yaşlı hastaların %21'inde malnütrisyon, %53'ünde malnütrisyon riski olduğu belirlendi. Yaşlılarda malnütrisyon durumuna göre vücut ağırlığı (p<0,0001), üst orta kol çevresi ve boy uzunluğu (p<0,05) arasında istatistiksel olarak anlamlı bir fark bulundu, ancak malnütrisyon durumu ile beden kitle indeksi arasında bir ilişki bulunamadı (p>0,05). Malnütrisyon durumuyla GDS-SF ile belirlenmiş depresyon durumu arasında istatistiksel olarak anlamlı ilişki bulunmuştur (p<0,0001). **Sonuç:** Hastanede yatan yaşlıların, beslenme durumlarının antropometrik ölçümler ve malnütrisyon tarama testleri ile değerlendirilmesi ve takibinin yaşam kalitelerini, mevcut hastalıklarının tedavisini ve iyileşme süreçlerini iyileştirmeye yardımcı olabileceği düşünülmektedir.

Anahtar Kelimeler: Yaşlı; malnütrisyon; depresyon; geriatri; antropometri

The increase in the elderly population in the world increases the importance of health problems brought with it and malnutrition is seen as the most common problem in elderly individuals.[1] Malnutrition a nutritional disorder that occurs as a result of taking less than the required amount of nutrients (carbohydrates, proteins, fats, vitamins, and minerals) or insufficient absorption.[2] The most important criterion for the diagnosis of malnutrition is body weight change in the elderly. Malnutrition is diagnosed if a loss of more than 5% kg in body weight in one month or more than 10% kg in 6 months is observed in elderly individuals. The first physiological change in the elderly with malnutrition is muscle loss and reduction in adipose tissue. As a result of malnutrition, it seems that there is a deficiency in the function of T cells and therefore, there appears to be a serious problem in protection against infections.[3] Malnutrition is a very common condition in the elderly, and unless it is treated early, it prolongs the treatment process of chronic diseases and increases the risk of death due to the increase in complications in the patient.[4] Nutritional disorders are observed in the elderly as a result of inadequate food consumption and absorption.[5] Depression is the most common cause of unintentional weight loss and malnutrition in elderly patients.[6] Since depression is a common but underdiagnosed disorder in the elderly, depression is rarely treated in these patients.[7] Evaluation of nutritional status in elderly patients who will receive inpatient treatment using anthropometric measurements, biochemical measurements and appropriate malnutrition screening tests gains importance in clinical treatment. The reason for this is that both the early diagnosis of malnutrition and the examination of the factors it is effective in provide more effective nutritional therapy.

This study was planned to evaluate the malnutrition status and malnutrition factors associated with the hospitalization in elderly patients who applied to a university hospital internal medicine clinic.

◼ MATERIAL AND METHODS

This study has been conducted on patients aged 65 and older who have been admitted to the Akdeniz University Hospital Internal Medicine Clinic. The internal medicine clinic bed capacity of the hospital is 370. According to the confidence limit of 95% and the confidence range of ±5, the number of instances for safe statistical results is 100 people. A questionnaire form was filled including general characteristics of individual, conditions of comorbidity, presence of chronic disease, etc. excluding non-stable patients who are unconscious or have clouding of consciousness. Measurements of height, weight, upper center arm circumference was taken from anthropometric measurements. Mini Nutritional Assessment-Short Form (MNA-SF) scale was applied from malnutrition screening tests to assess the malnutrition status. Each item was rated between 0 and 3 and evaluated with a total score of malnutrition, malnutrition risk or normal nutrition.[8,9] Geriatric Depression Scale-Short Form (GDS-SF) was used to determine the depression level of the patients. The validity of this scale in Turkish was made by Aktürk and colleagues.[10] The GDS-SF rated 0 and 1 for yes and no answers and was evaluated as non-depression in the total range of 0 to 4 points, light depression in the range of 5 to 8 points, medium depression in the range of 9 to 11 points, and severe depression in the range of 12 to 15 points.

Descriptive statistics were given as frequency, percentage, mean, standard deviation, minimum and maximum. Assumption of the normality was evaluated with Shapiro-Wilk's test. In the categorical data analysis, if the percentage of the cells that have expected values smaller than 5 is larger than 20%, Fisher's exact test was used. Otherwise, the Pearson chi-square test was used. In the analysis of the difference between the numerical data of more than 2 groups, the non-parametric Kruskal-Wallis test was used for those that did not fit the normal distribution. Bonferroni-Dunn post hoc method was used for pairwise comparisons. Analyzes were made with SPSS 23.0 software and $p<0.05$ was considered statistically significant.

For the study, the necessary approval was obtained from the Ethics Council of the Akdeniz University Department of Internal Diseases with the article dated 30.01.2020 and numbered 267085535-900-E.14324. The research was carried out in accordance with the Helsinki Declaration principles.

The elders who will participate in the study were given an overview of the research and then their statements that they will participate in the investigation voluntarily were taken with the "enlightened approval form for the research purposed study."

RESULTS

Of the individuals participating in the study, 43% were male and 57% were female. When we divide the elderly patients according to age groups, there are 8 young people (65-74) (8%), 59 elderly (75-84) people (59%), and very elderly (85 years and older) 33 people (33%). Seventy one percent of the elderly have high blood pressure, 48% have diabetes, 46% have musculoskeletal disorders, 46% have vitamin-mineral deficiency, 45% have cardiovascular systems disease, 26% have respiratory system disease, 10% have an endocrine disease, 6% have cancer and di-

gestive system diseases, and 5% have other diseases. The types of drugs used by elderly people include hypertensive drugs (67%), musculoskeletal system drugs (8%), diabetes drugs (44%), vitamin-mineral supplements (43%), cardiovascular disease drugs (40%), respiratory tract diseases drugs (15%), anti-depression cognitive drugs (45%). Of the male participants, 53.5% use cardiovascular drugs; 50.9% of women use diabetes drugs; 62.8% of men and 70.2% of women use hypertensive drugs. While 21.1% of women use antidepression cognitive drugs, 7% of men use antidepression drugs (Table 1).

Two percent of the elderly were weak according to body mass index (BMI), 25% were in their normal class, while 48% were overweight, 25% were in the obese class (Table 2). In the nutrition status assessment with the MNA-SF scale, 26% of the elderly are normally based on the malnutrition evaluation score,

TABLE 1: Distribution of the elderly according to the comorbidity status and types of drugs they use.			
	Gender		
Disease status	Male f (%)	Female f (%)	Total f (%)
Cardiovascular diseases	26 (60.5)	19 (33.3)	45 (45)
Diabetes	17 (39.5)	31 (54.4)	48 (48)
Hypertension	30 (69.8)	41 (71.9)	71 (71)
Cancer	2 (4.7)	4 (7)	6 (6)
Digestive system diseases	2 (4.7)	4 (7)	6 (6)
Respiratory system diseases	18 (41.9)	8 (14)	26 (26)
Mental problems	3 (7)	12 (21.1)	15 (15)
Musculoskeletal diseases	17 (39.5)	29 (50.9)	46 (46)
Endocrine diseases	5 (11.6)	5 (8.8)	10 (10)
Vitamin-mineral deficiencies	11 (25.6)	35 (61.4)	46 (46)
Other	2 (4.7)	3 (5.3)	5 (5)
Medication status			
Cardiovascular disease drugs	23 (53.5)	17 (29.8)	40 (40)
Diabetes medications	15 (34.9)	29 (50.9)	44 (44)
Hypertensive drugs	27 (62.8)	40 (70.2)	67 (67)
Oncological drugs	0 (0)	0 (0)	0 (0)
Stomach medications	2 (4.7)	5 (8.8)	7 (7)
Respiratory diseases drugs	15 (34.9)	9 (15.8)	24 (24)
Antidepressant-cognitive drugs	3 (7)	12 (21.1)	15 (15)
Musculoskeletal drugs	16 (37.2)	29 (50.9)	45 (45)
Endocrine drugs	3 (7)	5 (8.8)	8 (8)
Vitamin-mineral drugs	11 (25.6)	32 (56.1)	43 (43)
Other drugs	5 (11.6)	4 (7)	9 (9)

More than one option has been ticked. Other diseases; kidney diseases, infectious diseases. Other drugs; kidney drugs, infectious drugs.

21% have malnutrition presence, 53% have malnutrition risk (Table 2). According to the BMI assessment, 47.6% of the elderly with malnutrition, 45.3% of the elderly with malnutrition risk, and 53.8% of the elderly with a normal nutritional status, as determined by the MNA-SF scale have entered the overweight class. There was no statistical relationship between the BMI and the malnutrition status in the elderly (p=0.356) (Table 2).

When examining relations between malnutrition status and anthropometric measurements in the elderly, a statistical difference was found between malnutrition status and height size (cm), body weight and upper center arm circumference (p=0.002 p<0.0001, p=0.003; respectively) (Table 3). According to the MNA-SF,

there is a statistical difference between the mean height, body weight, and upper-middle arm circumference of the elderly with malnutrition, the elderly at risk of malnutrition, and the elderly with a normal nutritional status, but there is no statistical difference between the elderly at risk of malnutrition and the elderly with normal nutritional status.

When the relationship between malnutrition status and demographic characteristics of the elderly was examined, a statistical relationship was found between malnutrition status and the status of marital and age groups (p<0.000, p<0.0001; respectively) (Table 4). Of the participants with malnutrition, 33.3% are middle-aged, 66.7% are in the older group. 5.7% of individuals at risk of malnutrition are young aged,

TABLE 2: Distribution of body mass index by gender and its relationship with malnutrition status.

Body mass index (kg/m²)	Gender		p (χ^2 value)
	Male f (%)	Female f (%)	
Weak (<18.50)	2 (4.7)	0 (0)	0.020
Normal (18.50-24.99)	12 (27.9)	13 (22.8)	(χ^2=9.03)[f]
Overweight (25.00-29.99)	24 (55.8)	24 (42.1)	
Obese (30.00->40.00)	5 (11.6)	20 (35.1)	
Total	43 (100)	57 (100)	

Body mass index (kg/m²)	Malnutrition Assessment Score			p (χ^2value)
	1 f (%)	2 f (%)	3 f (%)	
Weak (<18.50)	2 (9.5)	0 (0)	0 (0)	0.356
Normal (18.51-24.99)	6 (28.6)	15 (28.3)	4 (15.4)	(χ^2=10.25)[f]
Overweight (25-29.99)	10 (47.6)	24 (45.3)	14 (53.8)	
Obese (over 30-40)	3 (14.3)	14 (26.5)	8 (30.7)	
Total	21 (100)	53 (100)	26 (100)	

[f]: Fisher's exact test. For malnutrition assessment score, 1: Malnutrition, 2: Malnutrition risk, 3: Normal nutritional status.

TABLE 3: Comparison of the anthropometric measurements with malnutrition status in the elderly.

Independent variables	Malnutrition status	n	Mean±SD	Median (Minimum-maximum)	Mean rank*	p (H value)
Height (cm)	1	21	157.95±7.17	155 (150-170)	28.9[b]	0.002
	2	53	167.62±9.96	165 (150-195)	57.71[a]	(H=15.288)
	3	26	165.5±8.31	165 (152-178)	53.25[a]	
Body weight (kg)	1	21	64.33±11.31	64 (45-90)	27.38[b]	<0.0001
	2	53	77.51±13.2	78 (50-105)	56.52[a]	(H=16.934)
	3	26	78±11.8	77.5 (60-115)	56.9[a]	
Upper arm circumference (cm)	1	21	25.71±5.41	24 (20-40)	31.6[b]	0.003
	2	53	29.64±5.02	30 (20-40)	54.44[a]	(H=11.594)
	3	26	30.46±5.34	30 (21-41)	57.73[a]	

Kruskal-Wallis H test and Bonferroni-Dunn post hoc test were used. *Different small letters in the column indicate statistical difference (p<0.05). For malnutrition assessment score, 1: Malnutrition, 2: Malnutrition risk, 3: Normal nutritional status. SD: Standard deviation.

TABLE 4: The relationship between malnutrition status and demographic characteristics in the elderly.			
	Malnutrition assessment score		
	1 f (%)	2 f (%)	3 f (%)	p (χ^2 value)
Age groups			
Young aged (65-74 years old)	0 (0)	3 (5.7)	5 (19.2)	<0.0001
Middle aged (75-84 years old)	7 (33.3)	35 (66)	17 (65.4)	(χ^2=16.81)f
Advanced elderly (85 years and older)	14 (66.7)	15 (28.3)	4 (15.4)	
Educational status			
Illiterate	7 (33.3)	5 (9.4)	4 (15.4)	0.245
Literate	3 (14.3)	13 (24.5)	3 (11.5)	(χ^2=12.01)f
Primary school	8 (38.1)	16 (30.2)	9 (34.6)	
Middle school	1 (4.8)	13 (24.5)	5 (19.2)	
High school	1 (4.8)	4 (7.5)	4 (15.4)	
College	1 (4.8)	2 (3.8)	1 (3.8)	
Living place			
Urban	16 (76.2)	38 (71.7)	22 (84.6)	0.450
Rural	5 (23.8)	15 (28.3)	4 (15.4)	(χ^2=1.59)p
Marital status			
The married	6 (28.6)	31 (58.5)	21 (80.8)	<0.0001
Single	0 (0)	2 (3.8)	1 (3.8)	(χ^2=15.38)f
Spouse or divorced	15 (71.4)	20 (37.7)	4 (15.4)	

f: Fisher's exact test; p: Pearson chi-square test. For malnutrition assessment score, 1: Malnutrition, 2: Malnutrition risk, 3: Normal nutritional status.

66% are middle-aged, 28.3% are in the older group. Of the elderly with normal nutrition, 19.2% are young aged, 65.4% are middle-aged, and 15.4% older. While 71.4% of the malnourished elderly are widowed or divorced, 28.6% are married, 37.7% of the elderly who have a risk of malnutrition have lost or divorced their wives, 58.5% are married and 3.8% are single. While 15.4% of the elderly with normal nutritional status are widowed or divorced, 80.8% are married and 3.8% are single (Table 4). 81% of the elderly with malnutrition have hypertension, 66.7% have cardiovascular disease, 57.1% have musculoskeletal problems, 52.4% have diabetes, 47.6% have mental problems, 47.6% have vitamin-mineral deficiencies. When the relationship between malnutrition and comorbidity status is examined in the elderly, there has been a statistically significant relationship between malnutrition and cardiovascular diseases and mental illness (respectively; p<0.05 and p<0.0001) (Table 5).

According to the geriatric depression score of elderly patients, it has been determined that 8% have severe, 19% have moderate and 23% have mild de-

pression. 23.8% of malnutrition individuals have severe, 52.4% have moderate levels and 14.3% have mild depression. Of individuals at risk of malnutrition, 3.8% have severe depression, 13.2% have moderate depression and 28.3% have mild depression. Of the individuals with normal nutritional status, 73.1% do not have depression. A statistically significant relationship has been found between malnutrition and depression in the elderly (p<0.0001) (Table 6).

DISCUSSION

One of the most common problems in the aging process is malnutrition, which develops with nutritional deficiency. Malnutrition can be defined as nutritional deficiency, which is a deficiency in energy, proteins, vitamins, and trace elements.[11] In the European Seneca Study, it was reported that the frequency of malnutrition among healthy elderly people in society is low and protein-energy malnutrition, in which micronutrient deficiencies are seen together in sick elderly people, is a major problem.[12]

TABLE 5: The relationship between malnutrition status and comorbidity status in the elderly.				
		Malnutrition assessment score		
		1 f (%)	2 f (%)	3 f (%)	p (χ^2 value)
Cardiovascular diseases	There is	14 (66.7)	23 (43.4)	8 (30.8)	0.046
	No	7 (33.3)	30 (56.6)	18 (69.2)	(χ^2=6.16)^p
Diabetes	There is	11 (52.4)	26 (49.1)	11 (42.3)	0.770
	No	10 (47.6)	27 (50.9)	15 (57.7)	(χ^2=0.52)^p
Hypertension	There is	17 (81)	34 (64.2)	21 (76.9)	0.264
	No	4 (19)	19 (35.8)	6 (23.1)	(χ^2=2.66)^p
Cancer	There is	0 (0)	5 (9.4)	1 (3.8)	0.403
	No	21 (100)	48 (90.6)	25 (96.2)	(χ^2=1.94)^f
Digestive system diseases	There is	3 (14.3)	3 (5.7)	0 (0)	0.147
	No	18 (85.7)	50 (94.3)	26 (100)	(χ^2=3.69)f
Respiratory system diseases	There is	8 (38.1)	14 (26.4)	4 (15.4)	0.210
	No	13 (61.9)	39 (73.6)	22 (84.6)	(χ^2=3.12)^p
Mental problems	There is	10 (47.6)	4 (7.5)	1 (3.8)	<0.0001
	No	11 (52.4)	49 (92.5)	25 (96.2)	(χ^2=17.68)^f
Musculoskeletal diseases	There is	12 (57.1)	24 (45.3)	10 (38.5)	0.437
	No	9 (42.9)	29 (54.7)	16 (61.5)	(χ^2=1.65)^p
Endocrine diseases	There is	3 (14.3)	6 (11.3)	1 (3.8)	0.402
	No	18 (85.7)	47 (88.7)	25 (34.4)	(χ^2=1.63)^f
Vitamin mineral deficiencies	There is	10 (47.6)	21 (39.6)	15 (57.7)	0.313
	No	11 (52.4)	32 (60.4)	11 (42.3)	(χ^2=2.32)^p
Other	There is	2 (9.5)	3 (5.7)	0 (0)	0.471
	No	19 (90.5)	50 (94.3)	26 (100)	(χ^2=3.54)^f

^{f}: Fisher's exact test, ^{p}: Pearson chi-square test. More than one option has been ticked. Other diseases; kidney diseases, infectious diseases.

TABLE 6: The effect of depression on the degree of malnutrition.				
		Malnutrition assessment score		
Geriatric depression score	1 f (%)	2 f (%)	3 f (%)	p (χ^2 value)
No depression	2 (9.5)	29 (54.7)	19 (73.1)	<0.0001
Mild depression	3 (14.3)	15 (28.3)	5 (19.2)	(χ^2=32.69)^f
Moderate depression	11 (52.4)	7 (13.2)	1 (3.8)	
Severe depression	5 (23.8)	2 (3.8)	1 (3.8)	

^{f}: Fisher's exact test. For malnutrition assessment score, 1: Malnutrition, 2: Malnutrition risk, 3: Normal nutritional status.

Thomas et al. reported that in 837 patients with an average age of 76±13 years who received orthopedic or neurological rehabilitation or antibiotic therapy for infection, the rate of malnutrition in inpatients was 29% and the rate of patients at risk of malnutrition was 63%. Thus, it has been reported that the total rate of patients at risk of malnutrition or malnutrition during admission to the health center exceeds >91%. It has been stated that the high malnutrition rate in the patients monitored in the hospital is due to the fact that the nutritional status of the patients in the hospital is not evaluated, monitored and appropriate nutritional support is not provided.[13] In a study that retrospectively evaluated 709 adult patients with an average age of 50.6±17.3 years selected by randomization method from 25 hospitals in Brazil, the incidence of malnutrition in hospitalization was 34.2%.[14] In Nursal et al.'s study of 2,197 patients with an average age of 54.3±14.8 years in a hospital in Adana, the incidence of moderate malnutrition during the

hospitalization of the patients was 9.78% (n=215, M/F=143/72), and the incidence of severe malnutrition was 1.22% (n=27, M/F=16/11).[15] According to the malnutrition evaluation score in our study, it was determined that 21% of elderly patients had malnutrition in hospitalization, 53% had a risk of malnutrition and 26% were normal (Table 2). While 66.7% of malnourished individuals were in the elderly group, 33.3% were in the middle-aged group, while the young elderly had no malnutrition, statistically, the relationship between age group and malnutrition status was found to be significant (Table 4).

It has been observed that the risk of malnutrition and the likelihood of malnutrition increase with age. The risk of malnutrition seen in Table 4 is higher in the middle age group and the malnutrition rate is higher in the older age group, and by looking at these findings, it can be said that the incidence of malnutrition increases with advancing age. In addition, it should not be overlooked that malnutrition will develop after a while if measures are not taken in elderly people at risk of malnutrition.

There was no statistically significant relationship between malnutrition status and BMI classification in our study (p>0.05) (Table 2). In scoring with the MNA-SF scale, 47.6% of the elderly with malnutrition according to the BMI classification, 45.3% of the elderly with malnutrition risk, and 53.8% of the elderly with a normal nutritional status are in the overweight group. In the study of Atalay et al., although all patients (20 patients) were evaluated as malnutrition according to Subjective Global Assessment, BMI value was found below 20 kg/m^2 in only 4 patients.[16] BMI=weight (kg)/ height(m)^2 formula is calculated from anthropometric measurements of patients.[17] Studies for malnutrition assessment in the elderly show that BMI is not particularly sufficient in the evaluation of malnutrition.[18-20] Muscle loss is common in elderly and sick individuals, and the decrease in lean body mass shows a strong association with morbidity. In some pathological diseases, in individuals with cancer, AIDS, chronic lung disease, muscle mass loss is seen despite normal body weight.[18] In the study of Flodin et al., in 532 patients with an average age of 81 years, patients were followed up for 1 year and mortality rates were found to be high in patients with low BMI (≤20). However, the researchers reported that BMI assessments can be seen in normal limits due to mistakes in weight measurement, while there is a significant loss of whole-body proteins in patients with excess fluids.[21] In their study, Schneider et al., which investigated the effect of age on body composition in patients with malnutrition, found that compared to younger patients, weight loss in older patients; is suggested to cause severe malnutrition with a significant reduction in lean body mass and body cell mass. Researchers found that weight loss in patients under the age of 70 caused a homogeneous decrease in lean and fat body mass, whereas, in patients over 70 years of age, there was only a decrease in lean body mass loss, and the fat mass, which constitutes a large part of the total body weight, was preserved.[22] The findings of our study suggest that it may be misleading to evaluate the nutritional status of the elderly according to BMI classification.

In our study, a statistically significant difference was found between body weight (kg), height (cm), upper-middle arm circumference (cm), and malnutrition status in the elderly (p<0.05) (Table 3). In evaluating nutrition status for patients who are hospitalized, it is believed that measurements of height and body weight from anthropometric measurements as well as upper center arm circumference, skinfold thickness measurements, the application of malnutrition risk screening tests with anthropometric measurements, and monitoring nutrition conditions can help improve life quality, treat existing diseases, and improve healing processes.[16]

In our study, no statistically significant relationship was found between malnutrition status, education level, and place of residence in the elderly (p>0.05) (Table 4). Considering the possibility of losing a spouse with the aging population, situations such as not being able to prepare food, not wanting to shop, and loss of appetite can cause malnutrition. While 71.4% of the elderly with malnutrition lost their spouse or divorced, 37.7% of the elderly at risk of malnutrition were widowed or divorced, and 15.4% of the elderly with normal nutritional status were widowed or divorced (Table 4). While the rate

of widowed and divorced is low in the elderly with normal nutritional status, the rate of widowed or divorced is high in those with malnutrition. These findings show that the feeling of loneliness or living alone also plays a role in the development of malnutrition. In a study conducted in the geriatric population, a significant relationship was found between marital status and malnutrition. Being single and widowed was found to be significantly associated with malnutrition compared to being married.[23]

The problem of living alone is that there are problems in purchasing and lack of mobility for shopping, inability to cook. In addition, it has been observed that food consumption has decreased with psychological factors (after dementia, depression, loneliness).[4,24] All of these cause malnutrition, resulting in a few disorders or illnesses due to the lack of nutrients. In addition, these reasons have been observed to increase the problem of malnutrition as a result of their effects such as physical limitation and psychological lack of appetite or refusal to eat.

The most important cause of nutritional deficiencies and malnutrition in the elderly is gastrointestinal system changes. A slowdown in the digestive system and a delay in gastric emptying are observed.[25] Decreased stomach velocity delays the feeling of hunger in the elderly and causes less food consumption. Acid insufficiency in the stomach shows a decrease in the absorption and bioavailability of many vitamins and minerals.[26] Considering that both physiological gastrointestinal changes and psychological and psycho-cognitive problems affect appetite negatively in the elderly, it is seen that appetite is an important risk factor for malnutrition. In our study, a statistically significant relationship was found between malnutrition status and both appetite status, marital status and mental problems (p<0.05) (Table 4, Table 5). These findings show that psychological and mental problems may affect appetite and pose a risk for malnutrition. Developing malnutrition will also negatively affect appetite, leading to an increase in nutritional problems in a vicious circle. In the study of Slavíková et al., nutritional status and mental status were found to be positively related.[27] Among the main clinical symptoms in major depression, there are symptoms such as sleep disturbances, changes in appetite and body weight.[28]

In our study, a statistically significant relationship was found between depression and malnutrition status in the elderly (p<0.0001) (Table 6). In the study conducted by Erdoğan and Tunca, 65.8% of the malnourished group had a risk of depression, while it was 15.8% in the group with a normal diet, and a statistically significant relationship was found between malnutrition and depression.[29] In their study, Ülger et al. found a relationship between malnutrition and malnutrition risk ratio according to MNA and cognitive impairment.[30]

In our study, 66.7% of the malnourished elderly had cardiovascular diseases, 81% had hypertension and 52.4% had diabetes. A statistical relationship was found between malnutrition status and cognitive-mental disorders in the elderly (Table 5). Cognitive impairment gradually leads to malnutrition. Typical findings of dementia include weight loss and malnutrition.[31] Cognitive impairment leads to malnutrition or malnutrition causes cognitive impairment.[32,33] In a study conducted in a nursing home, cognitive and functional impairment in the elderly caused swallowing difficulties and thus nutritional deficiency.[33]

In order to determine and examine the nutritional status and problems in old age, it is very important to examine in detail some changes in this process and to plan the nutrition of the elderly in accordance with the results. In our study, 97% of the elderly reported their illness and in individuals who indicated that they had a disease, hypertension (69.8%, 71.9%) in the first place in men and women elderly, in the second place in male elderly people, cardiovascular diseases (60.5%), vitamin-mineral deficiency in female elderly (61.4%), respiratory system diseases in male and elderly (41.9%) in the third row, in older women, diabetes (54.4%) and fourth place, male elderly have diabetes and musculoskeletal diseases (39.5%) and female elderly have musculoskeletal diseases (50.9%).

While 68.7% of the elderly individuals stated that they had one or more diagnosed diseases, the first disease was hypertension in male and female elderly,

the second disease was cardiovascular diseases in men and rheumatic diseases in women, 79.8% of them regularly took medication. It was stated that 13.1 of them used artificial sweeteners continuously.[34] The use of vitamin and mineral supplements of the elderly who participated in our study was also investigated. 25.6% of men and 57.1% of women receive vitamin-mineral support. In Erdoğan's study, which included 230 elderly individuals in a nursing home in İstanbul, the use of herbal and non-herbal supplements by the elderly was investigated, and it was found that 53.5% of them used non-herbal honey and vitamins B and C as supplements.[35] It is known that there are symptoms such as neurological and emotional irritability in case of vitamin deficiency that occurs after malnutrition in old age.[34]

CONCLUSION

There are many physiological and psychological problems in the elderly that cause malnutrition. In the event that sufficient nutritional items are not received or absorbed, the malnutrition is frequently observed in the elderly. Due to the physiological changes (psychological and mental problems) introduced by old age and added chronic diseases, the use of multiple drugs negatively affects food consumption.

In the elderly in the hospital, the risk of malnutrition and malnutrition that primarily affects the diagnosis and treatment of diseases should not be ignored and regular malnutrition risk screening tests should be performed with anthropometric measurements for every elderly in the calming area, and nutrition conditions should be monitored. Nutrition assessment and nutrition treatment are important factors in improving the quality of life for the elderly, in treating their existing diseases, and in their recovery processes. Nutrition therapy is important in clinical treatment, considering other factors such as depression that can affect malnutrition.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Tuğçe Sözer, Cahide Yağmur; Design: Tuğçe Sözer, Cahide Yağmur; Control/Supervision: Cahide Yağmur; Data Collection and/or Processing: Tuğçe Sözer; Analysis and/or Interpretation: Ebru Kaya Basar; Literature Review: Tuğçe Sözer, Cahide Yağmur; Writing the Article: Tuğçe Sözer, Cahide Yağmur; Critical Review: Cahide Yağmur.

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