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EVALUATION OF SATISFACTION WITH HOSPITAL MEALS, NUTRITIONAL STATUS AND HOSPITAL ANXIETY IN INDIVIDUALS WITH CARDIOVASCULAR DISEASE
KARDİOVASKÜLER HASTALIĞA SAHİP BİREYLERİN HASTANE YEMEKLERİNDEN MEMNUNİYETİ, BESLENME DURUMU VE HASTANE ANKSİYETESİ DURUMUNUN DEĞERLENDİRİLMESİ

Sema ÇALAPKORUR¹, Hilal TOKLU BALOĞLU², Buse BAKIR³ Ashi ONUR CANAYDIN¹

¹ Erciyes University, Health Sciences Faculty, Nutrition and Dietetics Department, Kayseri, Türkiye

² Bitlis Eren University, Health Sciences Faculty, Nutrition and Dietetics Department, Bitlis, Türkiye

³ İzmir Katip Celebi University, Health Sciences Faculty, Nutrition and Dietetics Department, İzmir, Türkiye

ABSTRACT

This study was planned and conducted to examine the relationship between satisfaction with hospital meals, nutritional status and hospital anxiety in individuals with cardiovascular diseases. This cross-sectional and descriptive study was conducted with patients receiving treatment in the cardiology clinic between October 2021 and October 2022. The nutritional status of the patients was evaluated with the Nutrition Risk Screening-2002, their satisfaction with hospital meals with the Hospital Food Services Patient Satisfaction Scale, and their anxiety and depression status with the Hospital Anxiety and Depression Scale. In addition, 24-hour food consumption records and anthropometric measurements were taken. The study was completed with a total of 152 participants, 85 males and 67 females. The mean score of the satisfaction with hospital food services scale was 81.50 ± 15.02 , 17.8% (n=27) of the participants had anxiety and 32.9% (n=50) had depression. Patients at risk of malnutrition were less satisfied with hospital food services and had higher levels of anxiety (p<0.05). In addition, it was observed that anxiety scores decreased as individuals' satisfaction with hospital meals increased. In conclusion, it was observed that satisfaction with hospital food services was associated with patients' malnutrition risk and anxiety level. Therefore, it should be aimed to prevent hospital malnutrition and improve the mental health of patients by increasing satisfaction with hospital food services.

Keywords: Anxiety, depression, hospital food services, malnutrition.

ÖZ

Bu çalışma kardiyovasküler hastalıklara sahip bireylerin hastane yemeklerinden memnuniyeti, beslenme durumu ve hastane anksiyetesi arasındaki ilişkinin incelenmesi amacıyla planlanıp yürütülmüştür. Kesitsel ve tanımlayıcı tipteki bu araştırma; Ekim 2021-Ekim 2022 tarihleri arasında kardiyoloji kliniğinde tedavi alan hastalarla yürütülmüştür. Hastaların beslenme durumu Beslenme Riski Taraması-2002, hastane yemeklerinden memnuniyetleri Hastane Yiyecek Hizmetleri Hasta Memnuniyeti Ölçeği, anksiyete ve depresyon durumları ise Hastane Anksiyete ve Depresyon Ölçeği ile değerlendirilmiştir. Ayrıca hastaların 24 saatlik besin tüketim kayıtları ve antropometrik ölçümleri alınmıştır. Çalışma 85 erkek ve 67 kadın olmak üzere toplam 152 katılımcı ile tamamlanmıştır. Hastane yemek hizmetlerinden memnuniyet ölçeği ortalama puanı 81.50 ± 15.02 olarak belirlenmiş, katılımcıların % 17.8'inde (n=27) anksiyete ve %32,9'unda (n=50) depresyon bulguları olduğu tespit edilmiştir. Malnütrisyon riski altındaki hastaların hastane yemek hizmetlerinden daha az memnun olduğu ve anksiyete seviyelerinin de daha yüksek olduğu belirlenmiştir (p<0,05). Ayrıca, bireylerin hastane yemeklerinden memnuniyetleri arttıkça anksiyete skorlarının düştüğü görülmüştür. Sonuç olarak hastane yemek hizmetlerinden memnuniyetin hastaların malnütrisyon riski ve anksiyete seviyesi ile ilişkili olduğu görülmüştür. Dolayısıyla hastane yemek hizmetlerinden memnuniyeti artırarak hastane malnütrisyonunu önlemek ve hastaların mental sağlığını iyileştirmek hedeflenmelidir.

Anahtar kelimeler: Anksiyete, depresyon, hastane yemek hizmetleri, malnütrisyon.

Corresponding Author: Assistant Professor (PhD), Sema ÇALAPKORUR, dyt_sema@hotmail.com, 0000-0002-2540-1957, Erciyes University Health Sciences Faculty, Nutrition and Dietetics Department, Kayseri, Türkiye

Authors: Assistant Professor (PhD), Hilal TOKLU BALOĞLU, tokluhilal@gmail.com, 0000-0002-0052-4838
Research Assistant (PhD), Buse BAKIR, buse.bkr.92@gmail.com, 0000-0001-5884-5063
Research Assistant (MSc), Ashi ONUR CANAYDIN, dyt.aslionur@gmail.com, 0000-0002-3099-8479

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INTRODUCTION

Adequate and balanced nutrition contributes significantly to the treatment process by reducing the risk of hospital malnutrition in patients receiving treatment in inpatient institutions. In patients with hospital malnutrition, the risk of infection increases, recovery time is delayed and hospital stay is prolonged. In addition, the increase in morbidity and mortality risk along with the cost of treatment is also noteworthy. Hospital malnutrition not only occurs due to disease and disease-related complications but is also affected by the quality of hospital food services.^{1,2}

The aim of the hospital food service is to provide patients with adequate and balanced nutrition by offering menus that are nutritious and appropriate to their medical nutrition therapy. In addition, food consumption of inpatients is considered a good indicator of their nutritional status and satisfaction with the food service.³ Patient satisfaction is considered as an important step in fulfilling quality requirements in health services and nutrition services constitute one of the important components of this satisfaction.² The quality of hospital food service can be affected by many factors such as the taste, appearance, temperature, hygiene and attitude of the staff. In addition, patients' loss of appetite due to the change of environment and their difficulty in adapting to dietary meals prepared specifically for their diseases also negatively affect satisfaction with catering services.¹ In a study conducted in Brazil, plate waste in meals served to hospitalized patients was found to be 7.7% on average per week. It was also among the results of the study that women had a higher rate of plate waste than men.⁴ In a study conducted with patients aged 65 years and older hospitalized in different wards of hospitals in Turkey, the satisfaction rate with hospital meals was 61.1%. While the amount of energy and protein consumed by the patients in the hospital was sufficient, it was determined that their fat and salt consumption was high.⁵ In this study, it was observed that adequate energy and protein intake was realized with the improvement in the satisfaction rate, while not consuming the food served in hospitals due to the quality of the food not being at the desired level is shown among the causes of malnutrition.⁶ In support of this data, a study conducted in hemodialysis patients reported that malnutrition inflammation scores decreased as food consumption increased.⁷ In another study, it was reported that improving the quality of hospital catering services would increase the overall satisfaction level with catering services and, as a result, reduce the length of hospital stay. It has been reported that the reduction in the length of hospital stay contributes to the psychological well-being of individuals as well as financial gain.⁸

Malnutrition is associated with many clinical outcomes, including depression. Failure to monitor the nutritional status of patients and the resulting unwanted weight loss may lead to an increase in the rate of depression.⁹ Various studies conducted with elderly patients in our country have also supported this conclusion and an increase in depressive symptoms has been reported as the malnutrition score increases.^{10,11} Among the results of a study conducted with cancer patients; it was found that with appropriate nutritional interventions, it may be possible to reduce the extent of depression in indi-

viduals and thus improve the quality of life and survival rates of patients. In addition, it was emphasized that hospital anxiety score was also high in cancer patients and this was associated with malnutrition.¹² In similar studies conducted with cancer patients, it was reported that depression and anxiety scores were high in patients receiving oncologic treatment and these scores increased in relation to malnutrition.^{13,14} In a systematic review examining this relationship in individuals with anorexia nervosa, 7 studies were analyzed and it was reported that there were differences in the results of the studies. It was stated that more comprehensive studies examining the relationship between anxiety, depression and malnutrition are needed.¹⁵

Depression and anxiety are highly prevalent in individuals with cardiovascular disease and are associated with deterioration in clinical outcomes and increased health costs. It is emphasized that individuals with cardiovascular disease with depressive symptoms are at risk for recurrent cardiovascular events and mortality.¹⁶ Satisfaction with hospital meals has been shown to be among the causes of malnutrition and the relationship between malnutrition and depression and anxiety has been confirmed in various studies in the literature. However, there are no studies investigating these relationships in cardiovascular diseases. This study was planned and conducted to examine the relationship between satisfaction with hospital meals, nutritional status and hospital anxiety in individuals with cardiovascular diseases.

MATERIALS AND METHODS

Study Plan

This cross-sectional and descriptive study was conducted in the cardiology clinic of Erciyes University Hospitals between October 2021 and October 2022. The study population was defined as conscious patients older than 18 years of age receiving treatment in the cardiology clinic for cardiovascular disease; patients with loss of consciousness and/or communication problems and patients in the terminal period were excluded from the study. Taking the effects size (0.53) of the study by Abdelhafez et al.¹⁷ as a reference, the G*Power 3.1 program's t-test menu yielded a sample size of 130 based on $\alpha=0.05$, $1-\beta=0.85$, and effect size 0.53. The study was completed with 152 participants.

For this study, approval was obtained from Erciyes University Clinical Research Ethics Committee with the decision number 2021/491 dated 07.07.2021. In addition, all individuals participating in the study were informed about the study and their written and verbal consent was obtained.

Data Collection

Demographic information of the individuals was obtained with the help of a questionnaire form; body weight, height, waist, hip and neck circumference measurements were taken by the researchers in accordance with the technique. Body mass index (BMI) [weight (kg)/height (m)²] was calculated from the weight and height measurements. Body mass index was evaluated according to WHO adult classification.¹⁸

Nutritional Risk Screening (NRS)-2002 was used to screen the nutritional status of the patients. NRS-2002 is a two-part screening tool that scores the deteriora-

tion in the nutritional status of patients and the severity of their diseases. In the first part, the severity of the disease, weight loss in three months and decreases in food intake in three months are questioned. The second part of the form is continued in patients who answered 'yes' to any of the questions in the first part. In the second part, patients are evaluated in terms of nutritional deficiency and disease severity, and a total score is determined by adding 1 point to the score obtained when the patient is 70 years of age or older. Patients with a total score of 3 and above are considered at risk of malnutrition.¹⁹ According to the study of Bolayir et al.²⁰ NRS-2002 was found as a valid screening tool to evaluate malnutrition risk in Turkish hospitalised patients.

The 24-hour food consumption records of the patients were taken, and their average daily energy and nutrient consumption was determined with the Nutrition Information System (BeBiS, Istanbul, 2017) program. While food consumption records were taken, the Food and Nutrition Photo Catalog was used to determine the amount of food consumed.²¹

The Hospital Food Services Patient Satisfaction Scale (HFSPSS) was used to assess satisfaction with hospital meals. The Turkish validity and reliability of the scale was conducted by Ercan and Ok in 2018. The scale has five sub-dimensions and consists of a total of 20 questions. The questions in the scale are evaluated with a five-point Likert scale and it is reported that as the score obtained from the scale increases, the satisfaction level of patients with hospital food services increases.²² The Hospital Anxiety and Depression Scale (HADS) was used to determine the risk of anxiety and depression in patients and to measure the level of existing depression and anxiety. The validity and reliability study of the scale in our country was conducted by Aydemir et al.²³ The scale consists of a total of 14 questions and the assessment is based on a four-point Likert-type scale. Different questions are used in the evaluation of anxiety and depression sub-dimensions and the total score of the scale is obtained by summing the sub-dimension scores. As a result of the study conducted in Turkey, a cut-off score of 10/11 was found for the anxiety subscale and 7/8 for the depression subscale. Accordingly, those above these scores were considered to be at risk.²⁴

Statistical Analysis of Data

The data of the study were evaluated using the Statistical Package for Social Sciences for Windows (SPSS 22.0). In addition to the Shapiro-Wilk test, kurtosis and skewness value of the data were assessed to determine whether they were suitable for normal distribution.²⁵ Numerical variables with normal distribution were expressed as "mean±standard deviation" and numerical variables without normal distribution were expressed as "median (minimum value-maximum value)". Categorical variables were expressed as "number (n)" and "percentage (%)". Independent sample t test was used to compare the normally distributed data between two independent groups, and One-Way Analysis of Variance (ANOVA) was used to compare the data between more than two groups. Kruskal-Wallis test was used to compare non-normally distributed data between more than two groups. When numerical variables were compared between groups, the Bonferroni

test was applied for equal variances and the Tamhane T2 test for non-equal variances in pairwise comparisons. In all statistical analyses, $p < 0.05$ was accepted as a significant value.

RESULTS

Table 1 shows the HFSPSS, anxiety and depression scores of the participants according to their general characteristics. The study was completed with a total of 152 participants, 85 men and 67 women. It was determined that 52% (n=79) of the participants were 65 years of age or older, 80.9% (n=123) were married, 54.6% (n=83) had four or more children, 59.9% (n=91) had high school or middle school education, and 42.1% (n=64) were housewives. According to the Hospital Anxiety and Depression Scale, 17.8% (n=27) of the participants had anxiety and 32.9% (n=50) had depression. According to the occupational status of the participants, the mean HFSPSS score showed a significant difference, and it was found to be higher in retired people (84.91±13.33) than in other occupational groups (75.29±15.15) ($p=0.016$). The mean anxiety score was higher in women (6.49±5.49), those with four or more children (6.30±5.39), illiterates (7.82±6.30), housewives (6.90±5.40) and non-alcohol users (5.94±5.27) ($p < 0.05$). Mean depression score was higher in women (6.73±4.60), housewives (6.95±4.54) and smokers (8.35±5.55) ($p < 0.05$).

Table 2 shows the comparison of mean HFSPSS, anxiety and depression scores according to the nutritional status of the participants. The mean HFSPSS score was found to be lower in patients who underwent the "main assessment" (76.05±16.86), which is the second step in NRS-2002, than in patients who underwent "only preliminary assessment" (83.38±13.93) ($p=0.008$). The mean anxiety score was found to be higher in individuals with a NRS 2002 baseline score of 3 and above (8.88±5.95) compared to those with a score of less than 3 (4.71±5.24) ($p < 0.05$). There was no significant difference in mean HFSPSS, anxiety and depression scores according to BMI and neck circumference classifications ($p > 0.05$).

Anxiety and depression scores, anthropometric measurements and nutrient intakes of the patients according to HFSPSS score quartiles are shown in Table 3. Anxiety score showed a significant difference according to the HFSPSS quartiles and this difference was found to be caused by the difference in the mean values of Q₁ (6.64±5.33) and Q₂ (3.31±3.38) ($p=0.031$). There was no significant difference between quartiles in anthropometric measurements ($p > 0.05$). Among the daily intake of nutrients, a significant difference was found only in vitamin K intake level between the quartiles, and this difference was found to be due to the difference between Q₁ [45.40-(Min-Max: 1.50-487.85)] and Q₂ [96.50-(Min-Max: 1.50-954.20)], Q₁ [45.40-(Min-Max: 1.50-487.85)] and Q₃ [90.50-(Min-Max: 3.60-471.74)] and Q₂ [96.50-(Min-Max: 1.50-954.20)] and Q₄ [45.50-(Min-Max: 0.00-521.52)] ($p < 0.05$).

DISCUSSION

The aim of this study was to evaluate the satisfaction with hospital meals, nutritional status and hospital anxiety status of individuals with cardiovascular dis-

Table 1. Evaluation of HFSPSS, anxiety and depression scores according to the general characteristics of the participants

	n (%)	HFSPSS Score ($\bar{x} \pm SD$)	Anxiety Score ($\bar{x} \pm SD$)	Depression Score ($\bar{x} \pm SD$)
Gender				
Male	85 (55.9)	81.49 ± 14.64	4.44 ± 4.75	5.17 ± 4.90
Female	67 (44.1)	81.52 ± 15.61	6.49 ± 5.49	6.73 ± 4.60
Total	152 (100.0)	81.50 ± 15.02	5.34 ± 5.17	5.86 ± 4.81
		t=-0.011, p=0.991	t=-2.416, p=0.017	t=-1.995, p=0.048
Age (years)				
< 65	73 (48.0)	79.69 ± 15.77	5.36 ± 5.37	6.06 ± 5.04
≥ 65	79 (52.0)	83.17 ± 14.20	5.32 ± 5.02	5.67 ± 4.62
		t=-1.431, p=0.155	t=0.048, p=0.962	t=0.507, p=0.613
Marital Status				
Married	123 (80.9)	81.21 ± 14.76	4.86 ± 4.70	5.73 ± 4.84
Single/Separated from spouse	29 (19.1)	82.75 ± 16.32	7.41 ± 6.54	6.37 ± 4.76
		t=-0.497, p=0.620	t=-1.983, p=0.055	t=-0.642, p=0.522
Number of Children				
< 4	69 (45.4)	81.36 ± 13.59	4.20 ± 4.68	5.43 ± 4.51
≥ 4	83 (54.6)	81.62 ± 16.20	6.30 ± 5.39	6.21 ± 5.05
		t=-0.108, p=0.915	t=-2.564, p=0.011	t=-0.996, p=0.321
Education Status				
Illiterate	29 (19.1)	82.79 ± 18.72	7.82 ± 6.30 ^a	7.79 ± 4.59
Literate	11 (7.2)	80.18 ± 13.38	4.81 ± 4.53 ^{ab}	4.72 ± 3.31
Primary and secondary school	91 (59.9)	81.78 ± 14.27	4.96 ± 4.82 ^{ab}	5.54 ± 5.04
High school and above	21 (13.8)	79.23 ± 14.09	3.85 ± 4.4 ^b	5.14 ± 4.29
		F=0.264, p=0.851	F=3.124, p=0.028	F=2.083, p=0.105
Profession				
Retired	61 (40.1)	84.91 ± 13.33 ^a	4.01 ± 4.71 ^a	4.73 ± 4.54 ^a
Housewife	64 (42.1)	80.87 ± 15.78 ^{ab}	6.90 ± 5.40 ^b	6.95 ± 4.54 ^b
Other*	27 (17.8)	75.29 ± 15.15 ^b	4.66 ± 4.79 ^{ab}	5.81 ± 5.58 ^{ab}
		F=4.093, p=0.019	F=5.449, p=0.005	F=3.407, p=0.036
Smoking				
Yes	14 (9.2)	82.21 ± 13.48	5.42 ± 6.71	8.35 ± 5.55 ^a
Quitting	44 (28.9)	83.59 ± 16.10	4.18 ± 4.20	4.50 ± 4.65 ^b
No	94 (61.8)	80.42 ± 14.76	5.88 ± 5.30	6.12 ± 4.63 ^{ab}
		F=0.678, p=0.509	F=1.632, p=0.199	F=3.923, p=0.022
Alcohol Use				
Yes	5 (3.3)	85.80 ± 15.9	0.00 ± 0.00 ^a	3.00 ± 2.64
Quitting	19 (12.5)	85.52 ± 11.53	2.73 ± 3.28 ^b	5.00 ± 3.88
No	128 (84.2)	80.74 ± 15.57	5.94 ± 5.27 ^c	6.10 ± 4.97
		F=1.049, p=0.353	F=6.351, p=0.002	F=1.350, p=0.262
Anxiety				
Yes	27 (17.8)	79.11 ± 19.94	14.44 ± 2.72	10.96 ± 4.21
No	125 (82.2)	82.02 ± 13.78	3.38 ± 3.03	4.76 ± 4.20
		t=0.723, p=0.475	t=-18.746, p<0.001	t=-6.952, p<0.001
Depression				
Yes	50 (32.9)	78.90 ± 16.90	9.60 ± 5.22	11.68 ± 3.19
No	102 (67.1)	82.78 ± 13.93	3.26 ± 3.68	3.00 ± 2.18
		t=1.503, p=0.135	t=-7.694, p<0.001	t=-19.610, p<0.001

HFSPSS: Hospital Foos Service Patient Satisfaction Scale**Participants include civil servants, freelancers, workers and students.
t Independent sample t test, F One-way analysis of variance,^{a,b,c} Post hoc. Different letters indicate a significant difference.

Table 2. Evaluation of HFSPSS, anxiety and depression scores of the participants according to nutritional status

	n (%)	HFSPSS Score ($\bar{x} \pm SD$)	Anxiety Score ($\bar{x} \pm SD$)	Depression Score ($\bar{x} \pm SD$)
NRS First Evaluation				
Only preliminary assessment	113 (74.3)	83.38 ± 13.93	4.90 ± 4.85	5.47 ± 4.72
Main assessment	39 (25.7)	76.05 ± 16.86	6.64 ± 5.90	6.97 ± 4.97
		t=2.682, p=0.008	t=-1.821, p=0.071	t=-1.682, p=0.095
NRS Main Assessment Score				
< 3	21 (53.8)	75.85 ± 16.86	4.71 ± 5.24	6.23 ± 5.20
≥ 3	18 (46.2)	76.27 ± 17.34	8.88 ± 5.95	7.83 ± 4.68
		t=-0.077, p=0.939	t=-2.327, p=0.026	t=-0.999, p=0.324
BMI Classification (kg/m²)				
< 25.00	35 (23.0)	82.02 ± 13.85	5.00 ± 5.36	5.65 ± 5.03
25.00 - 29.99	55 (36.2)	78.92 ± 16.29	5.50 ± 5.64	6.01 ± 5.47
≥ 30.00	62 (40.8)	83.50 ± 14.38	5.40 ± 4.69	5.83 ± 4.08
		F=1.383, p=0.254	F=0.107, p=0.898	F=0.060, p=0.941
Neck Circumference				
Normal	30 (19.7)	77.93 ± 16.59	5.16 ± 5.22	5.26 ± 4.37
Risky	122 (80.3)	82.38 ± 14.55	5.39 ± 5.18	6.00 ± 4.92
		t=-1.459, p=0.147	t=-0.214, p=0.831	t=-0.754, p=0.452

HFSPSS: Hospital Foos Service Patient Satisfaction Scale
t Independent sample t test, F One-way analysis of variance

Table 3. Anxiety and depression scores, anthropometric measurements and nutrient intakes of the participants according to quartiles of the HFSPSS score

	Q ₁ (0-73 points) (n=39) ($\bar{x} \pm SD$) / Median (Min-Max)	Q ₂ (74-83 points) (n=38) ($\bar{x} \pm SD$) / Median (Min-Max)	Q ₃ (84-95 points) (n=39) ($\bar{x} \pm SD$) / Median (Min-Max)	Q ₄ (96-100 points) (n=36) ($\bar{x} \pm SD$) / Median (Min-Max)	F/H	p
Age (years)	62.92 ± 9.47	63.86 ± 13.03	66.41 ± 8.48	64.52 ± 10.91	0.754	0.521
Anxiety score	6.64 ± 5.33 ^a	3.31 ± 3.38 ^b	5.53 ± 5.51 ^{ab}	5.88 ± 5.74 ^{ab}	3.026	0.031
Depression score	6.76 ± 5.46	5.00 ± 4.14	6.79 ± 5.33	4.77 ± 3.83	2.000	0.117
Body weight (kg) ^a	76.00 (52.00-148.00)	76.50 (46.00-125.00)	80.00 (48.00-110.00)	76.50 (50.00-104.00)	1.664	0.645
BMI (kg/m) ² ^a	28.08 (16.59-61.60)	26.88 (16.69-55.56)	29.13 (18.37-39.04)	29.78 (20.80-44.89)	1.096	0.778
Neck circumference (cm)	37.82 ± 4.05	37.50 ± 4.36	37.53 ± 2.44	38.00 ± 3.59	0.155	0.926
UMAC (cm)	29.75 ± 4.78	29.05 ± 5.14	29.10 ± 3.62	31.05 ± 3.93	1.641	0.182
Energy (kcal)	1367.18 ± 387.37	1451.79 ± 461.60	1432.58 ± 483.81	1434.36 ± 453.95	0.267	0.849
Protein (g)	57.61 ± 17.96	56.02 ± 18.72	57.01 ± 21.94	58.30 ± 23.77	0.081	0.970
Fat (g)	58.48 ± 19.57	65.34 ± 24.54	61.61 ± 23.56	57.32 ± 25.69	0.884	0.451
Carbohydrate (g)	147.64 ± 51.53	155.73 ± 53.57	157.65 ± 62.00	166.30 ± 53.08	0.720	0.542
Fiber (g)	14.64 ± 6.70	14.50 ± 5.75	17.11 ± 8.77	15.63 ± 7.63	1.052	0.372
Cholesterol (mg)	260.65 ± 163.93	269.37 ± 133.98	253.68 ± 156.60	210.69 ± 148.31	1.089	0.356
Vitamin A (µg) ^a	621.00 (201.92-2634.55)	693.82 (140.16-4961.20)	835.50 (138.15-2538.87)	625.73 (0.00-1913.79)	5.134	0.162
Vitamin D (µg) ^a	1.36 (0.20-4.03)	1.72 (0.13-8.07)	1.84 (0.10-10.44)	1.02 (0.00-4.28)	7.033	0.071
Vitamin E (mg) ^a	4.86 (1.57-37.91)	5.03 (0.75-16.39)	4.70 (1.67-24.44)	4.56 (0.98-24.68)	1.369	0.713
Vitamin K (µg) ^a	45.40 ^a (1.50-487.85)	96.50 ^b (1.50-954.20)	90.50 ^{bc} (3.60-471.74)	45.50 ^{abcd} (0.00-521.52)	9.149	0.027
Vitamin B ₁ (mg)	0.68 ± 0.24	0.68 ± 0.27	0.74 ± 0.34	0.74 ± 0.37	0.377	0.770
Vitamin B ₂ (mg)	1.32 ± 0.50	1.29 ± 0.54	1.27 ± 0.57	1.29 ± 0.66	0.035	0.991
Vitamin B ₆ (mg)	0.93 ± 0.37	0.85 ± 0.37	0.93 ± 0.49	0.94 ± 0.45	0.341	0.796
Vitamin B ₁₂ (µg)	3.76 ± 1.92	4.00 ± 2.09	3.91 ± 2.40	3.47 ± 2.47	0.405	0.750
Folate (µg)	215.55 ± 97.51	220.51 ± 106.76	261.76 ± 147.67	234.62 ± 140.97	1.072	0.363
Vitamin C (mg) ^a	77.39 (4.32-214.97)	62.96 (0.00-214.66)	72.11 (15.44-424.89)	71.23 (0.00-256.03)	1.864	0.601
Sodium (mg) ^a	2687.96 (713.55-8553.80)	3041.90 (628.00-4756.80)	2982.65 (738.00-6179.20)	3070.02 (555.00-5924.00)	3.329	0.344
Potassium (mg)	1912.99 ± 617.53	1887.65 ± 809.68	2018.24 ± 839.92	1951.07 ± 858.06	0.202	0.895
Calcium (mg)	742.41 ± 325.70	744.04 ± 348.23	687.80 ± 276.92	753.60 ± 365.13	0.315	0.815
Magnesium (mg)	199.08 ± 69.61	196.09 ± 77.42	201.07 ± 87.99	199.70 ± 80.40	0.027	0.994
Phosphorus (mg)	949.71 ± 316.34	947.96 ± 384.13	899.65 ± 359.37	931.82 ± 398.93	0.157	0.925
Iron (mg)	6.35 ± 2.74	6.58 ± 2.70	7.14 ± 3.46	6.83 ± 3.04	0.689	0.689
Zinc (mg)	8.08 ± 3.25	8.69 ± 3.74	8.96 ± 4.41	8.16 ± 3.96	0.462	0.709

HFSPSS: Hospital Foos Service Patient Satisfaction Scale, BMI: Body Mass Index, UMAC: Upper mid-arm circumference One-way analysis of variance, Kruskal wallis test, ^{ab,cd} Post hoc. Different letters indicate a significant difference.

ease. The results of the study showed that satisfaction with hospital food services was not affected by gender, age, marital status and educational status. Only retired patients were more satisfied with catering services compared to patients in other occupational groups. When anxiety and depression scores were evaluated; anxiety and depression scores of women and housewives were found to be higher than other patient groups (Table 1). In studies conducted on different populations, it has been determined that women have higher levels of depression and anxiety than men. Among the reasons for this situation, it was stated that learned helplessness, socioeconomic factors, inability to provide socialization at the desired level and emotionality.^{26,27}

When the relationship between satisfaction with hospital food services and anxiety and nutritional status was evaluated, it was found that patients at risk of malnutrition were less satisfied with hospital food services and had higher levels of anxiety (Table 2). In another study conducted in our country with 109 patients, no significant relationship was found between malnutrition risk and general satisfaction with hospital food services. However, this was explained by the limitations in the sample size of the study and the length of hospital stay of the individuals; the need for new studies including more variables was emphasized.²⁸ In a study conducted in Iran, it was concluded that plate wastage due to dissatisfaction with food services was associated with hospital malnutrition; it was reported that this issue should be considered as an important health problem and appropriate strategies should be adopted.²⁹ In a systematic review published on the subject, the relationship between malnutrition and hospital meal satisfaction was emphasized; it was stated that caterers should improve the process with appropriate interventions, especially for at-risk groups.³⁰

In various studies conducted with cancer patients, similar to the findings of our study, a significant relationship between malnutrition status and depression and anxiety scores was emphasized.^{13,31} The relationship between malnutrition and depression was also confirmed in a study conducted in chronic hemodialysis patients.³² In this study, it was determined that there was a relationship between malnutrition and anxiety in individuals with cardiovascular disease.

In our study, it was observed that anxiety scores decreased as individuals' satisfaction with hospital meals increased (Table 3). When this issue is examined in the literature, it is observed that the number of studies is limited. In a study conducted on the elderly, the general satisfaction of patients with hospital services was evaluated and depression was reported to affect the perceived quality of hospital care and satisfaction.³³ In a systematic review in 2019 that evaluated the factors affecting the satisfaction of elderly people with hospital food services, it was reported that there was no relationship between satisfaction with food services and mental health. However, this study also emphasized that more studies are needed to clarify this issue.³⁴ Our study will provide a new reference to the literature in this context.

CONCLUSION

In this study, satisfaction with hospital food services was associated with patients' malnutrition risk and anxiety level. Based on this result, it should be aimed to prevent hospital malnutrition and improve the mental health of patients by increasing satisfaction with hospital food services. In order to increase satisfaction with hospital catering services, it is important to improve the variety, taste, smell and freshness of meals that affect food quality. In addition, patients' preferences, perceptions, needs and complaints should also be taken into consideration.

Ethics Committee Approval: Ethics committee approval was received for this study from the Clinical Research Ethics Committee of Erciyes University (Date: 07.07.2021, Number: 2021/491).

Informed Consent: Written and/or verbal consent was obtained from the patients participating in the study.

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