Evaluation of the Level of Food Consumption and Satisfaction with Hospital Food Services in Elderly Inpatients
Hastanede Kalan Yaşlı Hastaların Yemek Hizmetinden Memnuniyetlerinin ve Yemekleri Tüketim Durumlarının Değerlendirilmesi

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Amaç: Hastanede yatan yaşlı hastaların kaldıkları süre boyunca beslenme durumlarının takip edilmesi iyileşme sürecinde önemli bir yer tutmaktadır. Hastanede servis edilen yemeklerden memnuniyet durumu hastaların tükettikleri miktarları etkilemektedir. Bu çalışma yaşlı hastaların hastane yemeklerinden memnuniyet durumlarının ve besin tüketimlerinin değerlendirilmesi amacıyla yapılmıştır.

Gereç ve Yöntemler: Bu çalışmaya Ocak-Haziran 2017 tarihleri arasında İstanbul, Türkiye'de bulunan çeşitli hastanelerin farklı servislerinde yatan 65 yaş ve üstü 90 (36 kadın, 54 erkek) gönüllü hasta dahil edilmiştir. Tüm gönüllü hastalara beslenme hizmetlerinin değerlendirilmesi anketi ve 24 saatlik geriye dönük besin tüketim kaydı yüz yüze görüşmelerde doldurulmuştur.

Bulgular: Yapılan bu çalışmada yaşlı hastaların cinsiyeti ve hastanede kalış süreleri ile yemek hizmetinden memnuniyetleri arasında anlamlı bir ilişki saptanmamıştır (*p*>0,05). Ancak erkek hastaların ve hastanede 7 günden fazla kalan hastaların yemek porsiyonlarını yeterince doyurucu bulmadığı saptanmıştır (*p*<0,05). Besin tüketim kayıtlarına göre hastaların %78,9'u yeterli enerji ve protein alırken, %94,4'ü önerilenden fazla tuz ve %63,3'ü fazla yağ tüketmektedir.

Sonuç: Sonuç olarak hastanede yatan yaşlı hastaların protein ve enerji tüketiminin yeterli olduğu saptanmıştır. Bununla birlikte, hastalar hastanede yatış süresi boyunca aşırı miktarda diyet yağı ve tuz tüketmektedir. Bu durum, hastane yemek servislerinin gözden geçirilmesi gerektiğini göstermektedir.

Anahtar Kelimeler: Geriatri, beslenme durumu, yemek hizmetleri

Aim: Monitoring the nutritional status of geriatric inpatients during their stay in hospital plays an important role in the recovery process. Satisfaction with the meals served in hospital affects the amount consumed by the patient. The aim of this study was to evaluate food consumption and satisfaction with hospital food services in elderly inpatients.

Material and Methods: This study was conducted with 90 (36 female, 54 male) volunteer inpatients aged 65 and over; the patients were staying in different wards of various hospitals located in Istanbul, Turkey. The study took place between January and June 2017. The assessment of food services and the 24-hour dietary recalls were collected via face-to-face interviews.

Results: In this study, no significant relationship was found between gender or duration of hospital stay and satisfaction with food service (*p*>0.05). However, it was found that male patients and patients staying in the hospital for more than 7 days did not find the food portions satisfactory (*p*<0.05). According to the food consumption records, 78.9% of the patients' intake of energy and protein was sufficient, whereas 94.4% of the patients were found to be consuming more salt and 63.3% of the patients were consuming a higher rate of dietary fat than recommended.

Conclusions: As a result, it was determined that protein and energy consumption in elderly inpatients was sufficient. However, patients consume excessive amounts of dietary fat and salt during hospitalization. This indicates that hospital food services should be reviewed in this respect.

Keywords: Geriatrics, nutritional status; food services

INTRODUCTION

In the last 5 years, the older adult population (65+) in Turkey has increased by 17%; in 2017, the older adult population was 6,895,385. While the ratio of older adult population to total population was 7.7% in 2013, this ratio increased to 8.5% in 2017 (1). Many different health problems can occur during old age. These health problems vary according to nutrition status, environmental and/or physiological factors. The most common diseases seen in the older adults population are hypertension, stroke, type 2 diabetes, osteoporosis, cancer, cardiovascular diseases, kidney diseases and neurological diseases (2).

Institutions that provide mass nutrition services are obliged to provide services in accordance with the characteristics of the consumer population (students, patients, workers, etc.) (3). Patient meals are an important part of the treatment for inpatients and a balanced diet is essential for the healing process (4). Providing a balanced diet for patients during their stay in hospital will shorten the length of hospital stay as well as provide psychological and economic support. It may also help to prevent comorbidities that can develop in bed-dependent patients (5). One of the major comorbidities that occur in older adults who have been hospitalized is malnutrition.

Malnutrition is known to be one of the major problems for elderly patients and causes a decrease in health-related quality of life (HRQOL) (6). Observational studies show that malnutrition is frequently diagnosed in elderly patients who have been admitted to hospital; malnutrition is also known to be associated with serious health problems and a poor outcome (4). Several problems, for example, poor appetite, difficulty in chewing and swallowing or in cutting food are associated with old age. These can adversely affect dietary intake in elderly patients and contribute to a worsening of their nutritional status (7). Epidemiological studies demonstrate that 5-10% of the non-institutionalized older adults suffer from malnutrition. This rate increases to 26% in elderly patients who have been admitted to hospital with acute conditions, and to 30-60% for those in long-term care units and nursing homes (8). Monitoring patient satisfaction with food service in an acute care setting can be a component of a risk management strategy for malnutrition; where satisfaction with food and service declines, the risk for malnutrition increases (9). The primary aim of treating elderly patients is to improve their quality of life and reduce mortality, and thus reducing the burden of healthcare services. For these reasons, it is necessary to consider the factors that affect quality of life in elderly patients (10). Better quality nutrition service has a positive effect on the quality of life and nutritional status in the older adults. Therefore, determining satisfaction with nutrition services is an important part of quality improvement studies (11).

This study was carried out to evaluate satisfaction with hospital food services and the food consumption status in elderly patients (>65 years old) who had been admitted for at least 1 night to hospital.

MATERIAL AND METHODS
Setting and design

This study was conducted between January and June 2017 at various hospitals in Istanbul, Turkey. Elderly patients, that is patients aged 65 and older, who had no problems in communication or understanding and who had been admitted to hospital for 1 day or more were included in the study. A total of 90 volunteer elderly patients (36 female, 54 male) participated in the study. Marmara University School of Medicine Ethics Committee approved the study. Participants in the study were informed that the information would only be used for research purposes and verbal and written approval were taken.

Data collection

The data related to all patients were obtained via a questionnaire which was completed in face-to-face interviews. The survey form included demographic information for the individual, a 5-point Likert-type scale form for measuring the level of satisfaction of the respondent with nutrition services, and a 24-hour dietary recall to determine the consumption of energy and nutrients. The energy and nutrient intake of the patients was compared to Turkey Nutrition Guide 2015 (12).

Statistical analysis

The Kolmogorov–Smirnov test was used to assess the normality of the distributions; the distribution of the variables was normal. Statistical comparisons between the groups were performed using a t-test for independent samples. The measure of the strength and direction of association that exists between two continuous variables were performed using the Pearson's correlation test. Data are shown as the mean and standard deviation. The nominal variables were analyzed using the χ^2 test. $p<0.05$ was considered significant. All statistical analyses were performed using the PSPP 1.2.0 program.

RESULTS

The mean age of the patients was 71.58 ± 6.39 and 60% (n = 54) of the participants were male. In terms of education, 13.3% of the patients were illiterate (n = 12), 11.1% were literate with no formal education (n = 10), 46.7% were primary school graduates (n = 42), 11.1% were secondary school graduates (n = 10), 11.1% were high school graduates (n = 10), 6.7% were university graduates (n = 6). The demographic characteristics of the patients are presented in Table I.

Table I also shows the information about length of hospital stay and the services that the patients received in hospital. Of the elderly patients who were included in the study, 48.9%

(n= 44) were hospitalized for 7 days or less and 51.1% (n= 46) for more than 7 days.

Table I. Demographic characteristics of the patients

	n	%
Gender		
Male	54	60.0
Female	36	40.0
Marital Status		
Single	25	27.8
Married	65	72.2
Education Level		
Illiterate	12	13.3
Literate	10	11.1
Primary School	42	46.7
Secondary School	10	11.1
High School	10	11.1
University	6	6.7
Length of hospital stay		
≤ 7 days	44	48.9
> 7 days	46	51.1
Inpatient Clinics		
Internal Medicine	34	37.8
Neurology	11	12.2
Ophthalmology	4	4.4
Orthopedics	6	6.7
Cardiology	13	14.4
Rheumatology	4	4.4
Urology	9	10.0
Pulmonology	9	10.0

Table II shows the satisfaction with the quality of food services according to gender. Of the 90 elderly patients that participated in the study, 1 female patient (1.1%) found the food service to be unsatisfactory, 14 patients (15.6%) found it slightly satisfactory, 20 (22.2%) found the food services moderately satisfactory, 38 (42.2%) found the food services satisfactory and 17 (18.9%) found it more than satisfactory. There was no statistically significant relationship between food service satisfaction and gender ($p>0.05$).

Table II. Distribution of satisfaction with the quality of nutrition services by gender

| | Gender | | | | | |
| | Female | | Male | | Total | |
	n	%	n	%	n	%
Not Satisfied	1	1.1	0	0	1	1.1
Slightly Satisfied	4	4.4	10	11.2	14	15.6
Moderately Satisfied	8	8.9	12	13.3	20	22.2
Satisfied	18	20.0	20	22.2	38	42.2
Extremely Satisfied	5	5.6	12	13.3	17	18.9
Total	36	40	54	60	90	100.0

When the effect of education status on satisfaction with food service was examined, the group with the highest level of satisfaction was university graduates and postgraduates (71.5%), followed by literate and primary school graduates (66.1%), while the lowest satisfaction level was found in secondary school and high school graduates (44.5%). There was no significant relationship between education levels and satisfaction status ($p>0.0.5$).

In Table III the satisfaction with the quality of food services according to the length of hospital stay is shown. Of the 44 patients who stayed in the hospital for 7 days or less 10.0% (n=9) were extremely satisfied and of the 46 patients who stayed longer than 7 days 8.9% (n=8) were extremely satisfied with the food service. All of the patients staying in the hospital for 7 days or less were satisfied with the food service, whereas 1.1% (n = 1) of those staying longer than 7 days was not satisfied. There was no significant correlation between satisfaction with the total quality of nutrition services and the length of hospital stay ($p>0.05$).

The distribution of daily energy and nutrient intake which has been evaluated from a 24-hour dietary recall of the patients participating in the study is given in Table IV. It was observed that the energy (78.9%) and protein (78.9%) intake during the hospital stay was adequate in most patients. Inadequate iron intake was observed in 53.3% (n=48) of the patients. As for excessive nutrients, 63.3% (n=57) of the patients consumed more dietary fat than required and 94.4% (n=85) of the patients consumed more salt than required for

Table III. Satisfaction with the quality of nutrition services according to the length of hospital stay

| | Length of Hospital Stay | | | | | |
| | ≤ 7 days | | > 7 days | | Total | |
	N	%	n	%	n	%
Not Satisfied	0	0	1	1.1	1	1.1
Slightly Satisfied	5	5.6	9	10.0	14	15.6
Moderately Satisfied	13	14.4	7	7.8	20	22.2
Satisfied	17	18.9	21	23.3	38	42.2
Extremely Satisfied	9	10.0	8	8.9	17	18.9
Total	44	48.9	46	51.1	90	100

Table IV. Daily energy and nutrient distribution in the geriatric patients

	Inadequate n (%)	Adequate n (%)	Excessive n (%)
Energy (kcal)	2 (2.2%)	71 (78.9%)	17 (%18,9)
Carbohydrate (%)	48 (53.3%)	41 (456%)	1 (1.1%)
Protein (%)	1 (1.1%)	71 (78.9%)	18 (20%)
Dietary Fat (%)	0 (0.0%)	33 (36.7%)	57 (63.3%)
Cholesterol(mg)	*	55 (61.1%)	35 (38.9%)
Calcium (mg)	19 (21.1%)	67 (74.4%)	4 (4.4%)
Iron (mg)	48 (53.3%)	41 (45.6%)	1 (1.1%)
Phosphor (mg)	0 (0.0%)	4(4.4%)	86 (95.6%)
Sodium (mg)	*	3 (3.3%)	87 (96.7%)
Potassium (mg)	7 (7.7%)	83 (92.3%)	0 (0.0%)
Magnesium (mg)	24 (26.7%)	65 (72.2%)	1 (1.1%)
Zinc (mg)	26 (28.9%)	61 67.8%)	3 (3.3%)
Copper (mg)	16 (17.8%)	68 (75.6%)	6 (6.7%)
Iodine (mcg)	5 (5.6%)	59 (65.6%)	26 (28.9%)
Vitamin A (mcg)	8 (8.9%)	35 (38.9%)	47 (52.2%)
Vitamin E (mcg)	6 (6.7%)	47 (52.2%)	37 (41.1%)
Vitamin K (mcg)	0 (0.0%)	3 (3.3%)	87 (96.7%)
Vitamin B_{12} (mcg)	31 (34.4%)	46 (51.1%)	13 (14.4%)
Vitamin B_6 (mg)	30 (33.3%)	60 (66.7%)	0 (0.0%)
Folic Acid (mcg)	28 (31.1%)	60 (66.7%)	2 (2.2%)
Niacin (mg)	0 (0.0%)	2 (2.2%)	88 (97.8%)
Thiamine (mg)	58 (64.4%)	32 (35.6%)	0 (0.0%)
Riboflavin (mg)	3 (3.3%)	64 (71.1%)	23 (25.6%)
Biotin (mcg)	7 (7.8%)	79 (87.8%)	4 (4.4%)
Pantothenic Acid (mg)	10 (11.1%)	78 (86.7%)	2 (2.2%)
Dietary Fiber (gr)	15 (%16,7)	56 (%62,2)	19 (21.1%)
Salt (gr)	*	5 (5.6%)	85 (94.4%)

* Inadequate intake limit was not reported.

their age group.

The average energy consumption of patients staying in hospital for 7 days or less was 1.397 kcal / day; similarly, patients who stayed more than 7 days were found to be consuming 1.392 kcal / day on average. There was no significant difference between duration of hospital stay and daily energy or nutrient consumption ($p>0.05$). The distribution of energy and nutrients according to length of hospital stay is shown in Table V.

According to the data obtained, it was found that men stated the portions of the hospital meals were significantly less satisfying as compared to women ($p=0,020$).

A significant relationship was found that as the length of hospital stay increased, satisfaction with the portion size of hospital meals significantly decreased ($p=0,045$).

DISCUSSION

The average age of the elderly patients who were interviewed was 71.58 ± 6.39 years (upper and lower values: 65.0 -91.0 years); 40% of the patients were female and 60% were male. When the educational status of the patients was examined it was found that 11.1% of them were literate with no formal education (n = 10) and 46.7% were primary school graduates (n = 42). In a similar study conducted in Turkey it was shown that the

Table V. Distribution of nutrient consumption according to length of hospital stay

	≤ 7 days	>7 days	p
Energy (kcal)	1,397 ±303.66	1,392 ±294.67	0.578
Carbohydrate (%)	42.93 ±9,59	44.26 ±6.04	0.555
Protein (%)	18.77 ±3.34	17.62 ±3.00	0.084
Dietary Fat (%)	38.29 ±9.16	37.93 ±6.42	0.737
Saturated fat (g)	21.23 ±8.36	21.32 ±7.64	0.910
Cholesterol (mg)	258.10 ±121.28	251.70 ±99.00	0.897
Calcium (mg)	849.98 ±230.54	796.3 ±241.37	0,388
Iron (mg)	10.88 ±3.12	10.95 ±2.70	0.806
Phosphor (mg)	1232.10 ±277,60	1191.30 ±271.75	0.678
Sodium (mg)	3575.00 ±1118.90	3435.90 ±967.46	0.567
Potassium (mg)	2340.90 ±593.73	2317.70 ±532.21	0.878
Magnesium (mg)	266.11 ±73.72	272.5 ±64.40	0.583
Zinc (mg)	10.31 ±2.94	9.89 ±2.52	0.603
Copper (mg)	1.37 ±0.38	1.42±0.34	0.563
Iodine (mcg)	178.06 ±51.60	165.65 ±48.51	0.243
Vitamin A (mcg)	1026.90 ±518.40	1039.40 ±460.63	0.759
Vitamin D (mcg)	1.28 ±0.86	1.23 ±0.78	0.707
Vitamin E (mcg)	15.43 ±5.64	14.84 ±4.64	0.611
Vitamin K (mcg)	421.04 ±223.32	422.64 ± 155.71	0.634
Vitamin B$_{12}$ (mcg)	3.81 ±1.79	3.33 ±1.60	0.211
Vitamin B$_6$ (mg)	1.16 ±0.29	1.18 ± 0.24	0.781
Folic Acid (mcg)	257.85 ±84.3	261.00 ±71.7	0.849
Vitamin C (mg)	97.47 ±51.60	92.73±38.63	0.622
Niacin (mg)	20.60 ±6.70	19.32±5.48	0.325
Thiamine (mg)	0.71±0.21	0.72±0.20	0.852
Riboflavin (mg)	1.45 ±0.33	1.34 ± 0.31	0.121
Biotin (mcg)	37.86 ± 9.11	37.02 ±7.63	0.636
Pantothenic Acid (mg)	4.59±1.03	4.40±0.90	0.374
Dietary Fiber (gr)	25.17±10.00	25.88±7.33	0.701
Salt (gr)	8.82 ±2	8.47 ±2	0.539

education level of the older adult population staying in hospital is generally literate with no formal education and primary school graduate (13).

It was found that most of the patients staying in hospital were satisfied by the food services. This may be a result of the fact that the study was conducted at hospitals with a sufficient number of dieticians and therefore there was a continuous control of meals and food service. In this study, it was found that gender and length of hospital stay did not affect overall satisfaction (p>0.05). Two similar studies that were conducted in Turkey and Australia found no significant difference between gender and satisfaction (14, 15).

The group with the highest level of satisfaction was university graduates and postgraduates (71.5%), followed by literate and primary school graduates (66.1%), while the lowest satisfaction level was found in secondary school and high school graduates (44.5%). There was no significant relationship between education levels and general satisfaction status in our study (p>0.05). In another study conducted in the province of Istanbul, when the effect of education levels of the patients on general satisfaction was examined, it was observed that the group with the highest level of satisfaction was the illiterate group (83.3%), while the university and primary school graduates (75.7% -74.4%) followed in second and third place; the group with the lowest

satisfaction level was found to be the literate group (50%). Similar to our study, no statistically significant relationship was found between the educational levels of the participants and their general satisfaction levels (16).

According to our results, no statistically significant relationship was found between length of hospital stay and general satisfaction of the patients (*p*>0.05). Contradictorily, in 2003 Stanga et al. found a negative correlation between the length of hospital stay and general satisfaction; as the duration of hospital stay increases, the overall satisfaction of the patients decreases (17).

In our study, 78.9% of the elderly patients were able to meet the daily energy intake requirements adequately according to 24-hour individual food consumption records. Contrary to our study, in a study that was held at a hospital in Malaysia, 120 patients aged 60 years and older were included. It was reported that 85.8% of the elderly patients were not able to meet their energy requirements according to their daily food consumption (18). In a study conducted with 211 elderly patients in a hospital in the Turkish Republic of Northern Cyprus, when food consumption was examined, it was found that 69.2% of the patients with normal nutritional status and 66.7% of the patients with malnutrition risk / malnutrition had inadequate daily energy intake (19). It was found that the length of hospital stays of the elderly patients did not affect their food intake; this may be due to the high satisfaction levels with food services in the study.

CONCLUSIONS
We demonstrated that in Istanbul, Turkey, elderly inpatients are getting adequate nutrition. However, the fact that patients consumed an excessive amount of dietary fat and salt over the period of hospitalization suggests that hospital meals may need to be re-

84

evaluated in this respect. In conclusion, it is necessary to cooperate with dietitians and other health professionals in the management of hospital food services, as it is well known that satisfaction affects the nutrient intake of patients.

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85

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