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Malnutrion and inadequate food consumption in hospitalized patients

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Abstract

Aim: To evaluate the nutritional status of hospitalized patients and the consumption of foods offered in the hospital and to assess the factors affecting their food consumption.

Materials and Methods: Patients over 18, who were hospitalized in the internal medicine clinics for at least 72 hours and could take oral food, were included in the study. Patients' anthropometric measurements, demographic characteristics, and current diseases were recorded, and NRS 2002 scores were calculated. The primary endpoint was to determine the patients' food consumption in the hospital and the reasons for insufficient consumption. The secondary endpoint was the comparison of the results according to the NRS score.

Results: A total of 200 patients participated in the study. The mean age was 66±18 years. NRS≥3 was in 48% of patients (n=96) and the body mass index of these patients was lower than patients with NRS<3 (27±5 vs. 25±5; P= 0.002). They were older (60±18 vs. 73±14; p= 0.005), and their duration of hospitalization was longer (5±3 vs. 7±7; p= 0.03). In the group with NRS≥3, the rate of receiving nutritional support was 38.5%. In the whole group, the rate of consuming less than half of the hospital food was 75% and 86.5% in those with nutritional risk. When the factors affecting the preference of hospital meals were questioned, answers varied, such as not serving the food at the appropriate temperature, sour taste of the food, inconsistency of the foods on the menu in terms of taste and content. Only 4% of patients stated that they would prefer hospital menus as their diet menu at home.

Conclusion: Half of the patients hospitalized in the internal medicine clinic are at risk of malnutrition. Nutritional support is also insufficient. To reduce inadequate food consumption during hospitalization, the causes should be analyzed, and measures should be taken.

Introduction

Malnutrition is characterized as a pathological condition that causes noticeable adverse events in the body and body functions because of low or high intake of energy, protein, and other nutrients, and therefore reduces survival. Complications such as low daily food intake, increased daily need due to illness, and malabsorption due to the underlying disease led to malnutrition [1]. The decrease in food intake, along with the increase in energy needs during hospitalization, worsens malnutrition in all patients, including those who were not initially malnourished. Malnutrition is associated with increased mortality, morbidity, duration of hospitalization, and increased costs. It has also been associated with adverse outcomes such as the increased risk of infection and complications, poor wound healing [2]. The incidence of malnutrition in hospitalized patients is 20-50% [3]. In our country, 29139 patients were evaluated according to the data of the study conducted by the (Society of Clinical Enteral Parenteral Nutrition) KEPAN Association between 2005 and 2006, which lasted for six months, and carried out in 34 centers in 19 provinces, and found an average of 15% malnutrition risk during the first hospitalization in hospitalized patients [4]. In internal medicine clinics, this rate varies between 8 and 24%. The European Society for Clinical Nutrition and Metabolism (ESPEN) [5] and the KEPAN recommend evaluating the nutritional

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status of all hospitalized patients within the first 24-72 hours. ESPEN recommends weekly reevaluation of patients with NRS-2002 score <3 and no malnutrition [5]. The aim of our study is to assess the nutritional status of our patients hospitalized in the internal medicine clinics of our hospital, to evaluate the consumption of foods offered in the hospital, and the factors affecting their food consumption.

Materials and Methods

The study was conducted in Istanbul Medeniyet University Goztepe Training and Research Hospital Internal Diseases Clinics. All patients over the age of 18 who had been hospitalized for at least 72 hours and could take oral food were included in the study. An informed consent form was obtained from the patients. Exclusion criteria were severe dementia or cognitive status unable to answer questions, tube, or parenteral nutritional support.

In our single-center cross-sectional study, 200 patients hospitalized in internal medicine, sub-branches of internal medicine, and neurology services of our hospital between April and July 2017 were subsequently evaluated. Demographic characteristics, anthropometric measurements (age, height, weight) of the patients whose current diseases were recorded, and NRS 2002 scoring was calculated.

Malnutrition screening of the patients was performed using Nutritional Risk Screening-2002 Test (NRS-2002), and the scores were recorded and analyzed. In accord with the NRS-2002 screening test, patients with scores ≥3 were at risk of malnutrition, and those with NRS scores of <3 were considered individuals without malnutrition risk [6]. Bodyweight (kg) and height (m) were measured while subjects wore light clothing and no shoes. The body mass index (BMI; kg/m^2) was calculated as weight in kilograms divided by height in square meters.

Consumption of the hospital meal was observed and recorded. The patients' comments about the meals served to the patients were questioned. The reasons leading to insufficient consumption in patients who consume deficient nutrients were investigated. The primary endpoint was to determine the consumption of hospital meals and the causes of insufficient consumption of inpatients in internal clinics, while the secondary endpoint was to compare the results obtained according to the NRS score.

The study was conducted in adherence to the Declaration of Helsinki II. The study protocol was approved by the local ethics committee (Istanbul Goztepe Training and Research Hospital Ethics Committee, Approval Date:23.03.2017, Approval Number: 2017/0128).

Statistical analysis

Population and studied groups were analyzed with descriptive statistics. Categorical variables (gender, previous hospitalization history, chronic disease history, factors affecting food consumption rates, food consumption amounts, NRS score, receiving nutritional support, presence of a companion accompanying a patient) were described by frequency and percentage and continuous variables (age, BMI, length of hospital stay) with mean ± standard deviation (SD) or median. Normal distribution of variables was examined by Kolmogorov Smirnov test and Shapiro-Wilk test. The differences within the studied groups were calculated with Chi-square test, ManneWhitney U Test, Fisher Exact Test or t-test depending on the variable type. A p value less than 0.05 was considered significant. Statistical analyses were performed using the SPSS version 21.0 software package (IBM SPSS, Chicago, USA)

Results

Two hundred patients (100 female, 100 male) participated in the study. The mean age was 66±18 years.

NRS score was ≥3 in 48% (n=96) of the patients. Body mass index of patients with NRS score ≥3 was significantly lower than patients with NRS score <3 (27±5 vs. 25±5 kg/m2 P= 0.002), their age was older (60±18 vs. 73±14; p = 0.005), and the length of hospital stay was significantly longer (5±3 vs. 7±7 p= 0.03).

Three out of four patients in the study had a history of previous hospitalization. The hospitalizations in the last 2 years were similar in the two groups with and without NRS scores ≥3 (p=0.15).

Eighty percent of the patients had a chronic disease, and 77% of the patients with NRS<3 and 79% of the patients with NRS≥3 followed a diet specific to their chronic disease. The rate of receiving nutritional support in the group with NRS score ≥3 was 38.5% (n=37). When the reasons for not taking nutritional supplements were questioned, 57.3% of the patients declared that the doctor did not recommend it, 37.5% did not know, and 5.2% said that the patient did not want to use it (Table 1).

In the whole group, the rate of consuming less than half of the food taken in the hospital was 75%, and 86.5% in those with basal nutrition risk (Table 1). When the factors affecting the consumption of hospital meals were questioned, 75% of the patients said that the food was not served at the appropriate temperature, 70.5% did not like the taste of the food, 72.5% of the patients complained that the foods on the menu were not compatible with each other in terms of content and taste, only 4% of the patients stated that they would prefer hospital menus as diet menus after discharge from the hospital (Table 2).

Discussion

Our aim was to take a picture of the conditions that affect and prevent clinical nutrition in our hospital, and as a result, it was seen that half of the patients in the internal medicine clinic were at risk of malnutrition, and most of them consumed less than half of the food service. Studies have reported that the rate of patients who are found to be malnourished at the first hospitalization is 20-50% [7,8].

The British Association for Parenteral and Enteral Nutrition (BAPEN) states that approximately one-third of patients admitted to hospitals acutely are malnourished [9]. Although malnutrition is common in all age groups, its prevalence in elderly individuals (>65 years; 32%) is significantly higher (23%) than in individuals under 65 years of age [3]. In our study, patients with NRS≥3 were significantly older than patients with NRS<3. Considering the reasons such as nutritional desire, habits, loss of chewing power, and increase in comorbidities with advancing age, this was an expected result.

Table 1. Patients' demografic characteristics and their nutritional status survey answers.

	All patients (n=200)	Patients with NRS<3 (n=104)	Patients with NRS≥3 (n=96)	p value
Gender (F)	100	53	47	0.77
Age, years	66±18	60±18	73±14	0.005
BMI, kg/m^2	26±5	27±5	25±5	0.002
Hospitalization time (day)	6±5	5±3	7±7	0.03
Previous hospitalization history	150 (75%)	74	76	0.15
Chronic disease history	160 (80%)	79 (76%)	81 (84.4%)	0.137
Having a special diet for a chronic disease	156 (78%)	80 (77%)	76 (79%)	0.702
Nutritional support	50 (25%)	13 (12.5%)	37 (38.5%)	
Reasons for not receiving nutritional support				0.001
-Not recommended by physician			55 (57.3%)	
-Patients' reluctance			5 (5.2%)	
-Unknown			36 (37.5%)	
Presence of a companion accompanying a patient	171 (85.5%)	81 (77.9%)	90 (93.8%)	0.001
The amount consumed from hospital meals in a day				
Full	50 (25%)	37 (35.6%)	13 (13.5%)	0.001
Half	53 (26.5%)	27 (26%)	26 (27.1%)	
A third	70 (35%)	32 (30.8%)	38 (39.6%)	
None	27 (13.5%)	8 (7.7%)	19 (19.8%)	

While the mean BMI of patients with NRS ≥3 was 25 kg/m^2, patients with NRS <3 were overweight.

Table 2. Factors affecting food consumption rates.

Questions	n (%)
Three main meals are served	197 (98%)
Snacks are served	69 (34.5%)
Hot meals available	84 (42%)
Foods look attractive	59 (29.5%)
Meals are suitable within each other in terms of taste, smell and texture	55 (27.5%)
Hospital meals are more delicious than what I eat at home	6 (3%)
I plan to use hospital meals as a role model at home	4 (2%)
There is a feedback opportunity for the meals served	
Yes	3 (1.5%) (with no reply)
No	14 (7%)
Unknown	183 (91.5%)
Offering a choice of meals	0
Meals are served coincidentally with procedures or examination durations	27 (13.5%)
If yes, meals are re-serviced later	9 (3.3%)
I bring my own food	99 (49.5%)
From home	63 (63.6%)
From canteen	35 (35.4%)
Online order	1 (1%)
I skipped at least one main meal during my hospital stay	110 (55%)

It is recommended to regularly evaluate and improve hospitalized patients' nutritional status to reduce the risk of malnutrition. In the Nutrition Day 2006 questionnaire, the cross-sectional food consumption of 16.290 hospitalized patients on the same day (January 19, 2006) was evaluated, and it was observed that more than half of the patients did not consume the meals given by the hospital in some way [10]. On the other hand, Bauer et al. stated that approximately 50% of the patients ate half or less of their meals and that nutritional disorders were observed four times more frequently in these patients than in patients who ate more than half of their meals [11]. Malnutrition seen in hospitals may develop due to patient-related reasons, and it is also affected by the quality of food services. The quality of hospital food services depends on many factors; In addition to the elements such as the taste, appearance, and temperature of the food, the hygiene, attitudes, and behaviors of the personnel are also effective.

In the hospital environment, the patients' eating habits may change, and they may have difficulty in adapting to this situation. For sick individuals to understand this change, they should be informed by the dietician/nutrition specialists working in the hospital [12].

A Turkish study on patient satisfaction showed that patients who liked hospital meals were approximately 30% [13].

In another Turkish study dealing with patient satisfaction from different aspects, it was found that, in general, patients were most satisfied with nursing services and least satisfied with food services [14].

In the study conducted by Messina et al. on 603 patients, the patients were satisfied with the staff and food service; however, it was determined that they were not satisfied

with the food quality. In this study, it was reported that the factor affecting patient satisfaction the most was "food quality" [15].
In our study, however, it was observed that only one-fourth of the patients completely finished their daily meals. Another striking result was that less than half of the patients were able to have their meals at their desired temperature. In some studies, it has been established that not only meals but also food services affect malnutrition. In addition to the quality of the food, the person presenting it, the way it is presented, and the appearance of the food is also effective in terms of patient satisfaction, as declared before. It has been stated that the main factor affecting patient satisfaction is the factors related to food service rather than food quality [16].
In the study conducted by Çelikkalp et al., it was reported that the satisfaction level of the patients was 53.6% (moderate) [17].
Components related to catering services that patients were less satisfied with; the taste of the food is insufficient, it is not in adequate and satisfying quantities, and it is not at an acceptable temperature.
Another study showed that the distribution of food on a tray has more negative consequences than the distribution of food on separate porcelain plates for each dish [18]. Factors that reduce patients' food intake are explained as the patient starving, leaving residue on the plate, or missing the mealtime due to the examination [19].
Patients report that the service they remember the most after discharge is nutrition services. In addition to the quality of the food, the person presenting it, the way it is presented, and the appearance of the food is also effective in terms of patient satisfaction, as stated before. Although patients generally have negative thoughts about diet food, they can evaluate food services as "good" when the presentation style is good [20].
In another study, some patients affirmed that they were uncomfortable with oily food [21].
It is reported that when the serving temperature and consistency of the meals are adjusted according to the wishes of the patients, the food consumption increases and how effective the food services are in the prevention of hospital malnutrition. Another factor that increases the consumption of patients is room service. Caring for patients and serving meals to their rooms according to mealtimes increases patient satisfaction [22]. Malnutrition is not only a condition that causes problems during hospitalization in patients. It is also associated with long-term complications after discharge. Therefore, the need for rehabilitation has increased compared with patients without malnutrition. Studies have shown that patients with malnutrition have a shorter survival time and/or a higher rate of re-admission to the hospital in the post-discharge follow-up period [23]. Inadequate monitoring and definition of nutritional status, insufficient food intake, the effect of diseases on food intake, digestion and absorption, the risk of malnutrition before coming to the hospital, and problems with the standard order of the hospital (food service type, time, diets applied), the high rates observed in patients staying in the hospital are the most important causes of malnutrition prevalence. Therefore, systemic evaluation of these causes and taking necessary precautions are necessary for the treatment of malnutrition [24,25].
The limitations of this study are the small number of patients and its single-center design.

Ethics approval

The study protocol was approved by the local ethics committee (Istanbul Goztepe Training and Research Hospital Ethics Committee, Approval Date: 23.03.2017, Approval Number: 2017/0128).

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