



# Longitudinal Changes in the Eating Habits of Patients with Cancer Receiving Palliative Care

## Hastalık Sürecinde Palyatif Bakım Hastalarında Yeme Alışkanlığı Değişimi

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### ABSTRACT

**Objective:** Nutritional changes are frequently observed in patients with cancer because of multiple symptoms. This study aimed to determine food types most preferred by the patients and most suitable to them and to identify methods to enrich these food options in the future.

**Methods:** This cross-sectional, descriptive study was conducted on 151 patients at Tokat Gaziosmanpaşa University Palliative Care Center. Demographic data, nutritional habits, and food preferences were obtained using a questionnaire. The Karnofsky performance scale (KPS) was also used.

**Results:** Of the 151 patients, 53.6% (n=81) were male, and the mean patient age was 62.7±14.7 years. Moreover, 47% (n=71) of the patients were bothered by the food odor; specifically, 27.8% reported that the food had a disturbing smell. The average KPS score was 63.9±15.0 points. The mean KPS scores were significantly higher in the eating group (p=0.043). Patients most preferred ayıla (39.7%) among soups and yogurt (28.8%) among milk products. Only 36.4% (n=55) of the patients stated that they could continue to use enteral nutrition products at the recommended dosage regularly, but 38% (n=21) have been consuming enteral nutrition products.

### ÖZ

**Amaç:** Çeşitli semptomlar nedeniyle kanser hastalarında beslenme değişiklikleri sıklıkla görülür. Bu çalışmayı hastalarımız tarafından en çok tercih edilen, onlar için en uygun gıda seçeneklerini ve bu seçenekleri gelecekte nasıl zenginleştirebileceğimizi belirlemek amacıyla planladık.

**Yöntemler:** Kesitsel ve tanımlayıcı tipteki bu çalışma Tokat Gaziosmanpaşa Üniversitesi Palyatif Bakım Merkezi'ndeki 151 hasta üzerinde gerçekleştirilmiştir. Demografik veriler, beslenme alışkanlıkları ve gıda tercihleri verileri anket ile elde edildi. Karnofsky Performans Ölçeği katılımcılara aynı anda uygulanmıştır.

**Bulgular:** Toplam 151 hastanın %53,6'sı (n=81) erkekti ve hastaların yaş ortalaması 62,7±14,7 idi. Hastaların %47'sinin (n=71) kokudan rahatsız olduğu ve özellikle gıda kokusunun (%27,8) hastaları etkilediği bulunmuştur. Karnofsky Performans Ölçeği (KPS) ortalama puanı 63,9±15,0 olarak tespit edildi. Ortalama KPS puanları yemek yiyebilen grupta anlamlı olarak yüksekti (p=0,043). Çorba çeşitlerinden ayıla çorbası (%39,7), süt ürünleri çeşitlerinden yoğurt (%28,8) hastalar tarafından en çok tercih edilen gıdalardı. Hastaların yalnızca %36,4'ü (n=55) enteral beslenme ürünlerini düzenli olarak, önerilen dozda kullanmayı sürdürebileceklerini, ancak bu hastaların dahi yalnızca %38'i (n=21) enteral ürünleri severek tükettiklerini ifade etmişlerdir.

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**Conclusion:** When offering healthy food options, patients should have sufficient calorie intake and consume foods that they think are delicious. Starting enteral nutrition products early is recommended to avoid malnutrition.

**Keywords:** Palliative care, eating habits, food preferences

**Sonuç:** Hastalara sağlıklı gıda seçenekleri sunmaya çalışırken, yeterli kalori aldıklarından emin olmak ve lezzetli olduğunu düşündükleri yiyecekleri tüketmelerine yardımcı olmak önemlidir. Hastalarda malnütrisyondan kaçınmak için enteral beslenme ürünlerine başlamada geç kalınmaması gerektiğini düşünüyoruz.

**Anahtar Sözcükler:** Palyatif bakım, yeme alışkanlıkları, gıda tercihleri

## Introduction

Palatal delight, food preferences, and diet patterns of patients change during cancer treatment (1). Many patients with cancer experience significant weight changes according to the type and stage of the tumor. Oral feeding is diminished or completely stopped because of various factors like smell or taste changes, loss of appetite, nausea, vomiting, dysphagia, mouth sores, and pain (2). The anorexia-cachexia syndrome in cancer is a clinical state characterized by decreased appetite, weight loss, metabolic disorders, and inflammatory events. The etiology of anorexia in cancer is unknown. However, it causes performance loss, decreases quality of life, and results in high morbidity and mortality rates (3).

Studies have reported impaired taste function and reduction in flavor perception in patients with cancer. Malnutrition leads to impaired immune function and failure to cope with the physical stress of radiotherapy, chemotherapy, and surgery, so treatment procedures are interrupted. Many studies have focused on the prevention of malnutrition (4). To maintain the optimal health level of patients with cancer, diet regimens are changed according to their preferences (3,4). Many nutritional support products were created for specific patients. However, the consumption of these products is sometimes extremely difficult because patients developed a high sensitivity to odor and experienced changes in taste perception (5).

This study aimed to understand the food preferences, feeding habits, and attitudes of patients with cancer receiving palliative care related to nutrition.

## Methods

This cross-sectional and descriptive study was conducted on patients with cancer receiving palliative care, between April and November 2016. In our university, palliative care started in 2010 as a voluntary group (palliative care study group) comprising of professionals from different disciplines including surgical oncology, internal medicine, family medicine, public health and nurses, social workers, dieticians, and psychologists.

Initially, the palliative care center accepted patients in the outpatient clinic in November 2015 and started to provide inpatient care in November 2017. The palliative care study group met regularly once a week and organize multidisciplinary research, education, and patient care. The palliative care center

is under the responsibility of a family practitioner together with a nurse. Other disciplines were consulted during the treatment when needed.

Ethical committee approval was obtained before the study (16-KAEK-088). Patients aged >18 years with cancer diagnosis followed in our palliative care unit and agreed to participate in the study were included in the study. Patients aged <18 years who had mental illnesses, communication difficulties, and malignant bowel obstruction and were not unwilling to participate in the study were excluded.

A questionnaire was developed to elucidate the feeding habits of patients receiving palliative care by the palliative care study group during several meetings. First, the themes were identified until redundancy. Then, the themes were reduced and related questions were formed. The answer styles and answers were created. The questionnaire consisted of three parts that contain 15 open-ended questions assessing the demographic data of the patients, two open-ended questions and 13 close-ended questions assessing nutritional habits, and six Likert-type questions assessing food preferences. The questions were revised after a pilot test was applied to 20 patients who had similar characteristics with the target group in the palliative care center. Tools used in our palliative care unit such as the Karnofsky performance scale (KPS), Katz daily living activities scale, and basic daily living activities scale were completed during the first admission by a palliative care doctor. The questionnaire was delivered by a service secretary in the outpatient unit and completed in 20 min by face-to-face interview method.

## Statistical Analysis

Descriptive statistics were presented as mean, standard deviation, median, percentile 25 (Q1), percentile 75 (Q3), and minimum and maximum values for numerical variables. The conformity of the variables to normal distribution was examined by using Kolmogorov-Smirnov/Shapiro-Wilk tests. The chi-square test was used for binary and multiple comparisons between categorical variables. The Mann-Whitney U test was used in binary group comparisons of variables that did not disperse normally. Data were analyzed with SPSS v20 software package (IBM Corp., Armonk, NY, USA). For evaluation of demographic data, descriptive statistics (such as percentage, average, standard deviation) were used, and chi-square and Student's t-test were used for comparisons between groups.  $P < 0.05$  was considered significant.

## Results

### Demographic and Clinical Features of Patients

A total of 151 patients were included in the study, of which 53% (n=81) were male. The mean age was 62.7 (±14.7) years. Details of the demographic features are presented in Table 1.

The most common cancer diagnoses were gastrointestinal tumors. In addition, 119 (78.8%) patients had decreased weight, and 38.7% (n=46) stated that they had lost ≥10 kg during the disease period. The mean KPS score was 63.9 (±15.0) points. As regards the disease duration after diagnosis, 57% of the patients had a disease duration of <1 year. Regarding treatment, 94 (62.3%) and 70 (46.4%) patients received chemotherapy and radiotherapy, respectively.

### Nutritional Status

The questionnaire on the nutritional habits of the patients showed that 94.7% (n=143) were able to eat, 68.2% (n=103) could not enjoy the food as before, and 36.4% (n=55) can use enteral nutrition products at the given dose regularly. However,

38% (n=21) of these patients have been eating the enteral products enjoyably.

In addition, 58.3% of the patients stated that they managed to complete three meals daily with difficulty. Moreover, 47% (n=71) of the patients were intolerant to the smell, and 27.8% reported that the food had a disturbing smell. Furthermore, 98 (64.9%) patients stated that they could eat for nutritional purposes even though they did not enjoy it. The most common symptoms during cancer diagnosis and treatment were loss of appetite (62.9%), nausea and vomiting (47.7%), and taste changes (29.8%). Sour foods (35.1%) are the most preferred flavor by the patients, and 14 (9.3%) patients used herbal treatment products for a period after diagnosis.

Patients consumed mostly soup (64.9%), of which 39.7% most preferred yayla soup (a regional soup made from yogurt and rice). The food preferences are presented in Table 2.

**Table 1.** Demographic and clinical features of the patients with cancer receiving palliative care

Sociodemographic features	n	%
<b>Age groups (mean age, 62.7±14.7)</b>		
<50	27	17.9
50-59	35	23.2
60-69	39	25.8
70-79	32	21.2
≥80	18	11.9
<b>Gender</b>		
Male	81	53.6
Female	70	46.4
<b>Place of living</b>		
Urban region (province, district center)	100	66.2
Rural region (little town, village)	51	33.8
<b>Education level</b>		
Illiterate	52	34.4
Primary school	71	47.0
Secondary school and upper	28	18.5
<b>Economic status</b>		
Income is less than the expenses	38	25.2
Income equal to the expenses	97	64.2
Income is more than the expenses	16	10.6
<b>Diagnosis</b>		
Lung cancer	25	16.6
Stomach cancer	28	18.5
Column cancer	21	13.9
Breast cancer	14	9.3
Rectum cancer	14	9.3
Pancreas cancer	5	3.3
Others	44	29.1

**Table 2.** Food preferences of the patients with cancer receiving palliative care

Food preferences	n	%
<b>Soup</b>		
Yayla	60	39.7
Lentil	26	17.2
Tarhana	12	7.9
Others	53	35.2
<b>Dough products</b>		
Breads	39	25.8
Patty	35	23.2
Katmer	23	15.2
Others	54	35.8
<b>Sweets</b>		
Baked sweet	42	27.8
Honey	28	18.5
Milky sweet	27	17.9
Others	54	35.8
<b>Meat</b>		
Red meat	95	62.9
Fish	24	15.9
Chicken	12	7.9
Others	20	13.3
<b>Milk products</b>		
Yogurt	43	28.8
Milk	36	23.8
Cheese	31	20.5
Others	41	26.9
<b>Oil</b>		
Flower oil	67	44.4
Butter	53	35.1
Olive oil	25	16.6
Others	6	3.9
<b>Total</b>	151	100.0

### Relationship Between Nutritional Status and KPS Score

During the interview, most of the patients (94.7%) were able to eat. The median KPS score of the eating group was significantly higher than that of the non-eating group [60 (60-80) vs. 55 (35-60);  $p=0.043$ ]. Patients who were dependent on enteral nutrition had significantly lower KPS scores [60 (50-70)]. Significant differences were found between the median KPS scores according to the use of enteral nutrition products (formula) during the treatment (KPS scores [60 (50-70) vs. 70 (60-80);  $p=0.022$ ].

### Discussion

This study of patients with cancer in the palliative care unit showed that a large proportion of the patients were able to eat during the study period. Moreover, the majority of the patients had weight loss >10 kg, and two-thirds did not enjoy food as before. Approximately one-third of the patients were able to consume enteral nutrition products, and only one-third who started the product could have used the given dose regularly. The participants were uncomfortable most with the smell of food. Among the food groups they could consume for nutritional purposes, patients most preferred soup. Regionally, *yayla* was the most preferred soup. Other frequently preferred foods were bread, baked desserts, meat dish, yogurt, and flower oil.

One of the most common problems in patients with cancer is related to nutrition. Oral feeding of patients is reduced or ceased completely because of symptoms such as nausea, dysphagia, loss of appetite, constipation, mouth sores, and pain. During the initial phases of the disease, loss of appetite and weight loss are observed in one of the two patients, while more than 75% of the patients experienced these problems in the terminal period, (5) as we also observed in our patients. Enig et al. (1) found that patients experienced anorexia and inadequate nutrition as well as food disgust. The lack of appetite and some other symptoms in patients with cancer might have been caused by malnutrition (2,6). Treatments such as radiotherapy and chemotherapy and the disease process increase the severity of the symptoms and impair the palatal delight of the patients (7). Interestingly, one-third of the patients experienced severely impaired taste sensation. Many authors have investigated the olfactory changes during the progress and treatment of cancer (2,7-11). In the present study, half of the patients had increased odor sensitivity and considered many odors "unbearable or malodorous". Although they were affected by various smells such as cigarettes, detergents, perfumes, and hospital odors, patients are uncomfortable most with food odors. It worsened the nutritional status of the patient since they had already serious problems with eating due to both physical and psychological symptoms such as anorexia and depression. Consequently, malnutrition in patients with cancer, whatever the reason, led to decreased performance, reduced quality of life, and increased morbidity and mortality (3).

We also found a significant relationship between KPS scores and the eating status of the patients. Patients with a high KPS score, which means good physical performance, consume few enteral nutrition products. The possible reason was that formula was

started when the general condition of the patient deteriorates or the patient does not use enteral products as long as he/she can consume other foods.

It is extremely important to identify enjoyable foods during this period because leisure experienced during food intake will strongly contribute to the well-being of the patients. For the first time, we tried to elucidate in this group of patients (namely, patients with cancer in palliative care) the most preferred food in terms of both taste and nutritional value. Food disgust is frequently seen in patients with cancer receiving active treatment. Dietary regimens are largely altered or allowed to be fed as preferred to maintain the health of these patients at an optimal level (3,4). Our patients preferred soup as food during the diseased state, which quite corresponds with our culture because a strong belief about the nutritional power of soup for diseases is evident in many sayings written in our language, such as "The soup was not asked to the patient-hastaya çorba sorulmaz-, prepare soup for patient-hastaya çorba hazırlamak, hasta çorbası-soup for sick". *Yayla* soup was the most preferred soup, a well-known soup in our country prepared with rice and yogurt. It can be easily prepared and can be potentially enriched with herbs, vegetables, and meat broths. Worldwide, soup is considered an easy meal for patients who experience difficulty with eating. Indeed, Berhardson et al. (7) presented that patients preferred soup more because it can be consumed more easily and quickly. To improve the psychological well-being and nutrition of the patients, the staff in palliative care centers have ordered food and drinks for patients with cancer. However, there is little research on which foods and beverages these patients like during clinical visits (4). In particular, few or no studies have examined the traditional food types preferred by these patients. The sense of taste, i.e., taste perception, is a subject that varies with each person, ethnic origin, and culture and needs to be investigated worldwide. Traditional foods that patients desired need to be evaluated to provide them with food rich in protein, lipid, carbohydrate, and vitamins. The results of these studies will improve the quality of life of patients receiving palliative care, not only because of proper nourishment but also of the ethnic and cultural effects of foods.

As regards feeding management, patients with cancer should receive enough calories while they keep their palatal delight. The food should have a familiar taste and contain nutritious elements to keep up their metabolic balance. The provision of nutritional support, such as enteral feeding solutions, was not considered food intake because they were treated like drugs. Although various taste options with these enteral solutions are present, the patients refuse to drink them, as also shown in our study (5). Therefore; the industrial market tries to overcome the human perception of enteral solutions as well as different taste selections. It is tempting to suggest the enrichment of a well-known, eatable or drinkable, and easily prepared soup with supportive nutritional supplements such as vegetable/meat broths, whey powder, etc., within acceptable changes in the taste. Therefore, the present study suggests a novel approach of initially identifying the preferred food of patients with cancer in palliative care settings. This approach is the use of a patient-

specific nutritional plan that considers the cultural and ethical meanings of foods and their nutritional values, and the most important part is the food preference of the patients. A review on nutrition in patients with cancer emphasized the importance of a patient-specific nutrition plan approach (12). The subject is covered in the ESPEN guide published in 2017 (13). Subsequent studies are expected to develop a nutritionally rich food built on a culturally acknowledged diet. This approach could help these patients overcome at least some of the nutritional problems encountered in the course of their disease.

### Study Limitations

The study limitations include the single-center setting and the small number of patients. Similarly, the nature of the food preferences makes the study more local than universal. However, this weakness could be considered a study strength because this emphasizes the cultural aspects of palliative care.

### Conclusion

In conclusion, Hippocratic aphorisms regarding “food as medicine” should be considered for these patients during nutrition management in palliative care settings. This study shows the nutritional preferences of patients in palliative care. We recommend starting enteral nutrition products early to avoid malnutrition. Subsequent studies should examine the nutritional value of enriched foods and their impact on patient feeding.

### Ethics

**Ethics Committee Approval:** Ethical committee approval was obtained before the study (16-KAEK-088).

### Informed Consent:

**Peer-review:** Externally peer reviewed.

### Authorship Contributions

Concept: N.Y.Ç., İ.O., M.S., Design: N.Y.Ç., İ.O., M.S., Data Collection or Processing: N.Y.Ç., U.Ü., R.Ç., Y.Ö., Analysis or Interpretation: R.Ç., Y.Ö., Literature Search: U.Ü., N.Y.Ç., M.S., Writing: U.Ü.

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