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## Knowledge and practices of medical oncologists concerning nutrition therapy: A survey study

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### SUMMARY

**Background and aims:** Despite the identification of malnutrition and administration of nutrition therapy being increasingly recognised as integral to the treatment of cancer patients, this is not always translated into routine clinical practice. The aim of this study was to determine medical oncologists' awareness of, and ability to assess, nutritional status and when to initiate nutrition therapy, to identify their educational status concerning clinical nutrition and their perceived barriers to the routine use of nutrition therapy in their patients through a survey study.

**Methods:** 155 medical oncologists were invited to complete a digital questionnaire. The questionnaire included information regarding the participants demographic and professional information, clinical nutrition education status, attitudes towards malnutrition and nutrition therapy, and barriers to using nutrition therapy. The questionnaire also included two case scenarios designed to assess ability to diagnose malnutrition/assess nutritional status and identify when nutrition therapy might be indicated.

**Results:** Of 109 medical oncologists who agreed to participate, 43.1% declared that they received clinical nutrition education and 33.9% declared that they followed the oncology sections in the European Society of Clinical Nutrition and Metabolism (ESPEN) Guidelines. The medical oncologists were divided into two groups according to their knowledge score (31 medical oncologists with a knowledge score of  $<3$  and 78 medical oncologists with a knowledge score of  $\geq 3$ ). The rate of having nutrition education was significantly higher in those with a higher knowledge score ( $\geq 3$ ) and the rate of medical oncologists having this education during medical and/or oncology education was also significantly higher. The rate of medical oncologists following the oncology sections in the ESPEN guidelines was higher in those with higher knowledge score.

**Conclusions:** Our results emphasize the association between clinical nutrition education and higher knowledge scores in medical oncologists, but reveal a mis-match between knowledge and awareness and what happens in clinical practice. Nutrition therapy might be used more frequently in routine practice when medical oncologists' lack of knowledge is resolved.

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### 1. Introduction

Malnutrition and cachexia are common in oncology patients due to both the disease itself and the applied treatments. Both malnutrition and cachexia, which is a complex syndrome, are indicators of poor prognosis [1]. In addition to the effects of cancer, loss of appetite, nausea, vomiting, diarrhoea, loss of taste, dry mouth, mucositis, dysphagia, early satiety, malabsorption, and

depression caused by surgery, chemotherapy, and radiotherapy lead patients to develop undernutrition. This is often accompanied by a catabolic state which further exacerbates a negative energy balance [2,3]. Weight loss is usually the presenting symptom of malnutrition in oncology patients [4–7] and has been reported in 30% to more than 80% of patients depending on the cancer type [1]. However, studies on body composition have revealed that skeletal muscle loss (with or without fat loss) in cancer-related malnutrition is a determinant of physical disability, postoperative complications, chemotherapy toxicity, and mortality risk [8].

In cancer patients, nutrition therapy aims to maintain or improve nutrient intake, mitigate metabolic derangements, maintain skeletal muscle mass and physical performance, reduce the

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risk of reductions or interruptions of scheduled anticancer treatments, and improve quality of life [8]. Therefore, the recognition of malnutrition and administration of nutrition therapy are integral parts of the treatment of cancer patients [9]. It has been reported that assessment of nutritional status in cancer patients should begin at diagnosis and be repeated at each visit [2]. Malnutrition is usually treated by modification of the patient's diet to meet needs of energy, protein and other nutrients. This can be achieved by the use of one or more nutrition therapies including dietary counseling, oral nutrition support and, when required, enteral and parenteral nutrition therapies. Pharmacological therapies may be used to counter the effects of malnutrition in some cancer patients, while the use of exercise training in conjunction with optimal nutritional care is recommended to maintain muscle strength and muscle mass [1–3,9].

Although the importance of nutrition in oncology patients is well established, malnutrition is frequently overlooked, screening techniques are not always standardised, and there is no satisfying consensus on malnutrition further assessment criteria [8,10]. Understanding the awareness of, and attitudes towards, malnutrition and nutrition therapies in oncologists may help to understand why the current evidence base is not translated into routine clinical practice. The present study aimed to determine medical oncologists' awareness of, and ability to assess, nutritional status along with when to initiate nutrition therapy. The study also aimed to identify their educational status concerning clinical nutrition and their perceived barriers to the routine use of nutrition therapy in their patients.

## 2. Materials and methods

A survey study was conducted among medical oncologists actively involved in the diagnosis, treatment and follow-up of cancer patients. According to the data obtained from the Turkish Society of Medical Oncology, the number of medical oncologists in Turkey is 500. Assuming that the awareness about nutrition therapy was 20% among oncologists, 107 participants were required within two-sided 95% confidence interval and with  $\pm 8\%$  accuracy. With the assumption that 65% of the invited medical oncologists would accept to participate in the study, it was planned to invite 165 medical oncologists.

With reference to a case-scenario based questionnaire developed and validated by Spiro et al. 2006 [11], a questionnaire was designed and subsequently discussed and approved by 10 medical oncologists, recognized as experts in clinical nutrition in Turkey (experts from the Turkish Society of Clinical Enteral Parenteral Nutrition (KEPAN)). The questionnaire assessed the awareness and knowledge of medical oncologists about nutrition therapy. Medical oncologists were asked to complete the survey of their own accord and the information was designed to be collated anonymously. As such ethical approval was not sought for this survey.

Participating Medical oncologists completed the questionnaire electronically between March 2016 and June 2016. Each question in the questionnaire appeared after the previous question was answered. While the answers were directly transferred to the database, the names of the medical oncologists were not recorded.

In the questionnaire form, demographic and professional (faculty of graduation, hospital of employment, years of specialty, number of patients examined weekly) information of the medical oncologists was collected. The following three main topics were targeted in the questionnaire: 1) Clinical nutrition training status 2) Awareness of, and ability to assess, nutritional status and identify malnutrition and indications for nutrition therapy, and 3) Barriers to routine use of clinical nutrition.

Two case scenarios with gastrointestinal cancer were included in the questionnaire to ascertain ability to assess nutritional status, identify malnutrition and when to initiate nutrition therapy. The first case was about diagnosis of malnutrition and the second case was about indications for nutritional support (Table 1).

### 2.1. Statistical analyses

Data were analyzed using the Predictive Analytics Software (PASW) Statistics for Windows, version 18.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were expressed as number and percentage for categorical variables and as mean, standard deviation, median, the 25th percentile (the first quartile [Q1]), the 75th percentile (the third quartile [Q3]), and minimum and maximum for numerical variables. Normality of variables was analyzed using visual (histogram and probability graphics) and analytic methods (Kolmogorov–Smirnov and Shapiro–Wilk tests). For non-normally distributed numerical variables, Mann–Whitney U test was used for two group comparisons and Kruskal–Wallis test was used for multiple comparisons. Two- and multiple-group comparisons between categorical variables were performed by Chi-square test; if Chi-square test assumption was not met, Fisher's exact test was used. Subgroup analyses were performed using Mann–Whitney U test with Bonferroni correction. The results for which type-1 error was  $<5\%$  was considered statistically.

## 3. Results

Among 165 medical oncologists planned to be enrolled in the present study, 155 (93.9%) were contacted (10 were unable to be contacted). Of these medical oncologists, 109 (70.3%) agreed to participate in the study. More than half of the participants (52.3%) had  $\geq 5$  years of specialty and 46.8% were working at university hospitals. The general characteristics of the medical oncologists are summarized in Table 2.

Of the medical oncologists, 43.1% reported that they received clinical nutrition education and 33.9% reported that they were following the oncology sections in the European Society of Clinical Nutrition and Metabolism (ESPEN) Guidelines [1,12]. Education-related features of the medical oncologists regarding nutrition therapy are presented in Table 3.

The answers given by medical oncologists to the questions concerning nutrition therapy are summarized in Table 4. Almost all of the medical oncologists were of the opinion that nutritional status affects the course of disease in oncology patients (94.5%) and all examined cancer patients should undergo nutritional screening (90.8%). Moreover, 92.7% of the medical oncologists reported that they were able to differentiate a patient with malnutrition.

An evaluation was undertaken of the responses to the case scenario questions which assessed the medical oncologists' ability to identify malnutrition and when to initiate nutrition therapy. The answers given to these questions by the medical oncologists were considered correct if they were in line with expert opinion. The medical oncologists were divided into two groups according to the median knowledge score ( $<3$  or  $\geq 3$ ). There were 31 (28.4%) medical oncologists with a knowledge score of  $<3$  and 78 medical oncologists (71.6%) with a knowledge score of  $\geq 3$ . The characteristics of these two groups are summarized in Table 5.

The number of medical oncologists who had undertaken some form of clinical nutrition education was significantly higher in those with a higher knowledge score ( $\geq 3$ ) (39 (50.0%) vs. 8 (25.8%),  $p = 0.021$ ) (Fig. 1) and the number of medical oncologists having this education during medical and/or oncology education was also significantly higher (31 (79.5%) vs. 3 (37.5%),  $p = 0.028$ ). The number of medical oncologists following the oncology sections in

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