



# Nutritional status and nutrition support in breast cancer patients

## Breast Cancer and Nutrition

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### Abstract

**Aim:** Nowadays, the risk of malnutrition which may develop after planning the treatment of overweight and obese female patients who were diagnosed with breast cancer, one most common cancer among women, is not considered. In this paper, we aimed to assess the nutrition status and importance for nutritional supplement in breast cancer patients in the preoperative period.

**Methods:** Of the 74 volunteers participating in the study, all were newly diagnosed breast cancer patients. The patients who previously received neoadjuvant therapy or underwent tumor surgery or those with other cancers were excluded from the study. The patients were applied to the MNA-SF test and their body mass indexes (BMI), types and stages of cancer were recorded.

**Results:** The mean MNA-SF scores of the patients was calculated as 11.93. It was observed that histopathological stage of cancer diagnosis of the patients increases with age, but the MNA-SF scores decreases ( $p=0.866$ ). There was no statistical significance between histopathological stage and body mass index (BMI). MNA-SF values were low in patients losing weight ( $p=0.001$ ).

**Conclusion:** At diagnosis, whether enteral nutrition support is required for breast cancer patients can be determined via nutritional screening. While providing enteral nutrition support, performing a close nutritional screening to these patients may be beneficial by considering the negative effects of excessive weight gain during adjuvant treatment on survival.

### Keywords

breast cancer, nutrition, malnutrition

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## Introduction

Despite the advances in screening methods, breast cancer has become widespread all around the world and has been the most common type of cancer among women.<sup>1</sup> However, with the screening procedures and early diagnoses, the patients' survivability and quality of life are quite well. Compared to past ten years, we mostly encounter early stage breast cancer rather than metastatic or locally-advanced breast cancers in patients admitted to the general surgery clinics.<sup>2</sup> There are several well-known major risk factors for breast cancer. Having a high body mass index is one of them.<sup>3</sup> Generally, the patients who were diagnosed with breast cancer are overweight or obese and the risk for malnutrition which may develop after adjuvant treatment is not considered. However, particularly gastrointestinal tract, head and neck cancer patients, and those with other system cancer are often at risk of malnutrition and their immune systems are weak and susceptible to infection at diagnosis.<sup>4</sup> Therefore, these patients generally undergo nutritional status screening and nutritional support is provided prior to operations or adjuvant therapy. Breast cancer patients may not bear risk at diagnosis but they may prone to develop complications that the other cancer patients experience during post-operative period and adjuvant treatment. Therefore, once the patient is diagnosed with cancer, nutritional status should be assessed and appropriate nutrition therapy should be initiated without any delay. As well as various measurements, reliable and proven surveys for the assessment of nutrition status are also available. In this study, we aimed to assess the nutrition status of breast cancer patients at diagnosis in the preoperative period via a proven mini nutritional assessment short form (MNA-SF) test which consists of 20 questions. We aimed to have an idea about the nutritional status in breast cancer patients.

## Materials and Methods

### Participants

After obtaining approval of local ethics committee, this study was conducted at Adnan Menderes University, Faculty of Medicine, Department of General Surgery between September 2014 and September 2015. A total of 74 volunteer patients who were newly diagnosed with breast cancer were included in the study. The patients who previously received neoadjuvant therapy or underwent tumor surgery or those with other cancers were excluded from the study.

### Assessments

The patients were applied to the MNA-SF test and their body mass indexes (BMI), types and stages of cancer were recorded. MNA-SF (Mini Nutritional Assessment Short Form) As well as anthropometric measurements, more practical and proven questionnaires such as Nutritional Risk Screening (NRS), Nutrition Risk Index (NRI), Malnutrition Universal Screening Tool (MUST), MNA (Mini Nutritional Assessment), and MNA-SF (Mini Nutritional Assessment Short Form) to assess the nutritional status of the patients are also available. While some of these tests evaluate nutritional status, some show the response to nutritional diet or some are used to predict the outcomes.<sup>5</sup> MNA-SF is a test used to evaluate nutritional status particularly giving better results in elderly patients.<sup>6</sup> It can be applied in both clinical practice and general surgery and oncology outpatient clinics. We chose this test because it is easy to use and reliable. It consists of a total of 6 questions. A score of 12-14 is considered as normal, 8-11 points at risk of malnutrition and 0-7 points malnutrition. These results are interpreted and nutritional therapy is planned.

### Statistical Analysis

For statistical analysis, SPSS software, version 15 (SPSS, Chicago, IL) was used. Kolmogorov-Smirnov test was applied to test the distribution of continuous variables. Continuous variables were expressed as mean  $\pm$  SD or median and 25th to 75th percentile values as appropriate. Categorical variables were expressed as percentages. One-way analysis of variance

with post hoc Scheffe correction was used to test statistical differences among groups. For the analysis of parametric or nonparametric variables, Kruskal-Wallis test was used.

## Results

The mean age of the patients was 55.54 ( $\pm$  11.73). Of the patients with breast cancer, while 63 (85.2%) were diagnosed with invasive ductal carcinoma, 11 (14.8%) received other histopathological diagnoses (invasive lobular carcinoma, paget, colloid carcinoma, etc.). Sixty patients (81%) underwent breast-conserving surgery + sentinel lymph node biopsy and the remaining 14 (19%) underwent modified radical mastectomy. The mean BMI of the patients was 29.64 ( $\pm$  6.87). While twenty-two patients (29.7%) had weight loss before the diagnosis, the remaining 52 patients (73.3%) did not experience weight loss. The mean MNA-SF scores of the patients was 11.93. Three patients (4%) were malnourished, 26 patients (35.1%) were at risk of malnutrition and 45 patients (61.9%) had normal nutritional value. It was observed that as the histopathological stage of the cancer diagnosis of the patient increases, the age of the patients increases too, but the MNA-SF score decrease ( $p=0.866$ ) (Table 1). No statistically significant association was observed between BMI and histopathological stages. While MNA-SF scores were lower in those patients presenting with weight loss ( $p=0.001$ ), their age was found to be lower ( $p=0.153$ ) (Table 2). It was determined that as the age increases, MNA-SF scores decrease ( $p=0.488$ ) (Table 3).

**Table 1.** The relationship between age, BMI, MNA-SF and tumor stage

Stage (n)	Age	BMI	MNASF
1a (35)	53.60 $\pm$ 12.73	29.05 $\pm$ 7.21	12.46 $\pm$ 2.32
2a (20)	56.45 $\pm$ 10.19	31.15 $\pm$ 6.98	11.25 $\pm$ 2.15
2b (13)	56.62 $\pm$ 12.11	28.46 $\pm$ 3.69	11.54 $\pm$ 2.44
3a (3)	60.00 $\pm$ 11.27	24.33 $\pm$ 4.04	11.66 $\pm$ 3.21
3b (2)	67.50 $\pm$ 6.36	33.00 $\pm$ 12.73	11.50 $\pm$ 3.53
3c (1)	54.00	44.00	14.00

$P=0.866$

**Table 2.** The relationship between weight loss, age and MNASF

Weight loss	MNASF	Age
Yes (22)	9.64 $\pm$ 2.32	54.27 $\pm$ 12.37
No (52)	12.90 $\pm$ 1.55	58.54 $\pm$ 9.65

$P=0.001$

**Table 3.** Change of MNASF with the age

MNASF	(n)	Age
Malnutre (0-7)	(3)	63.67 $\pm$ 4.93
Risk of malnutrition (8-11)	(26)	56.77 $\pm$ 11.59
Normal (12-14)	(45)	54.29 $\pm$ 12.00

$P=0.488$

## Discussion

Having a high body mass index is the leading acquired risk factor for breast cancer.<sup>3</sup> For this reason, rather than being cachectic, breast cancer patients are generally overweight or obese at diagnosis. However, according to the classification of Fearon et al.<sup>7</sup> as in all cancers, breast cancer has three stages as precachexia, cachexia and refractory cachexia. According to this classification, once the diagnosis of cancer is established, nutritional status should be evaluated immediately; the patient should be captured in precachexic term and enteral nutrition support should be provided without exposing unnecessary and tedious complications of malnutrition. High (40-80%) ratio of patients receiving chemotherapy is at risk of

