

# Prevalence of Malnutrition Among Adult Cancer Patients in Oncology Teaching Hospital

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## Abstract

**Background:** Cancer is the leading cause of mortality worldwide; it accounts for ten million deaths. The number of new cancer cases per year reaches to 33,873 in both sexes with a 5-year prevalence that tops to 79,057 cases. Cancer is considered a public health problem that add cost and burden on the Iraqi health system. Malnutrition is a common comorbidity in cancer patients, despite the fact that it is a potentially remediable condition, it is associated with poor overall survival and quality of life. **Aim:** To explore the prevalence of malnutrition among cancer patients in Iraq and illustrate the significant factors that affect malnutrition. **Patients and methods:** A cross-sectional study conducted in the Oncology Hospital – Baghdad, included a convenient sample of 100 cancer patients. Data collection was based on a structured questionnaire covering the demographical characteristics. Anthropometric values were measured during the interview. Basal Mass index (BMI), and Patient-Generated Subjective Global Assessment (SGA) were calculated accordingly. Chi-square and Fischer exact tests were applied to demonstrate the association between malnutrition and different variables, in all statistical analyses a P-value equal or less than 0.05 was considered significant. **Results:** The average age of the studied sample was 53.8±12.3 ranging from 33 to 84 years old. Breast cancer was the commonest 34(34%), followed by lung 18(18%). One quarter 26(26%) of the studied sample had were well nourished (SGA-A), 59 (59%) had moderate malnutrition (SGA-B) and 15(15%) had severe malnutrition (SGA-C). There was a significant association between severe malnutrition and gender, BMI, regularity of meal intake and type of meal, change in taste, dryness of the mouth, chewing problems, dysphagia and loss of appetite. Severe malnutrition was more prevalent among patients with nasopharyngeal, esophagus and upper GIT sites of cancer. **Conclusion and recommendations:** This study shows a need for installing nutritional units attached to oncology hospitals and wards in Iraq, in order to implement nutritional assessment systematically and periodically upon admission, as well as on an outpatient basis. Once patients with a nutritional risk are detected, they should undergo a more detailed evaluation to identify and quantify the type and degree of malnutrition.

**Keywords:** cancer patients, Oncology, Teaching Hospital

## 1. Introduction

Cancer is a generic term for a large collection of diseases that can affect any part of the body. Cancer has a common feature of rapidly growing abnormal cells that have a tendency to invade nearby tissues and metastasis to even far ones. As the leader of mortality all over the world, cancer accounts for around ten million deaths in the year 2020, that is one per six deaths is due to cancer. [1]

In Iraq, cancer is present and prevalent. the number of new cancer cases per year reaches to 33,873 in both sexes with a 5-year prevalence that tops to 79,057 cases. commonest cancers are Breast, Lung, Colorectum, Leukemia and Non-Hodgkin lymphoma. [2] hence it is considered a public health problem that add cost and burden on the Iraqi health system

Malnutrition is a common comorbidity in patients with cancer, despite the fact that it is a potentially remediable condition [3] and installing early intervention could influence a better clinical evolution, yet a significant number of malnourished cancer patients still remain undetected. [4] Cancer malnutrition represents the chronic form of disease-related malnutrition with chronic inflammation. The prevalence of malnutrition fluctuates from 25% to 70%. [3,5]

recent studies reported that only 30% of patients with risk of malnutrition received a nutritional assessment and half of them received an appropriate intervention [4]

malnutrition is independently associated with poor overall survival and quality of life, longer hospital stays, greater hospital cost reaches to \$21,892 higher than nourished cancer patients, higher annual

outpatient claims and hospital readmission. Hence, comprehensive malnutrition prevention is required for improving the nutrition status among older adults with cancer. [5,6]

The subjective global assessment (SGA) is reliable and valid tool that predicts morbidity and mortality associated with malnutrition, it is a nutrition evaluation instrument that is both useful and sufficient and represents an easier and faster way to identify at-risk or malnourished patients. [7,8] SGA type A= well nourished; B= suspected or moderate malnutrition; and C= severe malnutrition. According to recent studies death rate in SGA type C reaches to 80% among cancer patients [9]. Aim: To explore the prevalence of malnutrition among cancer patients in Iraq and illustrate the significant factors that affect malnutrition.

## 2. Patients and methods

This was a cross sectional study conducted from 1st of March 2022 till the end of August 2022 in the Oncology Hospital – Baghdad, included a convenient sample of 100 cancer patients.

### Inclusion criteria

all patients admitted to the oncology ward during the time of the study

### Exclusion criteria

Patients with severe medical or cognitive issues which enable them to communicate, patients on total parenteral nutrition and patients with nephropathy were excluded

Data collection was done after obtaining verbal consent from respondents and explaining the aim of

the study, collection of information was based on a structured questionnaire covering the demographical characteristics. Anthropometric values were measured during the interview. The assessment on the weight and height was performed using an electronic scale, rounded off to the nearest 0.1 kg and 0.1 cm. Body Mass index (BMI) were calculated accordingly. Subjective Global Assessment (SGA) questionnaire was divided into two sections: the first section includes weight history, changes of food, gastrointestinal symptoms (e.g., nausea, vomiting and diarrhea, etc.) and functional capacity. The second section comprises information on physical evaluation and metabolic demand. The participating cancer patients answered the first section while the author accomplished the second section. On the basis of the score, the patients can be classified into SGA type A, B and C. Data were presented by numbers and percentage and Statistical Package for the Social Sciences (SPSS) was used for data analysis, Chi square and Fischer exact tests were applied to demonstrate the association between malnutrition and different variables, in all statistical analyses a P-value equal or less than 0.05 considered significant.

## 3. Results

Average age of the studied sample was  $53.8 \pm 12.3$  ranging from 33 to 84 years old. More than half 55(55%) of the patients were 50 years old or older. Table (1) demonstrates the demographic characteristics of the sample.

Table (1) The demographic characteristics of the sample.

Variables	Frequency	Percentage	
Age in Years	<50	45	45.0
	≥ 50	55	55.0
Gender	Male	35	35.0
	Female	65	65.0
Residency	Urban	76	76.0
	Rural	24	24.0
Marital status	Married	90	90.0
	Unmarried	10	10.0
Employment status	Unemployed	51	51.0
	Employed	49	49.0
Education	≤ 6 years of education	29	29.0
	>6 years	71	71.0
Smoking	Non smoker	51	51.0
	Smokers	49	49.0
Alcohol consumption	No	91	91.0
	Yes	9	9.0
BMI	Underweight <18.9	34	34.0
	Normal 18.9-24.9	28	28.0
	Overweight ≥25	38	38.0
Total	100	100.0	

Three-quarters 67(67%) of patients stated that they were able to eat solid food, 33(33%) were able to eat only semisolid or liquid diets. More than half 55(55%) declared that they take food regularly, yet 45(45%) had irregular meals.

Figure (1) demonstrates the associated symptoms among the studied sample. Nausea 64 (64%), loss of appetite 62(62%), and vomiting 50(50%) were the commonest reported symptoms.

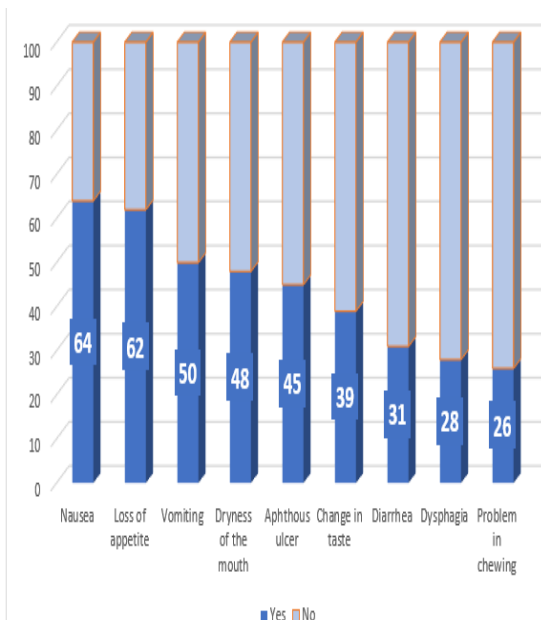


Figure (1) Distribution of the sample according to the associated symptoms

More than half 53(53%) of the studied sample had no family history of malignancy. Around 65 (65%) had no associated co-morbidities, while 13 (13%), 10 (10%) and 12(12%) had hypertension, diabetes mellites, or both respectively.

Figure (2) depicts the site of cancer among patients, breast cancer was the most common 34(34%), followed by lung and renal and prostate. One quarter 26(26%) of the studied sample were well nourished (SGA-A), 59 (59%) had moderate malnutrition (SGA-B) and 15(15%) had severe malnutrition (SGA-C).

Table (2) demonstrates the association between

cancers in 18(18%) and 14(14%) respectively. More than half 68(68%) of the patients had metastatic cancer and all were subjected to chemotherapy treatment. More than half of the studied sample 56 (56%) had five or more cycles of chemotherapy and the remaining 44(44%) had less than 5 cycles.

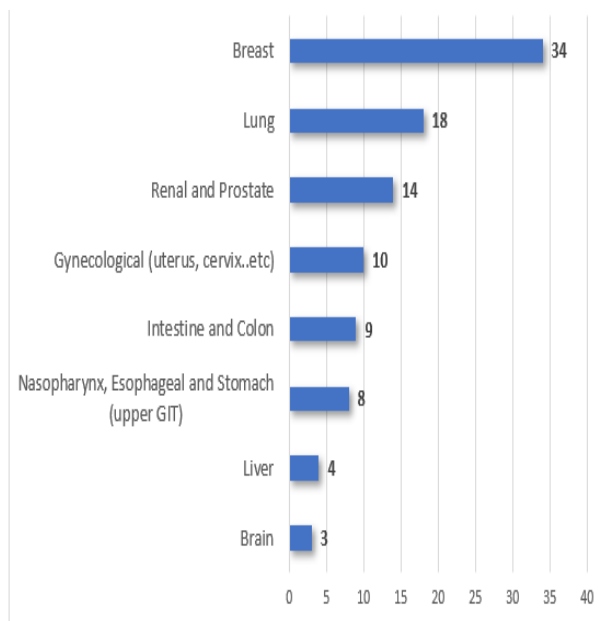


Figure (2) Distribution of the sample according to the topography of primary cancer site

severe malnutrition and demographic variables of the sample. Gender, BMI, regularity of meal intake and type of meal showed significant association with severe malnutrition.

Table (2) Distribution of the sample by type of malnutrition according to demographic variables

Variables		Malnutrition			P value
		Well-nourished (n=26)	Moderate (n=59)	Severe (n=15)	
Age in Years	<50	8(17.8%)	29(54.4%)	8(17.8%)	0.228
	≥50	18(32.7%)	30(54.5%)	7(12.7%)	
Gender	Male	5(14.3%)	21(60%)	9(25.7%)	0.031
	Female	21(32.3%)	38(58.5%)	6(9.8%)	
Residency	Urban	18(23.7%)	49(64.5%)	9(11.8%)	0.113
	Rural	8(33.3%)	10(41.7%)	6(25%)	
Marital status	Married	24(26.7%)	54(60.0%)	12(13.3%)	0.373
	Unmarried	2(20.0%)	5(50.0%)	3(30.0%)	
Employment status	Unemployed	15(29.4%)	31(60.8%)	5(9.8%)	0.302
	Employed/retired	11(22.4%)	28(57.15)	10(20.4%)	
Education	≤6 years	4(13.8%)	18(62.1%)	7(24.1%)	0.096
	>6 years	22(31%)	41(57.7%)	8(11.3%)	
BMI	Underweight	5(14.7%)	17(50.0%)	12(35.3%)	0.000
	Normal	4(14.3%)	21(75%)	3(10.7%)	
	Overweight	17(44.7%)	21(55.3%)	0	
Meal's intake	Regular	21(38.2%)	30(54.5%)	4(7.3%)	0.002
	Irregular	5(11.1%)	29(64.4%)	11(24.4%)	
Type of food consumed	Semisolid & liquids	4(12.1%)	17(51.5%)	12(36.4%)	0.000
	Solid	22(17.4%)	42(39.5%)	3(10.1%)	
Cycles of chemotherapy	<5 cycles	7(15.9%)	31(70.5%)	6(13.6%)	0.085
	≥ 5 cycles	19(33.9%)	28(50%)	9(16.1%)	

Change in taste, dryness of the mouth, chewing problems, dysphagia and loss of appetite showed a

significant association with severe malnutrition. Figure (3) shows the association between malnutrition and cancer associated symptoms.

**Table (3) Distribution of the sample by type of malnutrition according to current cancer symptoms**

Variables		Malnutrition			P-Value
		Well-nourished	moderate	Severe	
Apthous ulcer	No	18(32.7%)	32(58.2%)	5(9.1%)	0.083
	Yes	8(17.8%)	27(60%)	10(22.2%)	
Change in taste	No	20(32.8%)	36(59.0%)	5(8.2%)	0.022
	Yes	6(15.4%)	23(59.0%)	10(25.6%)	
dryness of the mouth	No	20(38.5%)	29(55.8%)	3(5.8%)	0.002
	Yes	6(12.5%)	30(62.5%)	12(25%)	
Problem in chewing	No	21(28.4%)	50(67.6%)	3(4.1%)	0.000
	Yes	5(19.2%)	9(34.6%)	12(46.2%)	
Nausea	No	12(33.3%)	19(52.8%)	5(13.9%)	0.454
	Yes	14(21.9%)	40(62.5%)	10(15.6%)	
Vomiting	No	13(26%)	32(64%)	5(10%)	0.352
	Yes	13(26%)	27(54%)	10(20%)	
Loss of appetite	No	15(39.5%)	21(55.3%)	2(5.3%)	0.016
	Yes	11(17.7%)	38(61.3%)	13(21%)	
Dysphagia	No	23(31.9%)	45(62.5%)	4(5.6%)	0.000
	Yes	3(10.7%)	14(50%)	11(39.3%)	
Diarrhea	No	22(31.9%)	37(53.6%)	10(14.5%)	0.129
	Yes	4(12.9%)	22(71%)	5(16.1%)	
Metastatic Cancer	No	8(25%)	17(53.1%)	7(21.9%)	0.411
	Yes	18(26.5%)	42(61.8%)	8(11.8%)	

## 4. Discussion

The current study showed that more than half of cancer patients were 50 years or older. Agreeing with Kang J et al. [10] Aging is one of the most important risk factors for cancer, as aging is considered to increase, and the number of people with cancer aged 80 years or older is suggested to get tripled by 2050. [11] Breast cancer was the commonest 34(34%) among patients, agreeing with Abood R et al [12] and Opanga Y et al [13]

The current study showed a severe malnutrition prevalence of 15% which can be compared to results by Opanga Y et al 2017 kenya (11.3%) [13] and Argefa TG and Roets L 2021 Ethiopia (17.7%) [14] Yet our finding was lower than findings reported by Marshall KM et al 2019 [15] and De Groot L et al 2020 [16] where 26-31% of cancer patients were malnourished, and also lower than results stated by Pingili S et al India 2021 [17] and Cao J et al China 2021 [18] where a total of 40.2% and 76% cancer patients had malnutrition respectively.

BMI, regularity of meal intake and type of meal showed significant association with severe malnutrition agreeing Nitichai N et al [19] and Tsaousi G et al [20] BMI and dietary type affected nutritional status

Males showed a significant association with severe malnutrition which might be related to the type of cancer among males compared to females, our result is in alignment with Opanga Y et al [13] where males were more severely malnourished, but disagrees with results reported by Cao J et al China 2021 [18] although Majid H et al had reported that overweight and obesity were highly prevalent among women who are breast cancer survivors [21]

Loss of appetite remains one of the commonest

problems in cancer patients, our results showed a significant association between appetite status and malnutrition agreeing with Wu M et al 2019 China [22], Hariyanto T et al 2021 Indonesia [23] and de Pinho NB et al 2020 Brazil [24] Change in taste of food, or feeling dryness, chewing problems and dysphagia showed significant association agreeing with Viana ECRM et al 2020 [25] and de Pinho NB et al 2020. [24] All these nutritional symptoms can influence a loss of appetite and are associated with severe malnutrition.

Tumor site is a major determinant of malnutrition, severe malnutrition was more prevalent among patients with nasopharyngeal, esophagus and upper GIT site of cancer, followed by colon and brain cancer, the current finding agrees with results by Bossi P et al 2021 [26] and de Pinho NB 2019 [27] where pancreatic, esophageal, and other gastrointestinal cancers, head and neck, and lung cancers having the highest prevalence of malnutrition. This can be related to the use of intubation, difficulty in chewing and swallowing food.

## 5. Conclusion and recommendations

Although Nutritional screening was recommended to be initiated at the time of diagnosis according to the guidelines established by the European Society for Clinical Nutrition and Metabolism and the Academy of Nutrition and Dietetics [28,29] Yet this study shows a clear need for installing a nutritional unit attached to oncology hospitals and wards in Iraq, in order to implement nutritional assessment systematically and periodically upon admission, as well as on an outpatient basis Once patients with a nutritional risk are detected, they should undergo a

more detailed evaluation to identify and quantify the type and degree of malnutrition.

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