Chettinad Health City Medical Journal
Volume 14, Issue 2 - 2025, Pg. No. 16-24
Peer Reviewed & Open Access Journal

Research Article

Malnutrition and Nutrition Impact Symptoms Among Preoperative Gastrointestinal Cancer Patients: A Cross-Sectional Study

Sowmiya J[1], Thilagamani S[2]

[1]Research Scholar, [2]Assistant Professor, Department of Food Service Management and Dietetics, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, Tamil Nadu, India
DOI: https://doi.org/10.24321/2278.2044.202519

I N F O

Corresponding Author:
Sowmiya J, Department of Food Service Management and Dietetics, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, Tamil Nadu, India
E-mail Id:
22phfdf002@avinuty.ac.in
Orcid Id:
https://orcid.org/0009-0009-5039-1453
How to cite this article:
Sowmiya J, Thilagamani S. Malnutrition and Nutrition Impact Symptoms Among Preoperative Gastrointestinal Cancer Patients: A Cross-Sectional Study. Chettinad Health City Med J. 2025;14(2):16-24.

Date of Submission: 2024-12-06
Date of Acceptance: 2025-06-16

A B S T R A C T

Introduction: Malnutrition is a common concern among gastrointestinal (GI) cancer patients, due to the interference of tumours with food intake and absorption. Nutrition Impact Symptoms (NIS) play a critical role in exacerbating malnutrition and lead to adverse clinical outcomes.

Aims: This study aims to assess the prevalence and association of NIS with malnutrition in upper and lower GI preoperative cancer patients.

Methods and Material: A cross-sectional study was conducted among 163 GI cancer patients at two multispeciality hospitals with oncology departments in Coimbatore. The Patient-Generated Subjective Global Assessment (PG-SGA) was employed to evaluate nutritional status and NIS. Multivariate logistic regression was performed to identify factors associated with moderate and severe malnutrition.

Results: The study included 163 patients aged 26 to 85 years, comprising 64 (39.3%) males and 99 (60.7%) females, of whom 97 (59.5%) were diagnosed with upper GI cancers and 66 (40.5%) with lower GI cancers. The study revealed that 41.1% were moderately malnourished (Stage B) and 38.03% were severely malnourished (Stage C). Also, 95.09% (n=155) of patients required nutritional intervention, with 49.08% (n=80) experiencing significant weight loss (≥10%) in the last six months. NIS were prevalent, with 71.78% (n=117) experiencing three or more symptoms. Vomiting (76.07%), lack of appetite (80.98%), and swallowing difficulties (70.55%) were significantly associated with stages of malnutrition ($p<0.001$). Vomiting (OR 4.69, CI 25.40-465.62) and swallowing problems (OR 3.77, CI 12.87-147.40) had the strongest associations with severe malnutrition.

Conclusions: This study highlights the critical role of NIS in predicting malnutrition severity among GI cancer patients. Early identification of NIS and targeted dietary interventions are critical to improve clinical outcomes in preoperative GI cancer patients. The study demonstrates the importance of systematic nutritional assessment and a multidisciplinary approach to malnutrition management.

Keywords: Malnutrition, Nutrition Impact Symptoms (NIS), Gastrointestinal Cancer, PG-SGA, Nutritional Assessment

Introduction

Cancer is the leading cause of death worldwide, accounting for nearly 10 million deaths, or 1 in 6 deaths, in 2020. Its rising burden imposes significant physical, psychological, and financial stress on individuals, families, communities, and healthcare systems, particularly in low and middle-income countries with limited access to timely diagnosis and treatment.[1]

Malnutrition is a common issue among cancer patients, affecting 15% to 87%, with gastrointestinal (GI) cancer patients at a greater risk compared to those with other cancers.[2-4] GI cancer collectively refers to cancers of the digestive tract, including oesophageal, liver, gastric, gallbladder, biliary tract, pancreatic, and gastrointestinal stromal tumours as upper gastrointestinal cancers and small bowel, colorectal and anal cancers as lower gastrointestinal cancers.[5] Malnutrition in GI cancer often results from disease-related factors such as obstruction, impaired digestion, and nutrient absorption.[6]

Malnutrition stems from modifiable and non-modifiable factors, including increased energy demands from cancer cachexia, reduced food intake and physical activity.[7,8] In GI cancers, tumour-related factors like obstruction, malabsorption, immune responses, and treatment side effects, such as chemotherapy-induced nausea, vomiting, and GI losses associated with ostomies, further exacerbate malnutrition risk.[2]

Among contributing factors, Nutrition Impact Symptoms (NIS) are key prognostic indicators, reflecting barriers to adequate food intake such as anorexia, nausea, vomiting, constipation, mouth sores, and loss of appetite. These symptoms are influenced by tumour characteristics and treatment types.[9]

NIS can be assessed using tools like the Patient Generated Subjective Global Assessment (PG-SGA). Studies link NIS to the severity of malnutrition. In a cross-sectional study, it was found that anorexia, constipation, and taste changes increased the risk of moderate malnutrition, while constipation and mouth sores were associated with severe malnutrition.[10] Similarly, preoperative NIS such as poor appetite and early satiety in over half of cancer patients, with factors like unintentional weight loss, vomiting, and prolonged reduced food intake strongly linked to malnutrition.[11]

In a multicentric cross-sectional study involving 4,783 cancer patients, 45.3% were moderately malnourished, with swallowing difficulties, loss of appetite, vomiting, and multiple NIS being significant predictors of moderate to severe malnutrition. These findings emphasise the importance of early identification and management of NIS to mitigate malnutrition risks.[12]

Despite extensive research on malnutrition in cancer patients, significant gaps remain in understanding the specific role of NIS in GI cancer, particularly those in the preoperative stage. While studies have highlighted the role of NIS in general cancer populations, limited attention has been given to differences between upper and lower GI cancer patients, especially in preoperative patients. Thus, the study aims to address this gap by investigating the prevalence of malnutrition and its association with NIS in preoperative upper and lower GI cancer patients.

Subjects and Methods

This cross-sectional study was conducted for four months at two multispeciality hospitals with oncology departments in Coimbatore, Tamil Nadu, India. The purposive sampling method was followed in the study, and it included 163 gastrointestinal (GI) cancer patients, both male and female, in stages I, II, and III, who were assessed for nutritional status within 48 hours of hospital admission.

Patients with complications like hepatobiliary or pancreatic disorders, heart failure, pulmonary diseases, or renal disorders were excluded, as these conditions might have fluid imbalance, which may distort the actual malnutrition status. Additionally, Stage IV cancer patients or those in palliative care were also excluded.

Tumour location was categorised into upper gastrointestinal (UGI) and lower gastrointestinal (LGI). The patients were grouped as adults (<60 years) and elderly (≥60 years), according to the World Health Organisation classification for developing countries.[13]

Data collection and tools

The patient's sociodemographic data (age, gender, locality, marital status, family type) and clinical data (height (cm), weight (kg), tumour location) were collected from medical records.

PG-SGA

PG-SGA, a gold standard and validated tool specifically designed to assess the nutritional status of cancer patients, was used in this study. The PG-SGA includes several components: the patient's current weight (kg), height (cm), weight one month ago (kg), weight six months ago (kg), and food intake patterns (unchanged, more than usual or less than usual) along with the type of food consumed (normal food, little solid food, only liquids, only nutritional supplements or only tube feedings).

The nutrition impact symptoms of the patients, such as no problems with food, no appetite, no desire to eat, nausea, vomiting, constipation, mouth sores, diarrhoea, dry mouth, strange taste or no taste, smells bothers, feeling full quickly, pain, fatigue, swallowing difficulty and others (for example dental problems or depression), were assessed and scored.

ISSN: 2278-2044
DOI: https://doi.org/10.24321/2278.2044.202519

Additionally, the activity level and functional level of the selected patients were evaluated, ranging from normal with no limitations to pretty much bed ridden. Factors related to metabolic stress, such as fever and use of corticosteroids, were also assessed. The presence of other health conditions, including open wounds, fistula, trauma, and age over 65, was considered and scored. The patient's metabolic demand and physical examination, including muscle status, fat stores, and fluid status, were also assessed, along with the percentage of weight loss before one month and six months.

Based on the percentage of weight loss, nutrient intake, nutrition impact symptoms, functioning capacity, and physical examination, patients are categorised as Stage A (well nourished), Stage B (moderate malnutrition), and Stage C (severely malnourished).

PG-SGA also helps determine the need for nutritional intervention through nutritional triage recommendation based on total scores. A score of 0-1 suggests no intervention is required but routine reassessment during treatment; a score of 2-3 indicates the need for education for the patient and family by a dietitian, nurse, or clinician, with pharmacological intervention as indicated by symptom survey and lab values; a score of 4-8 requires intervention by a dietitian, in conjunction with a nurse or physician as indicated by the presence of symptoms, and a score of ≥9 indicates a critical need for symptom management and/or nutrient intervention options.

Ethical aspects

The ethical clearance and approval for the study were obtained from the Institutional Human Ethics Committee (IHEC) of Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, on 10.02.2023 and the approval number is AUW/IHEC/FSMD-22-23/FHP-6. The researcher explained the study and its objectives to the study participants, and informed consent was obtained from the patients in the regional language prior to data collection.

Statistical analysis

Descriptive statistics were used to summarise sociodemographic data, while chi-square tests were applied to assess differences between groups. Multivariate logistic regression models were applied to determine the associations between NIS and malnutrition, with p values < 0.05 considered statistically significant. Odds ratio (OR) and 95% confidence intervals (CI) were calculated to express the strength of these associations. Data were analysed using IBM SPSS version 21.0.

Results

Table 1 A total of one hundred and sixty- three patients were assessed, with a median age of 58 years. Of these, 55% (n=90) were adults aged less than 60 years, 60.74% (n=99) were female, 82% (n=135) belonged to an urban locality, with 90% (n=147) being married, and 76.69% (n=125) belonged to nuclear families. About 59.51% (n=97) were diagnosed with upper GI cancers, comprising oesophageal cancer, stomach cancer, pancreatic cancer, liver cancer and gallbladder cancer, followed by 40.49% diagnosed with lower GI cancer, comprising colon cancer and rectal cancer. Furthermore, about 68.71% (n=112) were in stage II of cancer.

Table I. Demographic and clinical characteristics of gastrointestinal tract cancer patients

N=163

Variables	n (%)
Age (median)	58 years
Min-Max	26-85 years
Stage of life	
Adult (<60 years)	90 (55.22)
Elderly (≥60 years)	73 (44.78)
Gender	
Male	64 (39.26)
Female	99 (60.74)
Locality	
Rural	28 (17.18)
Urban	135 (82.82)
Marital status	
Married	147 (90.18)
Unmarried	16 (9.82)
Family type	
Nuclear family	125 (76.69)
Joint family	38 (23.31)
Tumour location	
Upper GI	97 (59.51)
Esophagus	42 (43.30)
Stomach	33 (34.02)
Pancreas	11 (11.34)
Liver	6 (6.19)
Gallbladder	5 (5.15)
Lower GI	66 (40.49)

ISSN: 2278-2044
DOI: https://doi.org/10.24321/2278.2044.202519

Colon	35 (53.03)
Rectum	31 (46.97)
Stage of cancer	
Stage I	22 (13.50)
Stage II	112 (68.71)
Stage III	29 (17.79)

GI: Gastrointestinal tract

Table 2 shows the nutritional status, need for nutritional intervention, number of NIS and percentage of weight loss in the last six months. According to PG-SGA, 41.1% (n=67) were suspected or moderately malnourished (Stage B) and 38.03% (n=62) were severely malnourished (Stage C). The PG SGA nutrition triage recommendation score indicated that 95.09% (n=155) of patients were in need of nutritional intervention, 49.08% (n=80) had weight loss of ≥10.0%. and 71.78% (n=117) had three or more NIS.

Table 3 shows the presence of NIS according to sociodemographic variables, tumour location, stage of cancer, nutritional status, and need for nutritional intervention. It was observed that there were significant associations between NIS and tumour location in specific to upper GI cancers ($p < 0.001$), stage of cancer ($p < 0.001$), PG-SGA ($p=0.050$), need for nutritional intervention ($p<0.001$), and weight loss percentage in six months ($p < 0.001$).

Table 4 shows the associations between NIS and stage of malnutrition. It could be interpreted that the stage of malnutrition is significantly associated with no appetite ($p< 0.001$), nausea ($p=0.001$), constipation ($p=0.013$), mouth sores ($p< 0.001$), vomiting ($p<0.001$), dry mouth ($p=0.030$), swallowing problems ($p<0.001$), and others ($p<0.001$).

Odds ratio (OR) was done for the stages of malnutrition and NIS and is given in Table 5. It was found that symptoms such as swallowing problems (OR 6.21, 95% CI 1.66-23.32), vomiting (OR 4.53, 95% CI 23.28-371.58), others (OR 3.35, 95% CI 3.67-219.98), no appetite (OR 2.68, 95% CI 4.93-42.83), and mouth sores (OR 1.43, 95% CI 0.427-4.785) had high chances of leading to moderate malnutrition, while the symptoms associated with severe malnutrition were swallowing problems (OR 33.0, 95% CI 5.71-190.59), mouth sores (OR 9.37, 95% CI 2.37-37.07), vomiting (OR 4.69, 95% CI 25.40-465.62), others (OR 3.82, 95% CI 5.87-355.78), and no appetite (2.79, 95% CI 5.20-50.98).

Table 2. Stage of malnutrition, need for nutritional intervention, prevalence of Nutrition Impact Symptoms and percentage of weight loss in gastrointestinal cancer patients

N=163

Variables	n (%)
PG-SGA	
Well nourished (Stage A)	34 (20.85)
Suspected or moderately malnourished (Stage B)	67 (41.10)
Severely malnourished (Stage C)	62 (38.03)
Need for nutritional intervention	
Without need	8 (4.91)
With need	155 (95.09)
Weight loss percentage in six months	
Without weight loss	8 (4.91)
<10.0%	75 (46.01)
≥10.0%	80 (49.08)
Number of Nutrition Impact Symptoms (NIS)	
Without symptoms	9 (5.52)
<3	37 (22.70)
≥3	117 (71.78)

PG-SGA: Patient Generated-Subjective Global Assessment

ISSN: 2278-2044
DOI: https://doi.org/10.24321/2278.2044.202519

Table 3. Association of NIS with socio-demographic variables, tumour location, stage of cancer, stage of malnutrition, weight loss percentage in six months, and need for nutritional intervention

N=163

Variables	Total	Without symptoms	<3 NIS	≥3 NIS	p value
Stage of life					
Adult	90 (55.22)	4 (4.44)	36 (40.0)	50 (55.56)	0.766
Elderly	73 (44.78)	5 (6.85)	16 (21.92)	52 (71.23)	
Gender					
Male	99 (60.74)	5 (5.05)	23 (23.23)	71 (71.72)	0.945
Female	64 (39.26)	4 (6.25)	15 (23.44)	45 (70.31)	
Locality					
Rural	28 (17.18)	2 (7.14)	8 (28.57)	18 (64.29)	0.675
Urban	135 (82.82)	7 (5.19)	30 (22.22)	98 (72.59)	
Marital Status					
Married	147 (90.18)	8 (5.44)	35 (23.81)	104 (70.75)	0.222
Unmarried/ Widow	16 (9.82)	1 (6.25)	3 (18.75)	12 (75.0)	
Family Type					
Nuclear	125 (76.69)	7 (5.6)	27 (21.6)	91 (72.8)	0.643
Joint	38 (23.31)	2 (5.26)	11 (28.95)	25 (65.79)	
Tumour Location					
Upper GI	97 (59.51)	-			<0·001**
CA Esophagus	42 (43.30)	0 (0)	0 (0)	42 (100.0)	
CA Stomach	33 (34.02)	3 (9.09)	6 (18.18)	24 (72.73)	
CA Pancreas	11 (11.34)	0 (0)	5 (45.45)	6 (54.55)	
CA Liver	6 (6.19)	0 (0)	4 (66.67)	2 (33.33)	
CA Gallbladder	5 (5.15)	0 (0)	2 (40.0)	3 (60.0)	
Lower GI	66 (40.49)	-			0.756
CA Colon	35 (53.03)	4 (11.43)	11 (31.43)	20 (57.14)	
CA Rectum	31 (46.97)	2 (6.45)	10 (32.26)	19 (61.29)	
Stage of Cancer					
Stage I	22 (13.50)	8 (36.36)	14 (63.64)	0 (0)	<0·001**
Stage II	112 (68.71)	0 (0)	25 (22.32)	87 (77.68)	
Stage III	29 (17.79)	0 (0)	0 (0)	29 (100.0)	
PG-SGA					
Well nourished (Stage A)	34 (20.86)	4 (1.18)	9 (26.47)	21 (6.18)	0.050*
Suspected or moderately malnourished (Stage B)	67 (41.10)	3 (4.48)	19 (28.36)	45 (67.16)	
Severely malnourished (Stage C)	62 (38.04)	2 (2.98)	10 (14.93)	50 (74.63)	

ISSN: 2278-2044
DOI: https://doi.org/10.24321/2278.2044.202519

Need for nutritional intervention					
Without need	9 (5.52)	9 (100)	0 (0)	0 (0)	<0.001**
With need	154 (94.48)	0 (0)	116 (75.32)	38 (24.68)	
Weight loss percentage in six months					
Without loss	8 (4.91)	3 (3.75)	5 (6.25)	0 (0)	<0.001**
<10.0%	84 (51.53)	5 (5.95)	14 (16.67)	65 (77.38)	
≥10.0%	71 (43.56)	1 (1.41)	19 (26.76)	51 (71.83)	

NIS: Nutrition Impact Symptoms; GI: Gastrointestinal; PG-SGA: Patient Generated-Subjective Global Assessment
Chi square test; *Significant at 5% level; ** Significant at 1% level

Table 4.Association of stages of malnutrition with Nutrition Impact Symptoms

N=163

Nutrition Impact Symptoms	Total	Stage A	Stage B	Stage C	p value
No appetite	132 (80.98)	14 (10.61)	61 (46.21)	57 (43.18)	< 0.001**
Nausea	49 (30.06)	5 (10.20)	15 (30.61)	29 (59.19)	0.001**
Constipation	35 (21.47)	11 (31.43)	18 (51.43)	6 (17.14)	0.013**
Mouth sores	67 (41.10)	7 (10.45)	19 (28.36)	41 (61.19)	< 0.001**
No taste	36 (22.09)	7 (19.44)	15 (41.67)	14 (38.89)	1.000
Smell bother	20 (12.27)	3 (15.0)	9 (45.0)	8 (40.0)	0.826
Feel full quickly	61 (37.42)	16 (26.23)	20 (32.79)	25 (40.98)	0.205
Vomiting	124 (76.07)	4 (3.23)	62 (50.0)	58 (46.77)	< 0.001**
Diarrhea	41 (25.15)	4 (9.76)	22 (53.66)	15 (36.59)	0.069
Dry mouth	15 (9.20)	5 (33.33)	9 (60.0)	1 (6.67)	0.030*
Swallowing problem	79 (48.47)	6 (7.59)	29 (36.71)	44 (55.70)	< 0.001**
Pain	111 (68.10)	21 (18.92)	42 (37.84)	48 (43.24)	0.145
Others	68 (41.72)	1 (1.47)	31 (45.59)	36 (52.94)	< 0.001**

Others: Dental problems, depression and/or stress
Chi square test; *Significant at 5% level; ** Significant at 1% level

Table 5.Multivariate Logistic Regression Analysis of Nutrition Impact Symptoms Influencing the Degree of Malnutrition in GI Cancer Patients

N=163

Nutrition Impact Symptoms	PG-SGA	
	Moderately malnourished (Stage B) - Odds Ratio	Severely malnourished (Stage C) - Odds Ratio
No appetite	2.68** (4.93-42.83)	2.79** (5.20-50.98)
Nausea	0.515 (0.55-5.07)	1.629** (1.74-14.89)
Constipation	-0.264 (0.31-1.89)	-1.496**(0.07-0.68)
Mouth sores	1.43** (0.427-4.785)	9.37**(2.37-37.07)
No taste	0.11 (0.41-3.06)	0.12 (0.41-3.13)
Smell bother	0.47 (0.40-6.36)	0.43(0.38-6.20)
Feel full quickly	-0.74 (0.20-1.12)	-0.27 (0.33-1.77)
Vomiting	4.53** (23.28-371.58)	4.69**(25.40-465.62)
Diarrhea	0.82* (0.98-5.26)	0.56(0.75-4.08)

ISSN: 2278-2044
DOI: https://doi.org/10.24321/2278.2044.202519

Dry mouth	-0.11 (0.28-2.93)	-2.35*(0.01-0.85)
Swallowing problem	6.21**(1.66-23.32)	33.0**(5.71-190.59)
Pain	0.039(0.44-2.44)	0.75(0.85-5.29)
Others	3.35**(3.67-219.98)	3.82**(5.87-355.78)

PG-SGA: Patient Generated-Subjective Global Assessment, *Significant at 5% level;
** Significant at 1% level

Discussion

This study investigates the prevalence of malnutrition and its association with Nutrition Impact Symptoms (NIS) in preoperative gastrointestinal (GI) cancer patients. The findings highlight the critical need for early identification of malnutrition and symptom management to improve clinical outcomes.

The high prevalence of malnutrition, with 79.13% of participants experiencing moderate to severe malnutrition, aligns with prior research reporting prevalence rates of 84.9% .[14] Similarly, malnutrition and the need for nutritional intervention were noted in 60.0% and 90.4% of preoperative GI cancer patients, respectively[15]. This study also observed that 95.09% of patients required nutritional intervention at admission, consistent with findings that 91.4% of the cancer patients presented similar needs at hospital admission.[16]

NIS were prevalent in 71.78% of patients, with symptoms such as lack of appetite (80.98%), vomiting (76.07%), mouth sores (70.55%), pain (68.10) and swallowing problems (48.47%) being particularly common. These findings align with earlier studies documenting NIS in 80.7% of GI cancer patients, including nausea or fullness (27.7%), choking (14.3%), appetite loss, vomiting and diarrhoea in 38.8% of the patients.[17] Such symptoms, often multifactorial, drive reduced oral intake, weight loss, and consequently severe malnutrition. Additionally, symptoms like taste alterations and constipation, which were documented in advanced cancer patients, further exacerbate malnutrition.[18]

A higher NIS burden was strongly correlated with greater malnutrition severity, underscoring the need for systematic assessment of these symptoms. This aligns with evidence showing that NIS combined with significant weight loss are predictors of poor postoperative survival and diminished quality of life.[19]

Multivariate logistic regression revealed that swallowing problems (OR 33.0, 95% CI 5.71-190.59), mouth sores (OR 9.37, 95% CI 2.37-37.07), and vomiting (OR 4.69, 95% CI 25.40-465.62 were the strongest predictors of severe malnutrition. This study thus, underscores the critical role of NIS in the decline of nutritional status of preoperative gastrointestinal cancer patients. The high prevalence of NIS is strongly associated with moderate and severe malnutrition, emphasising the need for early and comprehensive nutritional assessments. Given the multifactorial nature of malnutrition, it is essential that clinicians adopt a multidisciplinary approach, involving dietitians, oncologists and other healthcare professionals, to tailor dietary interventions aimed at addressing both malnutrition and NIS to improve patient outcomes.

The prevalence of NIS in preoperative GI cancer patients reveals distinct challenges in upper and lower GI cancers. Upper GI cancers often cause swallowing problems, vomiting and loss of appetite due to the tumour obstructions, reduced gastric capacity and delayed gastric emptying, which hinder food intake and digestion. Lower GI cancers commonly have led to altered bowel habits, abdominal pain and chronic diarrhoea or constipation, reflecting their impact on nutrient absorption and excretion. These issues contribute to malnutrition through nutrient malabsorption, fluid loss, and deficiencies. Upper GI cancers primarily impair intake and digestion, necessitating interventions like feeding tubes or stents, while lower GI cancers disrupt absorption, requiring management of diarrhoea, constipation, and deficiencies. This highlights the need for early, comprehensive assessments and multidisciplinary care tailored to specific challenges.

Future research should focus on longitudinal studies that track the progression of NIS and malnutrition throughout the cancer treatment trajectory. Additionally, exploring the impact of specific interventions targeted at mitigating these symptoms, as well as their long-term effects on survival rates and quality of life, would provide further insight into the optimal management of malnutrition in gastrointestinal cancer patients.

Conclusion

Nutrition Impact Symptoms (NIS) has significantly influenced the nutritional status and the need for nutritional intervention in preoperative gastrointestinal cancer patients. These findings underscore the importance of early nutritional screening, assessment and tailored dietary interventions to address NIS effectively. A multidisciplinary approach is essential to mitigate malnutrition, enhance treatment tolerance, and ultimately improve the quality of life and clinical outcomes.

ISSN: 2278-2044
DOI: https://doi.org/10.24321/2278.2044.202519

Acknowledgement

The authors would like to thank the Indian Council of Social Science Research (ICSSR) for providing financial assistance under the ICSSR Centrally Administered Full Term Doctoral Fellowship and also thank the physicians, oncologists, nurses, and dietitians in the oncology departments of the multispeciality hospitals, as well as the caretakers and the study participants.

Conflict of Interest: None

Source of Funding: This study was funded by the Indian Council of Social Science Research (ICSSR), under the ICSSR Centrally Administered Full Term Doctoral Fellowship

Author's Contribution: SJ: Data collection and compilation, conceptualization, manuscript drafting, statistical analysis, reviewing & editing, TS: Supervision of data collection, guided clinical implications of research findings, critical review of manuscript, and guidance on manuscript refinement.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process: None

References

1. World Health Organization. Cancer [Internet]. Geneva: World Health Organization; 2022 Feb 3 [cited 2025 Jun 25]. Available from: https://www.who.int/news-room/fact-sheets/detail/cancer
2. Levonyak NS, Hodges MP, Haaf N, Brown TJ, Hardy S, Mhoon V, Kainthla R, Beg MS, Kazmi SM. Importance of addressing malnutrition in cancer and implementation of a quality improvement project in a gastrointestinal cancer clinic. Nutrition in Clinical Practice. 2022 Feb;37(1):215-23. [Google Scholar] [Pubmed]
3. Shakersain B, Santoni G, Faxen-Irving G, Rizzuto D, Fratiglioni L, Xu W. Nutritional status and survival among old adults: an 11-year population-based longitudinal study. European journal of clinical nutrition. 2016Mar;70(3):320-5. [Google Scholar] [Pubmed]
4. Zhang X, Tang T, Pang L, Sharma SV, Li R, Nyitray AG, Edwards BJ. Malnutrition and overall survival in older adults with cancer: A systematic review and meta-analysis. Journal of geriatric oncology. 2019 Nov 1;10(6):874-83. [Google Scholar] [Pubmed]
5. Shaw C. Management of diet in gastrointestinal cancer. Proceedings of the Nutrition Society. 2021 Feb;80(1):65-72. [Google Scholar] [Pubmed]
6. do Prado CD, Campos JÁ. Nutritional status of patients with gastrointestinal cancer receiving care in a public hospital; 2010-2011. Nutrición Hospitalaria. 2013;28(2):405-11. [Google Scholar] [Pubmed]
7. Gupta D, Vashi PG, Lammersfeld CA, Braun DP. Role of nutritional status in predicting the length of stay in cancer: a systematic review of the epidemiological literature. Annals of Nutrition and Metabolism. 2011 Dec 2;59(2-4):96-106. [Google Scholar] [Pubmed]
8. Arends J. Nutrition in Cancer Patients. Aktuelle Ernährungsmedizin. 2012;37(02):91-106. [Google Scholar] [Pubmed]
9. Silva FR, de Oliveira MG, Souza AS, Figueroa JN, Santos CS. Factors associated with malnutrition in hospitalized cancer patients: a croos-sectional study. Nutrition journal. 2015 Dec;14:1-8. [Google Scholar] [Pubmed]
10. Silva TA, Maia FD, Zocrato MC, Mauricio SF, Correia MI, Generoso SD. Preoperative and postoperative resting energy expenditure of patients undergoing major abdominal operations. Journal of Parenteral and Enteral Nutrition. 2021 Jan;45(1):152-7. [Google Scholar] [Pubmed]
11. Maia FD, Silva TA, de Vasconcelos Generoso S, Correia MI. Malnutrition is associated with poor health-related quality of life in surgical patients with gastrointestinal cancer. Nutrition. 2020 Jul 1;75:110769. [Google Scholar] [Pubmed]
12. Deftereos I, Yeung JM, Arslan J, Carter VM, Isenring E, Kiss N, NOURISH Point Prevalence Study Group. Assessment of nutritional status and nutrition impact symptoms in patients undergoing resection for upper gastrointestinal cancer: results from the multi-centre NOURISH point prevalence study. Nutrients. 2021 Sep 24;13(10):3349. [Google Scholar] [Pubmed]
13. de Pinho NB, Martucci RB, Rodrigues VD, D'Almeida CA, Thuler LC, Saunders C, Jager-Wittenaar H, Peres WA. Malnutrition associated with nutrition impact symptoms and localization of the disease: results of a multicentric research on oncological nutrition. Clinical Nutrition. 2019 Jun 1;38(3):1274-9. [Google Scholar] [Pubmed]
14. World Health Organization. Health Topics: Ageing and Life Course. World Health Organization; 2017. Accessed September 18, 2020
15. Shpata V, Prendushi X, Kreka M, Kola I, Kurti F, Ohri I. Malnutrition at the time of surgery affects negatively the clinical outcome of critically ill patients with gastrointestinal cancer. Medical Archives. 2014 Jul 31;68(4):263. [Google Scholar] [Pubmed]
16. Viana EC, Oliveira ID, Rechinelli AB, Marques IL, Souza VF, Spexoto MC, Pereira TS, Guandalini VR. Malnutrition and nutrition impact symptoms (NIS) in surgical patients with cancer. PLoS One. 2020 Dec 15;15(12):e0241305. [Google Scholar] [Pubmed]
17. Teixeira AC, Mariani MG, Toniato TS, Valente KP, Petarli

GB, Pereira TS, Guandalini VR. Scored Patient-Generated Subjective Global Assessment: risk identification and need for nutritional intervention in cancer patients at hospital admission. [Google Scholar]
18. Zhang L, Lu Y, Fang Y. Nutritional status and related factors of patients with advanced gastrointestinal cancer. British journal of nutrition. 2014 Apr;111(7):1239-44. [Google Scholar] [Pubmed]
19. Omlin A, Blum D, Wierecky J, Haile SR, Ottery FD, Strasser F. Nutrition impact symptoms in advanced cancer patients: frequency and specific interventions, a case–control study. Journal of cachexia, sarcopenia and muscle. 2013 Mar;4:55-61. [Google Scholar] [Pubmed]
20. Anandavadivelan P, Martin L, Djärv T, Johar A, Lagergren P. Nutrition impact symptoms are prognostic of quality of life and mortality after surgery for oesophageal cancer. Cancers. 2018 Sep 7;10(9):318. [Google Scholar] [Pubmed]

ISSN: 2278-2044
DOI: https://doi.org/10.24321/2278.2044.202519