

Research Article

Evaluation of the Nutritional Status of Adult Cancer Patients in a Reference Hospital of Cameroon Using Patient-Generated Subjective Global Assessment

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Abstract

Background: Cancer is a leading cause of mortality worldwide, with malnutrition being a common comorbidity (prevalence 20-80%) that negatively impacts patient outcomes, increasing morbidity, mortality, and poor treatment tolerance. Early diagnosis and intervention are critical, yet nutritional status is often overlooked, particularly in low-resource settings. We aimed to evaluate the prevalence and severity of malnutrition among adult cancer patients at the Yaoundé General Hospital. **Methods:** We conducted a cross-sectional descriptive study from December 2021 to August 2022, including 109 adult cancer patients (age ≥ 18 years) using non-probability consecutive sampling. Nutritional status was assessed using the Patient-Generated Subjective Global Assessment (PG-SGA), classifying patients as well-nourished (A), moderately malnourished (B), or severely malnourished (C). **Results:** The cohort was predominantly female (62.4%), with a mean age of 51.78 ± 15.7 years. Breast cancer was the most common malignancy (25.7%), and 59.6% of patients presented with metastatic disease. The overall malnutrition rate was 52.3%, with 18.4% of cases being moderate (Stage B) and 33.9% being severe (Stage C). Cancers of the head and neck and stomach accounted for the highest proportion of malnourished patients (33.3% for each group). A critical finding was that only 20.2% of patients had received any form of nutritional intervention during their oncology follow-up. **Conclusion:** The prevalence of malnutrition is critically high (52.3%), with a high severity index, underscoring a significant and immediate gap in comprehensive cancer care in Cameroon. Routine PG-SGA screening and the urgent implementation of nutritional management protocols are essential to improve the quality of life and outcomes for cancer patients in resource-limited settings.

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Keywords

Nutritional Status, Adult Patients, Cancer, Malnutrition, PG-SGA, Cameroon

1. Introduction

Cancer is a leading cause of global mortality. In 2020, Cameroon reported 20,745 new cancer cases, with a mortality-to-incidence ratio of over 60% [1]. The disease and its treatments cause complex metabolic disturbances that can lead to undernutrition, a pathological condition resulting from an imbalance between nutrient intake and the body's needs [2-4]. Malnutrition is an integral part of cancer progression and is directly responsible for patient death in 20-30% of cases [5]. Its prevalence ranges widely, from 20% to 80%, depending on the patient's age and the tumor's location and extent [5, 6].

Therapeutic advances in oncology have been significant, but anti-cancer treatments such as chemotherapy and radiotherapy can exacerbate metabolic disturbances and lead to toxicities (nausea, vomiting, anorexia, mucositis), further reducing nutritional intake. Severe malnutrition is associated with increased morbidity and mortality, longer hospital stays, reduced quality of life, more frequent postoperative complications, and poorer tolerance of anti-cancer treatments [6, 7]. Therefore, early detection and management of malnutrition are crucial and should be integrated into the overall, multi-disciplinary management of the disease [8].

Despite its well-established impact, nutritional status is often a neglected aspect of cancer care. A review of 50 original research articles published in the *Journal of Clinical Oncology* in 2019, which reported the results of systemic oncology treatments, found that while all collected demographic and clinical data, only three studies noted the participants' body mass index [9]. This highlights that nutritional status is largely overlooked in clinical trials despite its profound impact on patient outcomes.

In Cameroon, data on the nutritional status of adult cancer patients are scarce. Pondy et al. found a malnutrition prevalence of 10.3% in a pediatric cancer population, but little data is available for adults [10]. Crucially, no prior study in this setting has systematically utilized a validated, gold-standard tool like the PG-SGA to establish the true prevalence and severity of malnutrition in a diverse adult oncology cohort. This study, therefore, provides the first robust, benchmark data on this critical comorbidity in Cameroonian adults, which is essential for developing evidence-based local guidelines and integrating nutritional support into national oncology policy. To address this knowledge gap and contribute to the improvement of comprehensive patient care, we aimed to describe the nutritional status of adult cancer patients in the oncology department of the Yaoundé General Hospital.

The findings of this study could help implement locally adapted therapeutic strategies to improve the quality of life and life expectancy of Cameroonian cancer patients.

2. Materials and Methods

2.1. Study Design, Location, and Duration

We conducted a cross-sectional descriptive study in the Medical Oncology Department of the Yaoundé General Hospital (YGH), a reference facility in Cameroon's health pyramid. The study took place over a nine-month period from December 2021 to August 2022.

2.2. Sampling and Study Population

Our target population consisted of patients diagnosed with cancer and followed at the YGH. The inclusion criteria were: an anatomopathological confirmation of cancer, age 18 years or older, and informed consent to participate. Patients who could not recall their previous weights were excluded. We used non-probability, consecutive, and exhaustive sampling to recruit participants. While this 'convenience' method allowed for the collection of data over a defined period in a resource-limited setting, we explicitly acknowledge that this non-probabilistic approach limits the generalizability of our findings and may introduce selection bias.

2.3. Procedure and Data Collection

We used consultation and hospitalization registers to identify eligible patients. After obtaining informed consent, we collected data using a standardized questionnaire. To ensure the reliability of the PG-SGA tool, all nutritional assessments were carried out by two trained co-investigators who underwent a specific training session on the standardized administration and scoring of the PG-SGA, including its physical examination component, prior to the start of the study. The following data were recorded:

- 1) Sociodemographic variables: age, sex, marital status, nationality, region of origin, education level, occupation, and place of residence.
- 2) Clinical variables: history (dietary habits, smoking, alcohol use, hypertension, diabetes, chronic kidney disease, viral hepatitis, HIV infection), general condi-

tion (WHO performance status), anthropometric parameters, cancer location, date of diagnosis, disease stage, and treatments received.

- 3) Nutritional status was assessed using the *Patient-Generated Subjective Global Assessment (PG-SGA)* questionnaire, which has been validated in oncology with a sensitivity of 98% and a specificity of 82% [11, 12]. The PG-SGA classifies nutritional status into three stages based on patient-reported data (weight loss, food intake, symptoms, functional capacity) and investigator-assessed physical examination (fat loss, muscle wasting, edema, ascites):

- 1) *Stage A*: Well-nourished.
- 2) *Stage B*: Moderately malnourished.
- 3) *Stage C*: Severely malnourished. In our study, undernutrition was defined as a PG-SGA score of Stage B or C. Weight loss (WL) was calculated as a percentage: $WL (\%) = [(usual\ weight\ or\ weight\ 1\ or\ 6\ months\ ago) - current\ weight] \times 100 / (usual\ weight\ or\ weight\ 1\ or\ 6\ months\ ago)$.

2.4. Statistical Analysis

Data analysis was performed using SPSS version 25. Descriptive statistics, including central tendency (mean, median) and dispersion (standard deviation) parameters, were used for continuous variables. Categorical variables were described using percentages and frequencies.

2.5. Ethical and Administrative Considerations

Ethical clearance was obtained from the Institutional Ethical Review Board of the Faculty of Medicine and Biomedical Sciences of the University of Yaoundé I, in Cameroon (N° 363 /UYI/FMSB/VDRC/DAASR/CSD of the 06/06/2022), and research authorization was granted by the Yaoundé General Hospital administration. The study posed no risk to patients, and medical confidentiality was strictly preserved.

3. Results

A total of 109 patients were recruited for the study. The cohort was predominantly female (62.4%) with a mean age of 51.78 ± 15.7 years (range 18 to 87). The age group from 45 to 54 years was the most represented (27.5%). The majority of patients were married (60.6%) and had a secondary education (36.7%) (Table 1).

Table 1. Sociodemographic characteristics of the study population.

Characteristic	Number (n=109)	Percentage (%)
Gender		
Male	41	37.6

Characteristic	Number (n=109)	Percentage (%)
Female	68	62.4
Age (years)		
18-24	6	5.5
25-34	10	9.2
35-44	18	16.5
45-54	30	27.5
55-64	19	17.4
65-74	17	15.6
≥ 75	9	8.3
Profession		
Unemployed	39	35.8
Student	6	5.5
Worker	16	14.7
Office worker	15	13.8
Retailer	23	21.1
Other	10	9.2

The most common cancer was breast cancer (25.7%), followed by head and neck cancers (12.8%). Over half of the patients (59.6%) were diagnosed with metastatic disease at the time of the study. A significant proportion of patients (38.5%) had a normal WHO performance status of 0 (Table 2).

Table 2. Clinical characteristics of the study population.

Characteristic	Number (n=109)	Percentage (%)
Tumor Location		
Breast	28	25.7
Head and neck	14	12.8
Cervix	9	8.3
Stomach	9	8.3
Bones and soft tissues	7	6.4
Prostate	6	5.5
Nodes, blood and bone marrow	6	5.5
Colon and rectum	5	4.6
Liver	4	3.7
Pancreas	4	3.7
Lungs	3	2.8
Endometrium	3	2.8

Characteristic	Number (n=109)	Percentage (%)
Esophagus	3	2.8
Kidneys	2	1.8
Ovaries	2	1.8
Other	4	3.7
Disease Stage		
Stage I	2	1.8
Stage II	9	8.3
Stage III	33	30.3
Stage IV	65	59.6
Current Performance Status (WHO)		
0	42	38.5
1	31	28.4
2	18	16.5
3	15	13.8
4	3	2.8

The overall rate of malnutrition was 52.3%, with 18.4% of patients being moderately malnourished (Stage B) and 33.9% being severely malnourished (Stage C). This contrasts with the 47.7% of patients who were well-nourished (Stage A) according to the PG-SGA. Head and neck and stomach cancers accounted for the highest proportion of malnourished patients (33.3% for each group). A Chi-square test revealed a statistically significant association between tumor location (specifically head/neck and upper gastrointestinal tracts) and the degree of malnutrition (Stage B/C) compared to other cancer types ($p<0.05$). Furthermore, severe malnutrition (Stage C) was significantly more frequent in patients with WHO Performance Status ≥ 2 (58.3% of Stage C patients) compared to well-nourished patients ($p<0.01$)."

Only 20.2% of the patients had received any form of nutritional management since their cancer diagnosis. The most common interventions were dietary advice (50%), food fortification (36.4%), and the prescription of appetite stimulants (36.4%) (Table 3). The use of enteral and parenteral nutrition was rare, at 18.2% and 4.6% respectively.

Table 3. Nutritional Management of Oncology Patients.

Nutritional Management	Number (n=22)	Percentage (%)
Dietary advice	11	50.0
Fortified food	8	36.4

Nutritional Management	Number (n=22)	Percentage (%)
Orexigens	8	36.4
Enteral feeding	4	18.2
Oral nutritional supplements	1	4.6
Parenteral nutrition	1	4.6

4. Discussion

This study, conducted in a Cameroonian tertiary hospital, reveals a high prevalence of malnutrition among adult cancer patients. This finding is consistent with the widely recognized issue of cancer-related malnutrition, with our prevalence rate falling within the lower end of the global range of 20% to 80% [5]. Our results are comparable to those from studies in Iran (53.1%) [19] and other developing countries [13, 15, 16], but lower than those reported in Spain (69.2%) and China (79.39%), a discrepancy likely attributed to the heterogeneity in study populations, methodologies, and the tools used for nutritional assessment across different studies [22, 23].

The high proportion of patients presenting with metastatic disease and low educational attainment highlights the ongoing challenges of delayed diagnosis and limited cancer awareness in Cameroon. This late presentation acts as a dual burden: it drives the high prevalence of malnutrition observed, as advanced tumors are more likely to induce cachexia, and it simultaneously limits the window for effective nutritional intervention, as patients are often critically ill upon arrival [2, 3]. Furthermore, our data show that cancers of the head and neck and stomach were most frequently associated with malnutrition, which aligns with findings from international studies like Nutricancer and PreMIO [20, 24]. The anatomical location of these tumors presents a physical barrier to feeding, exacerbating the risk of nutritional decline. This correlation strongly suggests that a lack of early screening for dysphagia and odynophagia in these specific oncological populations is a major systemic failure in our current local practice.

A striking finding of our study is the significant gap between the high prevalence of malnutrition and the low rate of nutritional management. Only a small fraction of our cohort (20.2%) received any form of nutritional support, with the majority of interventions limited to basic dietary advice. This is a critical deficiency in cancer care. It mirrors observations from other studies that report a lack of systematic nutritional screening and management in oncology [9, 17]. This gap can be attributed to multiple barriers, including a lack of specialized nutrition experts within the oncology department, limited knowledge among oncologists regarding nutritional support protocols, as reported in surveys from other contexts [18], and the high cost and scarcity of nutritional products like oral supplements or enteral and parenteral solutions in our setting. Furthermore, the nutritional status of patients often correlates

with their quality of life and treatment tolerance [14, 21], a crucial aspect not fully explored in our retrospective study, but consistent with observations elsewhere [14, 21]. The fact that factors like age, disease stage, and comorbidities are universally linked to malnutrition [14] highlights the generalizability of our findings, despite our limitations.

Our results highlight the urgent need for a paradigm shift in cancer care in Cameroon and other similar contexts. The diagnosis and treatment of malnutrition must be integrated as a standard component of patient care, not an afterthought. This requires not only the establishment of clear national protocols but also the training of healthcare professionals on the importance of nutritional screening and management. Addressing these deficiencies is essential to improve treatment tolerance, reduce complications, and ultimately enhance the quality of life and survival rates of cancer patients.

Systemic and Structural Barriers to Nutritional Care: The profound gap between the high prevalence of malnutrition and the minimal intervention rate (20.2%) is not merely an oversight; it reflects deep-seated structural barriers endemic to low-resource settings. Firstly, the lack of dedicated, salaried clinical dietitians within the public oncology service means nutritional care is often relegated to overburdened medical staff lacking specialized training. Secondly, the prohibitive cost of specialized nutritional products (enteral feeding, oral supplements) which are typically out-of-pocket expenses in Cameroon, renders essential support inaccessible to the majority of patients who already face catastrophic medical expenditures. Finally, the absence of a standardized national or institutional protocol for nutritional screening and management ensures that interventions remain sporadic and non-systematic, thereby contributing to the observed deficiency in comprehensive care.

5. Conclusions

This study confirms a high overall prevalence of malnutrition (52.3%) among adult cancer patients in a Cameroonian reference hospital. Despite this, only a small proportion of patients received any form of nutritional management. This underscores a critical need for the systematic diagnosis and treatment of malnutrition in routine clinical practice. By prioritizing nutritional support, we can significantly improve the quality of care and outcomes for cancer patients in low-resource settings.

Abbreviations

HIV	Human Immunodeficiency Virus
PG-SGA	Patient-Generated Subjective Global Assessment
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

YGH Yaoundé General Hospital

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Author Contributions

Berthe Sabine Esson Mapoko: Conceptualization, Data curation, Formal Analysis, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing – review & editing

Pelagie Douanla: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Project administration, Resources, Software, Writing – original draft

Etienne Atenguena: Conceptualization, Data curation, Formal Analysis, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – review & editing

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Data Availability Statement

The data is available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

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Biography



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