An Appraisal of Malnutrition in Gynaecologic Cancer Patients Attending the Gynaecology Clinic in the University of Port Harcourt Teaching Hospital, Nigeria

Bassey Goddy[1*] and Igberase-Eromosele Temitope[1]

[1]*Department of Obstetrics and Gynaecology, University of Port Harcourt Teaching Hospital, Port Harcourt, Rivers State, Nigeria.*

Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Background: Malnutrition in cancer patients is associated with increased risk of adverse effects including mortality and thus requires special attention.

Objective: The aim of this study was to determine the prevalence and factors affecting malnutrition amongst gynaecological cancer patients at the University of Port Harcourt teaching hospital (UPTH).

Methodology: This was a prospective cross-sectional study involving 74 patients with histologically confirmed genital tract malignancies at the UPTH. A structured proforma was used to obtain nutritional history from the participants while the serum albumin level was used to determine the nutritional status. Data entry and analysis was conducted using SPSS version 25 software package. Results were presented in simple frequency tables and percentages. Chi square test was used to compare categorical variables and p value less than 0.05 was considered significant.

Results: The prevalence of malnutrition was 39.19%. The age range of participants was 26-92 years with most (25.7%) in the 4th decade. Patients with cervical and ovarian malignancies were

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Corresponding author: E-mail: basseygoddy@yahoo.com;

more at risk of malnutrition. Low socioeconomic status, advanced stage disease, and reduced food intake were significantly associated with malnutrition. Poor appetite and early satiety were associated with poor food intake.

Conclusion: Malnutrition is highly prevalent amongst the study population. Cervical and ovarian cancer patients were more likely to suffer from malnutrition. Improvement in socioeconomic status and early detection of malignancy will improve the nutritional status of the study population.

1. INTRODUCTION

Gynaecological cancers are leading cause of death in women worldwide and knowing the demographic and clinical characteristics of affected women may be an interesting tool for understanding the individual needs and improving the quality of life of these patients [1,2] Among the clinical characteristics, the nutritional status deserves special attention because malnutrition is a common and under-diagnosed problem in patients with malignant diseases and it has been correlated to a number of physical, psychological and clinically relevant adverse effects in gynae oncology patients [3]. In patients requiring surgery, the clinical impact of malnutrition include an increased risk of morbidity and mortality, peri-operative complications such as wound infections, high cost of hospitalisation, and decreased quality of life [1,4].

The prevalence of cancer- related malnutrition ranges from 30% to 64% in inpatients and is related to an increased risk for adverse clinical outcome, poor quality of life and lower survival rates [5]. It has also been found that as many as 20% of cancer patients die from the effects of malnutrition rather than from the malignancy [5]. Moreover, malnutrition worsens the responsiveness and tolerance to anticancer therapy [5]. On the other hand, early and adequate provision of nutritional support for those identified as malnourished has been demonstrated to improve outcome [5,6].

A significant proportion of patients with gynaecological malignancies seem to experience malnutrition and patients with advanced ovarian cancer are particularly at risk [1]. Although the aetiology of malnutrition is multifactorial, there are two major culprits leading to this tragedy. The primary cause results from inadequate or poor-quality food intake while the secondary cause results from the disease itself which alters food intake or nutrient requirements, metabolism and absorption. The effects of malnutrition include immunodeficiency, abnormal muscle function, poor quality of life, poor treatment response including side effects and severity of chemotherapy and short survival length [7].

It is pertinent that nutritional issues be addressed at the time of diagnosis and throughout the course of cancer care [5]. Effective nutritional screening and intervention are very crucial in preventing symptoms and effects of malnutrition in gynae oncology patients and to minimize complications and improve the quality of life [2,5]. Therefore, assessing the nutritional status of gynae oncology patients should be an integral part of the care of these patients.

The various nutrition assessment methods may be arbitrarily divided into subjective (dietetic history), objective (serum albumin, haemoglobin, body mass index (BMI), weight lost in 1-6 months), or comprehensive nutrition assessment tools (scored Patient Generated Subjective Global assessment (PG-SGA), Malnutrition Universal Screening Tool, and Mini Nutritional assessment [8]. The scored PG-SGA has been considered the gold standard to determine the sensitivity and the specificity of the other methods used to evaluate for nutritional status [2,8].

However, the use of objective nutrition parameters (anthropometric, biochemical and immunological) such as serum albumin, haemoglobin, body mass index (BMI), weight lost to assess nutritional status is still in use for example, in India and other developing countries, where instead of any comprehensive nutrition assessment tool, the nutrition level of a cancer patient is mostly judged from his/ her BMI, haemoglobin, or serum albumin level [8]. This problem of underestimating the importance of proper nutritional assessment in cancer patients is prevalent in more developing nations too because of cumbersome and detailed nature of these nutrition assessment tools [9,10].

1.1 Objective

The objective of this pioneer study is to determine the prevalence and factors contributing to malnutrition among patients with confirmed gynaecological malignancies attending the gynaecologic clinic in the University of Port Harcourt Teaching Hospital (UPTH).

2. MATERIALS AND METHODS

This was a descriptive cross-sectional study with the target population being patients with proven primary gynaecological cancers attending the gynaecological clinic of the University of Port Harcourt Teaching Hospital from 1st January 2018 to 31st December 2019. All patients with confirmed histological diagnosis of genital tract malignancy who consented to take part in the study were included while those who refused to give consent were excluded. Seventy-four gynaecological patients were assessed for their nutritional status using their serum albumin level. Serum albumin level was determined using an automated autoanalyzer machine. Other parameters assessed were BMI, haemoglobin concentration, weight loss in the last 1 month and 6 months. The inclusion criterion was confirmed cases of gynaecological malignances. A set of pre-tested interviewer administered questionnaires were used to collect data from the clients. The values of haemoglobin and serum albumin were extracted from the case files. The questionnaire assessed the subjective aspect of the patient's nutritional status using the medical history components of the PG-SGA which include weight change, dietary intake and symptoms that affected dietary intake (such as nausea, vomiting, poor appetite, constipation, early satiety and side effect of drugs). Height and weight were measured at the gynaecological oncology consultation. Body weight was measured in kilograms using the same scale for all patients while the height was measured in meters. A retrospective review of medical records provided information on patient's details, histopathology diagnosis, stage of the disease, serum albumin and haemoglobin concentration. Criteria for normal haemoglobin level as well as mild, moderate, and severe anaemia was defined according to World Health Organisation (WHO) as >12g/dl, 11-11.9g/dl, 8-10.9g/dl, and <8g/dl respectively [11]. The values for normal level of serum albumin and mild, moderate, and severe hypoalbuminemia were taken as >35mg/dl, 30-35 mg/dl, 21-29mg/dl and< 20mg/dl respectively [12]. Height and weight were used to determine BMI (weight(kg)/height (m^2)), which was further classified according to the World health Organisation's age and sex-adjusted criteria as undernourished if < 18.5 kg/m^2, normal weight from 18.5-24.9 kg/m^2, overweight as 25-29.9 kg/m^2, and obese if $\geq$ 30kg/m^2 [13]. Socioeconomic status of the patients was determined using the Olusanya's classification [14], Data were analysed using SPSS version 25 software package and results presented as simple percentages and frequency Tables. The cases were divided into various groups for comparison purpose using Chi square test and statistical significance was reported at the conventional *P*< 0.05 level.

3. RESULTS

Twenty-nine of the 74 patients that took part in the study had malnutrition based on their serum albumin level giving a prevalence of malnutrition of 39.19%. Table 1 shows the socio-demographic characteristics of the patients. The age of the patients ranged between 26 and 92 years, with most (25.7%) in their fourth decade. No age range was significantly associated with malnutrition as shown in Table 2. However, patients in their 5th decade of life were four times more likely to be malnourish (OR=3.97). The mean age of patients with cervical cancer was 57.96 $\pm$ 12.99 years, ovarian cancer was 47.00 $\pm$ 12.09 years, endometrial cancer was 48.60 $\pm$ 14.02 years while vulva cancer was 63.75 $\pm$ 6.99 years. Majority of the patients, 50 (67.6%) were married while 16 (21.6 %) were widows. Majority (43.2%) of the patients had tertiary level of education and level of education was not significantly associated with malnutrition. Using the Olusanya's method to determine socioeconomic status (SES), of the 50 married patients, all 10 of the patients with low SES had malnutrition while 15 out of 40 patients with a higher SES had malnutrition and the difference was statistically significant (P=0.0004).

Twenty-eight (37.8%) patients had cancer of the ovary, twenty-seven (36.5%) had cervical cancer, fifteen (20.3%) patients had endometrial cancer and four (5.4%) had vulva cancer. As shown in Table 3 none of the genital tract malignancies was significantly associated with malnutrition evident by their p values, however cervical cancer patients were twice more likely to have malnutrition compared to other genital malignancies as shown by the OR of 2.3. In terms of the stage of the disease, 23 patients out

of 52 patients with advanced stage disease (stage 3 and 4) had malnutrition whereas 2 out of 22 patients with early stage disease (stage 1 and 2) had malnutrition and the difference was statistically significant (P=0.0035). Patients with advanced disease were about 8 times more likely to have malnutrition (OR=7.93). Most patients with advanced malignancy had either cervical or ovarian malignancy. BMI assessment showed that 18 (24.3%) patients had normal weight, 35 (47.3%) were overweight and 21(28.4%) were obese. None of the patients was underweight. BMI correlated poorly with malnutrition in this study especially in patients with ovarian malignancy as patients who were clinically cachectic had normal or high BMI. Most 24 (85.7%) of the patient with ovarian malignancy had ascites. Five (17.2%) of the 29 cases of hypoalbuminaemia had severe hypoalbuminaemia and all were patients with ovarian cancer. Fourteen (19.0%) patients had severe anaemia with haemoglobin level of <8g/dl, 39 (52.6%) had moderate anaemia, 13 (17.6%) had mild anaemia, and 8 (10.8%) had normal haemoglobin level. Fifty-four (73%) patients had weight loss in the last 1 month. 54 (72.9%) patients also reported that their food intake was less than usual out of which 25 had malnutrition while 20 (27.1%) reported that it was unchanged out of which 4 had malnutrition and the difference was statistically significant (P=0.0124, OR=4.31). Forty (54%) patients had their nutrition affected by change in the quantity of food intake while 14 (18.9%) had their nutrition affected by complete change of diet with preference for liquid food. The most common factor affecting food intake amongst the studied population was reduced appetite reported in 34 (45.9%) patients while amongst those with malnutrition early satiety was the most common factor reported in 14 (48.2%) patients as shown in Table 4.

Table 1. Socio-demographic Characteristics

Sociodemographic Variables	Frequency	%
Age group (n-74)		
20-29	4	5.4
30-39	9	12.2
40-49	19	25.7
50-59	17	23.0
60-69	16	21.6
>70	9	12.2
Marital Status (n=74)		
Divorced	1	1.4
Married	50	67.6
Single	7	9.5
Widow	16	21.6
Socioeconomic Status (n=50)		
High	25	50.0
Middle	15	30.0
Low	10	20.0
Parity (n=74)		
0	16	21.6
1	5	6.8
2	8	10.8
3	9	12.2
4	5	6.8
5 Above	31	41.9
Level of Education (n=74)		
None	10	13.5
Primary	11	14.9
Secondary	21	28.4

Sociodemographic Variables	Frequency	%
Tertiary	32	43.2
Occupation (n=74)		
Civil Servant	19	25.7
Self Employed	23	31.1
Business	8	10.8
Farmer	10	13.5
Unemployed	5	6.8
Retired	9	12.2

Table 2. Sociodemographic variables and malnutrition

Variables	Number with malnutrition (n=29)	Percentage with malnutrition	P value	Odds ratio
Age				
20-29	2	6.9	0.512	1.59
30-39	1	3.4	0.064	0.17
40-49	6	20.7	0.430	0.64
50-59	11	37.9	0.014	3.97
60 and above	9	31.0	0.688	0.82
Socioeconomic status	(n=25)			
Low	10	40.0	0.0004	Undefined
Middle	7	28.0	0.7576	0.83
High	8	32.0	0.010	0.22
Educational status	(n=29)			
None	3	10.34	0.522	0.63
Primary	5	17.24	0.644	1.35
Secondary	10	34.48	0.349	1.63
Tertiary	11	37.93	0.459	0.70

Table 3. Tumour site, stage and malnutrition

Tumour site	Frequency(n=74)	No. with malnutrition (n=29)	% malnutrition	P value	Odds ratio
Ovarian	28	7	24.13	0.057	0.36
Cervix	27	14	48.28	0.090	2.30
Endometrium	15	6	20.69	0.942	1.04
Vulva	9	2	6.89	0.266	0.40
Stage					
1	10	0	0.00	Undefined	0.00
2	12	3	10.34	0.221	0.46
3	14	8	27.58	0.126	2.48
4	38	18	62.07	0.138	2.05

Table 4. Factors that affected food intake and malnutrition

Factors	Frequency (74)	Percentage	Malnutrition (29)	Percentage
Poor appetite	34	45.9	10	34.5
Early satiety	28	37.8	14	48.2
Drug side effects	22	29.7	5	17.2
Nausea	17	22.9	5	17.2
Constipation	16	21.6	7	24.1
Vomiting	13	17.6	6	20.7

4. DISCUSSION

The study evaluated the prevalence and the risk factors for malnutrition in patients who had gynaecological cancers. The finding on the mean age of each cancer group was similar to a study done by Laky et al.[1]. However, other publications have shown lower mean ages of genital tract malignancies thus raising serious concern that genital tract malignancies are gradually becoming a disease of young adults rather than the elderly [15,16].

The prevalence of malnutrition of 39.2% from this study falls within the global prevalence of 30-64% as stated by Leuenberger et al.[5]. Malnutrition is thus a significant problem amongst the studied population. Malnourished patients are at greater surgical risk, will poorly tolerate chemotherapy and as postulated by Leuenberger et al., a significant proportion of these patients are at risk of dying from malnutrition rather than the malignancy. Therefore, malnutrition should be given serious attention amongst the studied population.

Serum albumin level was used to determine malnutrition in this study even though other parameters such as BMI, weight loss and anaemia were assessed. BMI was shown to be a poor parameter for assessing malnutrition in patients with ovarian malignancies as all the patients with ovarian cancers had normal or higher BMI despite all of such patients having hypoalbuminaemia. Therefore, the use of BMI in assessing malnutrition in patients with ovarian malignancy should be discouraged. The unreliability of BMI may be linked to the weight contribution from ascites and the tumour mass even in patients who were obviously cachectic. Ascites in cancer patients may mask weight loss and may even result in weight gain whereas patients who are overweight and obese may have loss of lean muscle which may be masked by excess body fat and this buttresses the usefulness of serum albumin as a better index of assessing malnutrition. If weight loss alone was used in this study as an indicator for malnutrition many patients with ovarian cancer would not have been detected as being malnourished. Serum albumin is an objective parameter often used in clinical studies to assess long standing malnutrition [4,8].

This study demonstrated a slight preponderance of ovarian malignancy over cervical malignancy with vulva cancers being the least recorded. This slight preponderance of ovarian over cervical cancer may be related to the fact that most patients with advanced cervical cancer are referred elsewhere for chemoradiation due to absence of radiotherapy services at the study site. Other studies have however shown that cervical cancer is the most prevalent in most developing countries including Nigeria [16] Patients with endometrial and vulva cancers are less likely to present with malnutrition unlike patients with ovarian and cervical malignancies which were most affected in this study. Even though tumour site was not significantly associated with malnutrition, patients with cervical cancer were twice more likely to be have malnutrition. Therefore, the nutritional need of patients with cervical and ovarian malignancies requires special consideration. Patients of low socioeconomic status were shown in this study to be at increased risk of being malnourished. The high cost of cancer treatment may have negatively affected the finances of these patients leaving little or nothing available to address their nutritional needs. It is pertinent that specialized units involved in cancer care should set up funds with contributions from government, non - governmental organizations and well-meaning individuals to cater for the financial needs of these patients. Advanced stage disease was demonstrated to be significantly associated with malnutrition while patients with early stage disease were the least affected. This shows the importance of screening for the detection of pre-malignant and early stage disease with favourable nutritional and treatment outcome. Patients with early stage disease are less likely to suffer from the harmful effects of malnutrition and are likely to have a better treatment outcome [1-5]. Unfortunately, there are no universally acceptable and reliable screening method for ovarian malignancy as available screening methods such as routine use of ultrasound scan, routine pelvic examination, tumour markers and malignancy index are either too expensive or not completely reliable, and this may explain why most patients with ovarian malignancy still present with advanced disease as shown in this study. This finding is in conformity with a previous study from the study centre where 73.5% of patients with ovarian malignancy had advanced stage disease at presentation [15]. On the other hand, cervical cancer has a recognised premalignant stage detected with the routine use of pap smear and vaccination against the human papilloma virus has significantly reduced the incidence and mortality from cervical cancer in developed countries. This is however different in

developing countries where cervical cancer is still highly prevalent with screening and vaccination grossly underutilized. In a local study by Bassey et al, 93.4% of patients with cervical cancer had advanced disease, only 1.3% had any form of screening and none had been previously vaccinated against cervical cancer [16].

Poor appetite, early satiety, and side effects of drug therapy were the most common factors affecting food intake amongst the studied population with early satiety the most important cause of malnutrition. Poor appetite and early satiety may be linked to depression or psychosocial problems or may result from the effects of the disease process [10]. Combating these factors through psychotherapy and nutritional therapy may result in improved outcome. Reduced food intake may also improve by elevating the socioeconomic status of these patients.

5. CONCLUSION

Malnutrition is a significant problem amongst gynaecological cancer patients and thus requires special attention. Patients with cervical and ovarian malignancies were more as risk of malnutrition. Low socioeconomic status, advanced stage disease and reduced food intake were significantly associated with malnutrition. Improving the socioeconomic status of these patients, screening with early detection of cancer and addressing the nutritional needs of these patients will help to improve outcome.

CONSENT AND ETHICAL APPROVAL

Ethical approval was obtained from the Ethics committee of the hospital and informed consent was obtained from the participants.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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