Resrach Article

*Corresponding Author

AYEGBUSI, Temitope Bodunde, Yaba College of Technology, Yaba, Lagos State, Nigeria, Tel: +234903 9063921, E-mail: temiayegbusi90@gmail.com

Citation

Prevalence of Malnutrition Among Patients on Admission into Lagos University Teaching Hospital (LUTH), Lagos State, Nigeria

AYEGBUSI, Temitope Bodunde[1*], TIJANI, Bolanle[2], SHODIYA, Esther[2] and ADEBANWO, Adewunmi Abodunrin[2]

[1]Yaba College of Technology, Yaba, Lagos State, Nigeria

[2]Nutrition & Dietetics Department, Lagos University Teaching Hospital (LUTH), Idi-Araba, Lagos State, Nigeria

Abstract

Background: Malnutrition is link to a number of unfavorable clinical outcomes, such as length hospital stays, higher rates of morbidity and mortality, and higher hospital expenses.

Objectives: This study is carried out to assess the prevalence of malnutrition among patients at admission in Lagos University Teaching Hospital (LUTH), Lagos State.

Methodology: The study adopts a cross-sectional research design. Multi-stage sampling techniques was adopted, purposive sampling method was used to select male and female medical wards while simple random sampling by balloting without replacement was used to select 154 hospitalized patients from the wards selected that participated in the study. Data was collected with the use of Mini- Nutritional Assessment (MNA) questionnaire, weighing scale and tape rule to collect the anthropometric measurements. Data obtained was analyzed with the use of Statistical Package Service Software (SPSS) version 23.0 and the results was presented in frequency and percentages.

Results: Findings of the study showed that more than half (61.0%) of the patients were young adult aged less than 50years and 39.0% of them were older adult aged 50years and above. More than half (55.8%) of the patients were female and 44.2% of them were male. More than half (52.9%) of the patients had BMI greater than or equals $23kg/m^2$, 42.6% of the patients had MUAC greater than or equal 22cm. Majority (94.2%) of the patients had a reduced calf of less than 31cm and 5.8% of them had a calf circumference greater than or equals 31cm. It was observed in the study that 34.8% of the patients had a weight loss of 1 and 3kg in the last 3months, 38.1% of the patients does not know if they lost weight in the last 3months, 15.5% of them had a weight loss of 3kg in the last three 3months while 11.6% of the patients remaining did not lost any weight in the last 3months. More than half (58.1%) of the patients leave independently while 41.9% of the patients does not leave independently. More than half (54.2%) of the patients take more than 3 prescribed drug per day while 45.8% does not, 49.7% of the patients has suffered psychological stress or acute diseases in the past three months while 50.3% of them has not suffered the aforementioned diseases in the past three months. It was observed in the study that

more than half (51.0%) of the patients eat 2 full meals daily, 34.2% of them eat 3 full meals daily and 14.8% of them eat 1 full meal daily. All (100.0%) of the patients take one servings of dairy product on daily basis. It was observed in the study that more than half (56.8%) of the patients do not know if they were moderately malnourished, 29.7% of them were aware of being malnourished and 13.5% of them claimed they do not have any nutritional problem.

Conclusion: The overall malnutrition indicator score showed that more than half (63.9%) of the patients were malnourished and 36.1% of them were at risk of malnutrition, respectively.

Keywords: Malnutrition; Morbidity and Mortality; Human Nutrition; Food Science

Introduction

According to [1], malnutrition is linked to a number of unfavorable clinical outcomes, such as lengthier hospital stays, higher rates of morbidity and mortality, and higher hospital expenses. Malnutrition's prevalence in hospitals has been found to range from 20% to 50%, despite measurement variations based on hospital location and nutritional assessment method [2]. Thus, in addition to treating underlying conditions, it's critical to identify malnutrition in hospitalized patients and provide early nutritional therapy [1]. However, although malnutrition among hospitalized patients is not rare, it is occasionally overlooked either because medical resources, such as the availability of nutritional specialists or hospital systematic and financial support, are insufficient, or because clinicians do not consider malnutrition to be a vital issue [1,2].

Malnutrition is a nutritional disorder that adversely affects the body from a functional or clinical perspective [3]. It is very often observed in the elderly population, a retrospective pooled analysis of elderly people from 12 countries reported that the overall prevalence of malnutrition was approximately 23% and the highest prevalence was observed in rehabilitation settings (50.5%), followed by hospitals (38.7%), nursing homes (13.8%), and communities (5.8%) [3].

According to the World Health Organization [4], malnutrition can be caused by many different factors including under-nutrition, over-nutrition, inadequate nutrient intake, and an unhealthy diet, resulting in chronic illnesses such as diabetes, stroke, and hypertension. A recently published prospective cohort study conducted in 18 Canadian hospitals from July 2010 to February 2013 found that 45% of patients were malnourished at admission [1]. Malnutrition in inpatients is associated with adverse health outcomes, such as the development of infectious diseases, respiratory failure, and pressure ulcers [5]. Moreover, the impact of malnutrition on health outcomes for patients with stroke can be significant and increase mortality and delay functional recovery [6]. Patients that developed malnutrition during hospitalization required longer hospital stays, could not independently perform daily activities, and became high-cost care users at discharge [7].

The use of outcome measures in the health sector promotes the achievement of care goals, facilitates patient healthcare professional communication, matches the delivery of health care to the patient's needs, and supports the decision-making for the allocation of healthcare resources [8]. A well-developed outcome measure should consist of three primary psychometric properties: reliability, validity, and responsiveness to change (Riddle & Stratford, 2013).

In the context of malnutrition management, there are two broad categories of outcome measures used in tertiary care facilities: malnutrition screening and malnutrition assessment. Malnutrition screening is a quick and simple process in which the screening can be readily performed by nursing staff to identify patients at risk of malnutrition and inform practitioners if further clinical nutritional interventions are warranted (Power *et al.,* 2018). The screening process at hospital admission is a crucial step to improve safe patient care; moreover, using a validated screening tool triggers appropriate referrals to dietitians that can assess and treat malnutrition in a timely manner to reduce overspending of resources from preventable misdiagnosis and poor patient outcomes (Kelley *et*

al., 2015).

Malnutrition assessment is different from malnutrition screening in that an in-depth and comprehensive evaluation of nutritional status is performed; therefore, professional training is required to conduct malnutrition assessment and this process is usually completed by a trained registered dietitian (RD) [9]. Moreover, in the field of nutritional practice, the assessment tool should not only be used to diagnose malnutrition at the initial visit, but the same tool should also be used by RDs to compare the effect of nutritional intervention and to measure nutritional outcomes at re-assessment and there are three well-studied malnutrition assessment tools which includes: Mini Nutritional Assessment (MNA) the Subjective Global Assessment (SGA) and the Patient-Generated Subjective Global Assessment (PG-SGA) [10].

The nutritional deterioration in hospitalized adult patients has been a subject of extensive analysis, being associated with higher morbidity and mortality and, therefore, an increase in healthcare expenditure (Durá-Travé *et al.,* 2016). This eventuality has been widely debated at the highest administrative and political level, so making necessary the development of clinical guides and resolutions (from the Council of Europe) on feeding and nutritional care in hospitals [11].

The epidemiological studies on hospital malnutrition that have been carried out in occidental countries show a prevalence of malnutrition at the time of admission ranging from 6.1 to 13.3%, making these patients more susceptible to presenting nutritional deterioration during the hospital stay [12]. However, this eventuality often goes undetected owing to the lack of specific strategies for nutritional screening [13]. Therefore, this study assessed the prevalence of malnutrition among patients at admission in Lagos University Teaching Hospital (LUTH), Lagos State.

Research Methodology

Study Location

This study was conducted in adult wards of Lagos University Teaching Hospital (LUTH) Idi-Araba within Mushin Local Government Area of Lagos State, South-Western region of Nigeria.

Study Design

Descriptive cross-sectional study design was used for the study to characterize the prevalence of malnutrition and other health outcomes at a specific period of time during data collection and observation.

Study Population & Sampling Techniques

The study population made up of all admitted patients aged 18years and above in the facility and gave their consent participated in the in the study. Multi-stage sampling techniques was adopted for the study. In the first stage, purposive sampling techniques was used to select male medical wards: A1, A2, A3 & A4 and female medical ward: B1, B2, B3 & B4 in the hospital. List of patients in the various male and female medical wards was collected from the wards records. In the second stage, Simple random sampling techniques was used to select nineteen (19) admitted patients from each wards in both female and male medical wards that form the sample size that was studied in this research work.

Study Tool

The study tool was Mini Nutritional Assessment (MNA), it was originally developed in 1990 to assess the nutritional status of elderly patients [14]. The full form of MNA consists of 18 scored questions that are divided into 4 categories: 1) anthropometric measurements; 2) global assessment; 3) dietary history and 4) metabolic stress [14]. The MNA generates a total score of 30. The total scores are interpreted as follows: 24–30 (normal nutritional status); 17–23.5 (at risk of malnutrition); less than 17 points (malnourished) [14].

Ethical Consideration and Approval

Written informed consent was obtained from the patient's care givers before obtaining any information from their records. Utmost care was taken to maintain privacy and confidentiality.

Data Collection

Data was collected within the period of 5weeks with the use of Mini Nutritional Assessment (MNA) standardized questionnaire tool. It encompasses both screening and assessment features to determine level of malnutrition.

Data Analysis

Data generated from the questionnaires was analyzed using the Statistical Package Service Software (SPSS), version 23.0. Descriptive statistics (mean, frequencies and percentages) was used to analyze all the study variables and they were presented in frequency tables in the results sections.

Study Results

Table 1: Socio-demographic and economic characteristics of the patients

Variable	Frequency (F)	Percentage (%)
Age group		
Young adult (<50years)	94	61.0
Older adult (≥50years)	60	39.0
Total	**154**	**100.0 Mean age = 43.0**
Sex		
Male	68	44.2
Female	86	55.8
Total	**154**	**100.0**
Religion		
Christianity	138	89.6
Muslim	16	10.4
Total	**154**	**100.0**
Household size		
1-3persons	60	39.0
4-6persons	88	57.1
7 persons and above	6	3.9
Total	**154**	**100.0**
Educational qualification		
No formal education	14	9.1
Primary education	18	11.7
Secondary Education	78	50.6
Tertiary Education	44	28.6
Total	**154**	**100.0**
Occupation		
Farmer	27	17.5
Business person	27	17.5

Civil servant	65	42.2
Unemployed	22	14.3
Artisan	13	8.4
Total	**154**	**100.0**
Monthly income		
Less than N30, 000	19	12.3
N30,000-N60,000	63	40.9
N60,000-N100,000	20	13.0
N100,000-N150,000	36	23.4
N150,000 above	16	10.4
Total	**154**	**100.0**

Table 2: Anthropometric Assessment of the patients

Variable	Frequency (F)	Percentage (%)
Body mass index		
BMI < 19 (0 points)	15	9.7
BMI 19 to <21 (1 points)	16	10.3
BMI 21 to 23 (2 points)	42	27.1
BMI ≥ 23 (3 points)	82	52.9
Total	**155**	**100.0**
Mid-upper arm circumference (cm)		
MUAC < 21 (0 points)	53	34.2
MUAC 21-22 (0.5 points)	36	23.2
MUAC ≥ 22 (1 points)	66	42.6
Total	**155**	**100.0**
Calf circumference (cm)		
CC < 31 (0 points)	146	94.2
CC ≥ 31 (1 points)	9	5.8
Total	**155**	**100.0**
Weight lost during last three (3) months		
Weight lost greater than 3kg (0 points)	24	15.5
Does not Know (1 points)	59	38.1
Weight loss between 1 and 3kg (2 points)	54	34.8
No weight loss (3 points)	18	11.6
Total	**155**	**100.0**

Table 3: General Assessment of the patients

Variable	Frequency (F)	Percentage (%)
Leave independently (not in nursing home or hospital)		
No (0 points)	65	41.9
Yes (1 points)	90	58.1
Total	**155**	**100.0**
Take more than 3 prescribed drug per day		
Yes (0 points)	84	54.2
No (1 points)	71	45.8
Total	**155**	**100.0**
Patient suffered psychological stress or acute diseases in the past three months		
Yes (0 points)	77	49.7
No (2 points)	78	50.3
Total	**155**	**100.0**
Mobility		
Bed or chair bound (0 points)	52	33.5
Able to go out of bed/ chair but does not go around (1 points)	77	49.7
Goes out (2 points)	26	16.8
Total	**155**	**100.0**
Neuropsychological problem		
Severe dementia or depression (0 points)	54	34.8
Mild Dementia (1 points)	58	37.4
No Psychological Problems (2 points)	43	27.7
Total	**155**	**100.0**
Pressure sores or Skin ulcers		
Yes (0 points)	9	5.8
No (1 points)	146	94.2
Total	**155**	**100.0**

Table 4: Dietary Assessment of the patients

Variable	Frequency (F)	Percentage (%)
Full meals the patients eat daily		
1 meal (0 points)	23	14.8

2meals (1 points)	79	51.0
3meals (2 points)	53	34.2
Total	**155**	**100.0**
One servings of dairy product (milk, cheese, yoghurt)		
Yes	155	100.0
Two or more servings of legumes or egg per day		
No	34	21.9
Yes	121	78.1
Total	**155**	**100.0**
Serving of meat, fish and poultry everyday		
No	47	30.3
Yes	108	69.7
Total	**155**	**100.0**
Above Protein servings consumption score		
If 0 or 1 yes (0 points)	11	7.1
If 2 yes (0.5 points)	59	38.1
If 3 yes (1.0 points)	85	54.8
Total	**155**	**100.0**
Consume two or more servings of fruits and veg. per day		
No (0 points)	41	26.5
Yes (1 points)	114	73.5
Total	**155**	**100.0**
Has food intake decline over the past three months due to loss of appetite, digestive problem, chewing difficulties		
Severe loss of appetite (0 points)	17	11.0
Moderate loss of appetite (1 points)	94	60.6
No loss of appetite (2 points)	44	28.4
Total	155	100.0
How much fluid (water, juice, coffee, tea milk) is consumed per day		
Less than 3 cups (0 points)	20	12.9
3 to 5 cups (0.5 points)	109	70.3
More than 5 cups (1.0 points)	**26**	16.8
Total	**155**	**100.0**
Mode of feeding		
Unable to eat without assistance (0 points)	14	9.0

Self-fed with some difficulty (1 points)	98	63.2
Self-fed without any problem (2 points)	43	27.7
Total	**155**	**100.0**

Table 5: Self-Assessment of the patients

Variable	Frequency (F)	Percentage (%)
Patients viewing themselves having nutritional problem		
Major malnutrition (0 points)	46	29.7
Does not know or moderate malnutrition (1 points)	88	56.8
No nutritional problem (2 points)	21	13.5
Total	**155**	**100.0**
How patients consider their health in comparison with other people of same age		
Not as good (0 points)	33	21.3
Does not know (0.5 points)	24	15.5
As good (1.0 points)	76	49.0
Better (2 points)	22	14.2
Total	**155**	**100.0**

Table 6: Overall malnutrition indicator score of all the assessments of the patients

Malnutrition indicator score	Frequency (F)	Percentage (%)
Normal nutritional status or well-nourished ($\geq$ 24 points)	--	--
At risk of Malnutrition (17 to 23.5 points)	56	36.1
Malnourished (< 17 points)	99	63.9
Total	**155**	**100.0**

Discussion of the Findings

Based on the result from this study, majority of the patients studied were young adults with their mean age being 43years, and many of the patients being female. Majority (66.2%) of the patients earn below N=60,000 on a monthly basis. This result shows low income status among the patients which may negatively affect their purchasing power when it comes to food and other needs of the family affecting their nutritional status. The aforementioned statement conformed to the statement of [7] that low income status of patients or subjects would result to malnutrition, as they lack access to balanced diet and other needs for their care.

In addition, based on the anthropometric assessment of patients, 52.9% of the patients had BMI greater than or equals $23kg/m^2$, 27.1% of the patients had BMI of 21.0 to $23.0kg/m^2$,

10.3% of the patients had BMI of 19 to less than 21.0kg/m^2 and few (9.7%) of the patients had BMI less than 19kg/m^2, respectively. The above result of BMI indicates that most of the patients had a healthy body mass index on admission into the hospital which will play critical role in their body response effectively to medications or treatments. Healthy nutritional status have been linked to effective response to medication and reduces prolong stays in the hospital [1]. Also, 38.1% of the patients does not know if they lost weight in the last 3months, 34.8% of the patients had a weight loss of 1 and 3kg in the last 3months, 15.5% of them had a weight loss of 3kg in the last three 3months while 11.6% of the patients remaining did not lose any weight in the last 3months. This result indicates most of the patients lost weight in the last few months unknowing to some of them which may be linked to their level of knowledge, and this could be due to non-access to balanced diet or underlying diseases of the patients which was evidence upon the time admission into the hospital, this statement corroborated with the statement of [15] that affirmed weight loss of patients are mostly due to malnutrition or underlying diseases.

According to the general assessment of the patients. The results showed that more than half of the patients leave independently, take more than 3 prescribed drug per day while many of the patients have not suffered the aforementioned diseases in the past three months. This indicates that the patients are improving in their health status and following doctor's prescription, and this could increase their nutritional status as well in the hospital ward due to close monitoring of the physicians. Majority of the patients were able to go out of bed & chair but does not go around, less than half (37.4%) of the patients that participated in the study had mild dementia while only few (5.8%) of the patients suffered from pressure sores and skin ulcers. This result indicates that some of the patients still have some underlying sickness that could impair their health status, and reduce their nutritional level. This statement agrees with the study of [1] that patients are prone to nutritional decline after 7days or more of admission due to different factors, psychologically feeding frequency of some patients drop after admission because of change of environment.

Furthermore, the dietary assessment of the patients showed that many of the patients eat 2-3meals per day in form of legumes, fruits, vegetable, egg, meat, and fish, fluids. Majority of the patients had moderate loss of appetite while few of them. This implies that the patients had access to balanced diet which could take them out of their malnutrition status early.

In respect to the self-assessment of the patients, It was noted in the study that more than half (56.8%) of the patients do not know if they were moderately malnourished, 29.7% of them were aware of being malnourished and 13.5% of them claimed they do not have any nutritional problem. Higher percentage (49.0%) of the patients see their health as good as other people of their age, 14.2% of them see their health status better than that of other people of their age, 15.5% do not know if their health status is better than other people of their age and 21.3% of them claimed that their health status is not as good compared to other people of their age, respectively. This indicates that the patients were at risk of malnutrition, which could be due to consumption of poor diet. Also, the patients cannot ascertain if their health status is good or not, which could be due to their level of knowledge. The study of [16] concluded that many of the patients on admission could not ascertain if their health status was better at their age than others or not, which was due to lack of knowledge, old age, dementia etc. The overall malnutrition indicator scores of all the assessment kits patients showed that more than half (63.9%) of the patients were malnourished and 36.1% of them were at risk of malnutrition. This depicts that adequate care needs to be provided to the patients in order to improve the decline in their nutritional status. This result corroborated with the study of [17] that many patients evaluated for the study upon admission in facility were malnourished and needed adequate nutritional plan and support during their stay in the hospital.

Conclusion and Recommendation

Conclusively, the patients had low income which could have resulted to malnutrition as a result of poor diet intake. Also, the findings from this study showed that some of the patients have some underlying sickness that could impair their health

status, and reduce their nutritional level. The dietary assessment of the patients showed that many of the patients eat 2-3meals per day in form of legumes, fruits, vegetable, egg, meat, and fish, fluids. Many of the patients had moderate loss of appetite while few of them. In addition, the patients cannot ascertain if their health status is good or not, which could be due to the mild dementia some of the patients have. This study showed that the patients had high prevalence of malnutrition upon admission into the hospital for treatment and management. It is therefore recommended to all stakeholders involve in public health issue and the government agencies to create awareness and enact policies that will support adequate food and nutrients intake and also free feeding for patients in the hospital to avoid further decline of nutritional status.

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Figure 1: Mini-Nutritional Assessment (MNA) Questionnaire

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