EVALUATION OF NUTRITIONAL STATUS OF PATIENTS ATTENDING TWO TERTIARY HOSPITALS IN SOUTH-WEST, NIGERIA

Otegbayo JA[1], Onifade OM[2], Akinyemi JO[3,] Oluyemi OY[4], Okoje VN[5], Adeniyi AR[6], Rabor FD[7] and Adeleye OO[8]

Department of Medicine[1], University of Ibadan, Nigeria
Department of Epidemiology and Medical Statistics[3],University of Ibadan, Nigeria
Department of Maxillofacial Surgery[5] , University of Ibadan, Nigeria
Department of Nutrition and Dietetics[2], Babcock University Teaching Hospital, Ilishan-Remo, Nigeria
Department of Surgery[4], Babcock University Teaching Hospital, Ilishan-Remo, Nigeria
Department of Internal Medicine[6,7], Babcock University Teaching Hospital, Ilishan-Remo, Nigeria
Department of Medicine[8], Olabisi Onabanjo University Teaching Hospital, Sagamu, Ogun state, Nigeria

Correspondence Address: Professor Jesse A. Otegbayo, Department of Medicine, University of Ibadan/ University College Hospital, PMB 5116, Ibadan, Nigeria. E-mail: otegbayoa@com.ui.edu.ng

ABSTRACT

Background: Undernutrition and overnutrition constitute notable health hazards to man. Thus, optimal nutrition can prevent disease and promote health. The goal of nutrition assessment is to identify any specific nutrition risk(s) or clear existence of malnutrition. This paper attempts to assess the nutritional status of patients being attended to in tertiary hospitals.

Method: This was a cross-sectional study carried out in tertiary healthcare institutions in South-west Nigeria. The sample consisted of 276 patients attending the medical, surgical, gynaecology and general out-patient clinic of the hospitals. Mini Nutrition Assessment, a pre-tested questionnaire developed by the Nestle Nutrition Institute was used to obtain data from the respondents. The researcher-administered questionnaire which contained close ended questions was divided into two sections; Screening section and Assessment section. Anthropometric measurements including weight, height, mid-arm circumference and calf circumference were carried out to determine the nutritional status of the patients. Malnutrition Indication Score was obtained and the nutritional status was graded as Normal nutritional status, at risk of malnutrition and malnourished. SPSS version 20.0 was used for data entry, cleaning and analysis. Nutritional status and dietary patterns were summarized using frequencies and percentages while mean (standard deviation) was computed for continuous variables.

Results: The overall nutritional indicator score showed that 19.6% had normal nutritional status, 34.1% were at risk of malnutrition and 5.8% of the patients malnourished. Less than one out of every 10 patients (7.6%) take only one meal per day while 46.7% reported three meals. Dietary pattern showed that about one third (30.8%) take at least one serving of dairy products per day while 71.4% takes meat, fish or poultry product daily. Half (50.0%) take two or more servings of fruit or vegetables per day. Regarding fluid intake, 60.9% reported more than 5 cups per day. There was no statistically significant association between nutritional status and basic demographic variables-age and sex. The malnourished patients were however slightly older than those with normal nutritional status.

Conclusion: Nutrition plays an important role in a patient's overall condition and there exists basic factors in illness which has the ability to alter an individual's food intake. This paper calls for the need for clinicians to ensure that nutritional assessment be incorporated into the routine management of patients who are at least of middle age and older.

Keywords: Nutritional status, Malnutrition, Nutritional assessment, MNA, Dietary intake

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INTRODUCTION

Under nutrition– caused by an insufficient intake of adequate nutrients and overnutrition-caused by an excessive intake of adequate intake of nutrients, constitute notable health hazards to man. It is also common knowledge that nutrition has profound effects on the cellular and humoral immune systems, and it is widely known that malnutrition is the most common cause of immunodeficiency worldwide. Thus, optimal nutrition which is an appropriate intake of nutrients can prevent disease and promote health. It has been reported that upon admission to the hospital, 15-70% of patients are undernourished or malnourished[1-4] and furthermore malnutrition remains undiagnosed in up to 70% of patients admitted into the hospital and about 70-80% of the admitted malnourished patients enter into and leave the hospital without any significant nutritional intervention.[5] It has been identified that the elderly are particularly predisposed to malnutrition, with up to 55% of the elderly hospitalized patients being malnourished upon admission.[6] Possible causes of malnutrition in hospital patients include inability to chew or swallow, apathy/ depression, drug therapy and age. Organizational factors could also be a possible cause of malnutrition and such factors include failure to recognize malnutrition, failure to record patient intake, lack of nutritional screening or assessment and lack of nutritional training.[7]

Nutritional assessment is "a comprehensive approach to diagnosing nutritional problems that uses a combination of medical, nutrition, and medication histories; physical examination; anthropometric measurements; and laboratory data, according to the American Society for Parenteral and Enteral Nutrition (ASPEN)."[8] This assessment provides the basis for a nutrition intervention when necessary in disease states.

The goal of nutrition assessment is to identify any specific nutrition risk(s) or clear existence of malnutrition. Nutrition assessments may lead to recommendations for improving nutrition status (eg, some intervention such as change in diet, enteral or parenteral nutrition, or further medical assessment) or a recommendation for re-screening.[9-11]

Nutrition assessment performed by a nutrition support clinician is a rigorous process that includes obtaining diet and medical history, current clinical status, anthropometric data, laboratory data, physical assessment information, and often functional and economic information; estimating nutrient requirements, and usually, selecting a treatment plan. Clinical skill, resource availability, and the setting determine the specific methods used.[12, 13]

Parameters used to diagnose malnutrition in the screening and assessment processes reflect both nutrition intake and severity and duration of disease. These factors may lead to changes in body habitus and metabolic alterations associated with poor outcome.

In view of the importance of nutrition in health and disease, and the fact that not much attention has been paid to research on effects of nutrition on health and disease in our environment, we embarked on this study to assess the nutritional status, as well as describe the dietary pattern in order to evaluate the association between nutritional status and basic demographic variables of patients undergoing treatment at two tertiary health institutions in Nigeria.

MATERIALS AND METHODS

This study was a cross-sectional study carried out at Babcock University Teaching Hospital (BUTH), Ilishan-Remo, Ogun-State, South-West Nigeria and University College Hospital (UCH) Ibadan, South-West Nigeria. Both hospitals have a bed capacity of 400 and 850 respectively. Ethical approval was sought and obtained from the Babcock University Health Research

Ethics Committee (BUHREC). A total of 276 patients were recruited for the study with 192 patients from BUTH and 84 patients from UCH. The study population was drawn randomly from patients attending the out-patient clinics and those on admission at the medical, surgical and gynaecology wards of the hospitals. Data was collected over a period of eleven months.

The data collection tool used was the Mini Nutrition Assessment[14], a pre tested questionnaire developed by the Nestle Nutrition Institute. The researcher-administered questionnaire which contained close ended questions was divided into two sections; Screening section and Assessment section. The screening section consisted of questions on food intake, weight loss, mobility, Body Mass Index, psychological stress, calf circumference and neuropsychological problems, with a Screening Score of 14 points. Scores of 12-14, 8-11 and 0-7 were rated as normal nutritional status, at risk of malnutrition and malnutrition respectively. The assessment section consisted of questions on independent living, number of prescription drugs, pressure sores, number of meals, daily fluid intake and mode of feeding among others,

Table 1: Demographic characteristics and dietary pattern

Variables	Freq (n=276)	Percentage (%)
Age (Years): mean (SD)	39.1	(19.4)
Sex		
Male	95	34.4
Female	181	65.6
Number of full meals in a day		
1 meal	21	7.6
2 meals	126	45.7
3 meals	129	46.7
Consumption markers for protein intake		
At least 1 serving of dairy products per day	85	30.8
Two or more servings of legumes per week	240	87
Meat, fish or poultry every day	197	71.4
Two or more servings of fruit or vegetables per day	138	50
Quantity of fluid per day		
less than 3 cups	20	7.2
3-5 cups	88	31.9
more than 5 cups	168	60.9
Mode of feeding		
unable to eat without assistance	6	2.2
self-fed with some difficulty	9	3.3
self-fed without any problem	261	94.6
Nutritional status		
Normal	166	60.1
At risk of malnutrition	94	34.1
Malnourished	16	5.8
Body mass index		
less than 19	22	8
19 – 23	82	29.7
> 23	172	62.3

with a subtotal score of 16. Summation of the screening and the assessment score amounting to 30 formed the Malnutrition Indication Score; where scores of 24-30. 17-23.5 and less than 17 represented Normal nutritional status, at risk of malnutrition and malnourished respectively.

A bathroom scale was used to measure the weight of the patients with the measurements recorded to the nearest 1kg. A heightometer/stadiometer was used to measure the height of the patients to the nearest 1cm. A measuring tape was used to measure the arm and calf circumference of the patients and the measurement was recorded to the nearest 0.1cm.

SPSS version 20.0 was used for data entry, cleaning and analysis. Nutritional status and dietary patterns were summarized using frequencies and percentages while mean (standard deviation) was computed for continuous variables. Statistical association between nutritional status and demographic variables was investigated using Chi-square test at 5% significance level.

RESULTS

A total of 276 patients participated in the study with females (65.6%) constituting the higher percentage. Age of study participants ranged from 16 to 93 years with a mean of 39.1 (SD=19.4) years (Table 1). Twenty one participants (7.6%) take only one meal per day while 129 (46.7%) reported three meals. Dietary

were able to self-feed without any problem. Very few (2.2%) were unable to eat without assistance.

The overall nutritional indicator score showed that 94 patients (34.1%) were at risk of malnutrition and 16 (5.8%) malnourished. Distribution of their BMI was as follows: less than 19kg/m^2 (8.0%); 19-23 (29.7%) and greater than 23(62.3%).Table 2 shows the association between nutritional status and basic demographic variables-age and sex. The malnourished patients were slightly older than those with normal nutritional status (43.9 years versus 40.4 years; p>0.05). There was no significant difference in malnutrition between males (7.4%) and females (5.0%).

DISCUSSION

One of the main causes of malnutrition in hospitalized patients is lack of adequate monitoring of nutritional status hence the need to routinely perform nutritional assessment in hospitals.[15]This study was carried out among patients attending the medical, surgical, gynaecology and general outpatient clinics of 2 teaching hospitals in a semi urban and urban towns in South-West Nigeria. In this study, there were more females than male participants with the females constituting a total of 57.5% of the sample population. Women are more likely to have a higher hospital attendance and compliance than men due to factors

Table 2: Association between nutritional status and demographic characteristics

| Variables | Nutritional status | | | | |
	Normal	At risk of malnutrition	Malnourished	Test statistic	p-value
Age	40.4 (19.6)	36.1 (17.8)	43.9 (24.8)	F = 1.911	0.150
Sex					
Male	62 (65.3)	26 (27.4)	7 (7.4)		
Female	104 (57.5)	68 (37.6)	9 (5.0)	X^2=3.151	0.207

pattern showed that about one third (30.8%) take at least one serving of dairy products per day while 71.4% takes meat, fish or poultry product daily. Half (50.0%)take two or more servings of fruit or vegetables per day. Regarding fluid intake, 7.2% take less than 3 cups per day while 60.9% reported more than 5 cups (1.17 litres) per day. Data on mode of feeding show that majority of the patients (94.6%)

ranging from a higher percentage of women in the surrounding community being unemployed and fulltime housewives to men being less compliant in the early stages of their illness.

Our study revealed that 45.7% and 46.7% of the respondents ate two to three regular meals daily respectively while the remaining 7.6% ate one meal per day. This is slightly different from the findings of

a previous study carried out in the same region where it was discovered that 77% of the respondent ate three regular meals daily.[16] Nutrition plays an important role in a patient's overall condition and there exists basic factors in illness which has the ability to alter an individual's food intake.[17]

BMI less than 19kg/m^2 was discovered in 8.0% of respondents while 29.7% had BMI between 19-23 and 62.3% had BMI greater than 23. This is contrary to a study where it was discovered that only 3 out of 97 patients (0.03%) had BMI<18.5 kg/m2 and most of the patients had normal BMI.[15] It was also slightly at variance with the finding of another study where it was discovered that 42% of the respondents had normal nutritional status.[18] The overall nutritional indicator score showed that 34.1% were at risk of malnutrition and 5.8% were actually malnourished. This is similar to a finding from another study which showed that 4.8%, 26.2% and 69% was malnourished, at risk of malnutrition and well nourished respectively in Mongolian elderly patients.[19]

Poor dietary and fluid intake is common among elderly patients, with oral lesions, anorexia, confusion, mood disturbances/anxiety and dysphagia being the primary contributing factor when intake is poor.[20] From our study, it was discovered that 60.9% of the respondents drink more than 5 cups of fluid daily including water, tea and carbonated drinks. 94.6% of the patients could feed themselves without any problem while 3.3% self-fed with some difficulty.

We found that 5.8% of elderly patients are malnourished. This is similar to the findings from another study which used the MNA tool and it revealed that the prevalence of under nutrition in hospitalized and institutionalized elderly is 23 ± 0.5% and 21 ± 0.5%.[14]

In the same study according to a report,[21] corresponding statistics for the prevalence of at-risk elderly was even higher, 46 ± 0.5% and 51 ± 0.6% respectively. The prevalence of malnutrition in the cognitively impaired elderly was 15 ± 0.8% (mean ± SE) and those at risk of malnutrition was 44 ± 1.1%.[14] These findings are of serious concern since the undernourished elderly are known to have longer periods of illness, longer duration of hospital stay, higher infection rates, delayed wound healing, reduced appetite, and increased mortality.[6]

From the report of a systematic review, it was identified that hospitalized patients often develop further nutritional problems during hospital stay in addition to pre-existing malnutrition. Various factors including nausea, vomiting, "Nil per Oral" orders, medication side-effects, difficulty with vision and opening containers, inability of patients to reach foods out of patients' proximity, limited access to snacks, and ethnic or religious food preferences may all contribute to low nutritional intake in hospital.[22]

About a third of the respondents (30.8%) ate at least one serving of dairy products daily while 87% of the respondents ate two or more servings of legumes per week. The legumes consumed by the respondents included beans, tofu, fried bean paste (akara) and steamed bean paste (moinmoin). Dairy products consumed by the respondents include milk and cheese. However our study did not differentiate between respondents that ate the various dairy products. A study from Bangladesh reported that 22% of the respondents consumed milk 2-3 times daily,[18] this is similar to the low percentage of respondents that consumed dairy products from our study. The reason for the low consumption could be due to the level of availability and affordability of the products. Also from our study, it was discovered that 71.4% of the respondents ate meat, fish or poultry daily and this is similar to the findings from a similar study where it was discovered that 73.8% of respondents consumed animal protein daily.[16] However, findings from another similar study conducted in South-West Nigeria reported that protein consumption among the respondents was quite low. This might be due to the difference in the age group of the respondents and also the prevalent occupation of the respondents.[23] The sample population in our study was a mix of people of different occupations including students, academics and health professionals.

Furthermore, the Nigeria food based dietary guidelines recommends daily food intake should include diets that are prepared from a variety of available foods including cereals, tubers, fruits and vegetables, and also increase consumption of fish and fish-based diets. It however specified that individuals should eat more of fruits and vegetables and eat more frequently.[16]

Findings from this study revealed that half of the respondents ate 2 or more servings of fruit and vegetables daily. However fruits are consumed in lesser amounts compared to vegetables and this is majorly because, in our environment, most fruits are

not available all year round and are consumed only when they are in season while the reason for increased green vegetable consumption among the study population may be adduced to the fact that many south western Nigerian based dishes are often consumed with green vegetables.[23]

CONCLUSION

In conclusion, 60.1% of our patients had normal nutritional status, while only 5.8% of them were malnourished. A review of their dietary pattern showed that 46.7% of them ate three times daily; 30.8% of them had one serving of dairy products; 71.4% ate meat, fish or poultry products every day; 50% had two or three servings of fruits and vegetables; and 60.9% had more than 5 cups of water daily. There was no statistically significant association between their nutritional status and basic demographic parameters; although the malnourished patients were slightly older in age.

We therefore recommend that nutritional assessment should be incorporated into the routine management of our patients who are at least of middle age and older. It is also desirable to do a much larger multicentre study in which the patients will be stratified into various disease groups; we shall also study factors like socioeconomic status, pregnancy, surgical operation, chemotherapy and radiotherapy.

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