

Original Research Article

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Assessment of nutritional status of the geriatric patients attending the outpatient department of an urban health training centre: a cross-sectional study

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ABSTRACT

Background: Older persons are particularly vulnerable to malnutrition and it is very difficult to provide them with adequate nutrition. As the age increases, energy requirement per kilogram body weight is reduced. Thus, People belonging to the older age group are at risk for malnutrition because of the evident physical changes related to aging and numerous psychological and social factors such as depression, lack of independence and limited income.

Methods: A cross- sectional study was conducted in the Outpatient Department of an urban health training centre. A total of 351 participants were included (154 men and 197 women) aged 65 years and above. The nutritional status of participants was assessed using the mini-nutritional assessment tool.

Results: Out of 351 elderly patients, only 25% were observed to be well-nourished, 58.6% were at the risk of malnutrition and around 16.2% of the elderly patients were malnourished. A significant association was found between nutritional status and older age groups, female gender, dependent financial status and inadequate dietary intake.

Conclusions: According to this study, the risk of malnutrition among the elderly is very high. It depicts that malnutrition can be a result of many factors and thus, this problem should be solved through health education to the elderly and their families by which diet and lifestyle of this section of our population can be improved.

Keywords: Malnutrition, Elderly, Mini-nutritional assessment, Urban health training centre

INTRODUCTION

The 20th century has witnessed a considerable increase in number of older people all over the world. This is a result of improved health conditions and standard of living of the elderly. Thus, the dependency ratio has been on a rise as the geriatric population is increasing at a very high rate.

Both the number and the proportion of older persons - defined as aged 65 and above - are growing in virtually all countries, and worldwide trends are likely to continue

unabated. In 2002 there were an estimated 605 million older persons in the world, nearly 400 million of whom were living in low-income countries. Greece and Italy had the highest proportion of elderly expected to reach more than 1.2 billion, with about 840 million of these in low-income countries.¹ In India, geriatric age group (aged 65 years and above) constitute 8.6% of the total population as per 2011 census.²

Women comprise the majority of the older population in virtually all countries, largely because globally women live longer than men. By 2025, both the proportion and

number of older women are expected to soar from 107 to 373 million in Asia, and from 13 to 46 million in Africa.¹

The health of the elderly defines the health status of a population. There are a number of health issues in older people related to mental health, musculoskeletal problems and chronic non-communicable diseases.³ Along with this, malnutrition is a major issue seen in them and it is witnessed to be almost always present along with other problems. It has been observed that there is an evident underreporting of malnutrition in India. It has been shown in various studies that prevalence of undernutrition among geriatrics is more than 50%.⁴

Malnutrition can be labeled as modifiable and therefore, early identification of malnutrition has become a necessity in the present scenario. Diagnosis and treatment at the earliest can lead to prevention of various morbidities among the geriatric population. Unfortunately, there are a very few reliable tools to assess the nutritional status in elderly.

The mini nutritional assessment (MNA) tool is a validated tool for assessing malnutrition in the elderly and it fulfills all the criteria of both screening and diagnostic measures. With this background the present study was carried out to assess the nutritional status of the elderly by using MNA (Mini Nutritional Assessment questionnaire) tool and the various factors influencing their nutritional status in elderly visiting the general OPD of an UHTC.⁵ This might lead to the commencement of further research in order to reach the root causes of malnutrition in elderly thus resulting into the amendment of new health policies for the betterment of the people belonging to this age group.

METHODS

Study setting

The cross-sectional study was conducted in OPD of an Urban Health Training Center (UHTC) under the department of community medicine of a medical college in central India between August 2019 and December 2019.

Study population

All elderly patients aged 65 years and above visiting the OPD.

Exclusion criteria

Patients diagnosed with malignancy and patients admitted to hospital during the last month were excluded.

Sample size

Based on prevalence of malnutrition of 7.8% in older persons presenting at the General Outpatients Department

clinic of university college hospital in Nigeria, sample size was calculated to be 382 which was derived from single proportion of 10±3% (margin of error) and 95% CI.⁶

Sampling technique

All the consecutive elderly patients of age 65 years and above coming for any health related problem attending the OPD were included in the study

Data collection methods and instruments used

Elderly patients aged 65 years and above who came to the OPD of the UHTC between August 2019 and December 2019 were asked to participate in this study. Participants enrolled in the study were 351 after excluding participants for incomplete data or having malignant disease.

Nutritional status of the participants was assessed by performing the mini nutritional assessment (MNA). The MNA consists of 18 questions clustered in four domains: anthropometric assessment (BMI, history of weight loss, arm and calf circumference), general assessment (lifestyle, medication, mobility, history of depression and dementia), dietary assessment (number of meals, food and fluid intake and autonomy of feeding) and subjective assessment (self-perception of health and nutrition). Each question has a weighted point that contributes to the total score which is 30 points as maximum. The participants were classified based on the total score to the following: Well nourished (24 to 30 points), at risk of malnutrition (17 to 23.5 points) and malnourished (<17 points). Medical interns were recruited for collecting data. A 24-h dietary recall method was used to assess the calorie intake of the elderly. The calorie requirement was calculated by using recommended dietary allowances (RDA) 2010 guidelines as per the weight of the elderly.⁷ Adequate calorie intake per 24-h has been defined as the intake of calories as recommended per kg body weight as per RDA 2010 guidelines. Measurement of height was done by the portable stadiometer. The height was recorded to the nearest 0.5 cm. Measurement of weight was taken by electronic scale after asking patient to remove their shoes nearest to 100 grams. Body mass index BMI was calculated by dividing the weight in kilograms by the square of height in meter. Mid arm circumference was measured by taking the mid-point between acromion and olecranon and was recorded to the nearest 0.1 cm. Calf circumference was measured by wrapping a tape around the calf at the widest part while patient is standing with their weight distributed on both feet and measurement was recorded to nearest 0.1 cm.

Operational definitions

Well-nourished: The participants scoring 24 to 30 points in mini-nutritional assessment tool were defined as well-nourished.

At risk of malnutrition: The participants scoring 17 to 23.5 points in mini-nutritional assessment tool were defined as at risk of malnutrition.

Malnourished: The participants scoring <17 points in mini-nutritional assessment tool were defined as malnourished.

Statistical analysis

The questionnaires were numbered serially, data entry and analysis were performed with statistical analyses (SPSS) version 21 for windows. Results were expressed as mean \pm SD and in number and percentages. Descriptive statistics were used to describe socio-demographic and dietary assessment variables. Analysis for qualitative variables was done using Chi-square test.

RESULTS

In the present study, there were a total of 351 elderly participants out of which 54.7% belonged to age group of 65-75 years, 26.7% were found to be in the age group of

75- 85 years and the remaining 18.5% fell in the age group of above 85 years. The overall mean age (\pm SD) of the study participants was 72.65 ± 4.25 years.

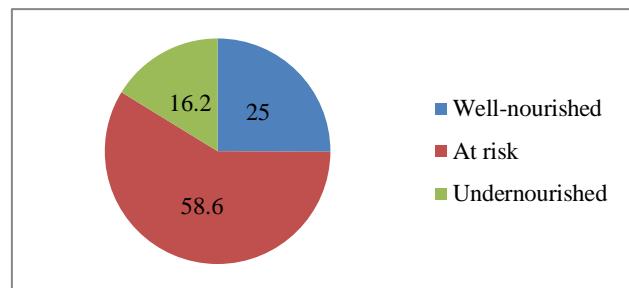


Figure 1: Distribution of the study subjects according to their nutritional status.

Out of 351 elderly patients, only 25% were observed to be well-nourished, 58.6% were found to be at risk of malnutrition and around 16.2% of the elderly patients were seen under the category of malnourishment (Figure 1).

Table 1: Association of socio-demographic variables of the participants with their nutritional status.

Socio-demographic variables	Well-nourished (n=88)	At risk (n=206)	Malnourished (n=57)	Total (n=351)	P value
	N (%)	N (%)	N (%)		
Age group (in years)					
65-75	55 (28.6)	123 (64)	14 (7.3)	192	
75-85	21 (22.3)	56 (59.5)	17 (18.08)	94	<0.05
>85	12 (18.4)	27 (41.5)	26 (40)	65	
Gender					
Males	52 (33.7)	79 (51.2)	23 (14.9)	154	
Females	36 (18.2)	127 (64.4)	34 (17.2)	197	<0.05
Living status					
With spouse	32 (20.12)	112 (70.4)	15 (9.4)	159	
With children	27 (28.12)	52 (54.16)	17 (17.7)	96	
With spouse & children	17 (23.9)	33 (46.4)	21 (29.5)	71	>0.05
Other relatives	12 (48)	9 (36)	4 (16)	25	
Financial status					
Dependent	25 (13.8)	123 (67.9)	33 (18.2)	181	
Independent	63 (37.05)	83 (48.8)	24 (14.1)	170	<0.05

Table 2: Association of calorie intake of the study subjects with their nutritional status.

Calorie intake	Well-nourished (n=88)	At risk (n=206)	Malnourished (n=57)	Total	P value
	N (%)	N (%)	N (%)		
Adequate	56 (38.6)	72 (49.6)	17 (11.7)	145 (100)	
Inadequate	32 (15.5)	134 (65)	40 (19.4)	206 (100)	<0.05

A significant association was found between nutritional status and older age groups, female gender and dependent financial status. The association between nutritional status and living status was found to be insignificant (Table 1).

Inadequate dietary intake was found to be in 58.6% of the elderly. The association between inadequate calorie intake was found to be significant with nutritional status of the elderly (Table 2).

Table 3: Distribution of study participants according to the reasons cited for the inadequate calorie intake (n=182).

Reasons cited	Frequency	Percentage (%)
Chewing and swallowing problems	109	59.8
Complained of loss of appetite	99	54.3
Not able to afford	89	48.9
Decision was taken by care givers	81	44.5
Elderly were unaware	67	36.8

*Percentages are not adding up for 100% as the reasons cited are multiple.

The different reasons cited for inadequate calorie intake were chewing and swallowing problems (59.8%), some complained of loss of appetite (54.3%), some were not able to afford (48.9%), decision regarding food intake was taken by caregivers in case of 44.5% of the elderly and unawareness was found among 36.8% of the elderly (Table 3). Percentages are not adding up for 100% as there are multiple reasons cited for inadequate calorie intake.

DISCUSSION

The population including the geriatric people are increasing day by day and dependency ratio is on the rise. This has led to various social, economic and health issues among the elderly in India. The special focus is on malnutrition among the old people which is a proven key cause of innumerable infections and other ailments.

Observing the above mentioned facts, a cross-sectional study was conducted among 351 elderly patients (above 65 years of age) visiting the general OPD of an UHTC from August 2019 to December 2019.

It was observed that, out of 351 elderly patients, 54.7% belonged to age group of 65 to 75 years, 26.7% were found to be in the age group of 75 to 85 years and the remaining 18.5% fell in the age group of above 85 years. The overall mean age (\pm SD) of the study participants was $72.65(\pm 4.25)$ years. In a study conducted by Saleh et al found the mean age of elderly to be 74.23 ± 7.8 which was like our study.⁸ Also, a study conducted by Ghosh et al in the rural area of West Bengal showed similar findings as they observed the mean age to be 70.82 ± 6.9 years.⁹

Out of 351 elderly patients, only 25% were observed to be well-nourished, 58.6% were found to be at risk of malnutrition and around 16.2% of the elderly patients were seen under the category of malnourishment. Similar findings were observed in the study conducted by Patil et al, where it was seen that 19.4% were malnourished, 52.3% were at risk of malnutrition and 28.3% had normal nutritional status.¹⁰ On the contrary, study conducted by

Saleh et al showed that 9.6% of the elderly patients were malnourished, 27.5% were at risk of malnutrition and 62.8% were well-nourished.⁸ This difference might be due to the disparities between lifestyle, healthcare facilities and dietary habits of elderly in different parts of the world.

A significant association was found between nutritional status and older age groups, female gender and dependent financial status. The association between nutritional status and living status was found to be insignificant. A significant association was also found between low MNA scoring and advanced age in the study conducted by Patil et al.¹⁰ Study conducted by Paul et al, Agarwal et al and Krishika et al also showed similar association between advanced age and low MNA score.¹¹⁻¹³

The association between the female gender and nutritional status was found to be significant in our study. Similar findings were observed in the study conducted by Rashmi Agarwalla et al.¹¹ Studies done by Saeidou et al, Donini et al and Boulos et al also found similar results.¹⁴⁻¹⁶ This might be attributed to the factors like financial dependency and ignorance towards their health.

No significant association was found between living status and nutritional status, which was in consonance with studies done by Boulos et al in Lebanon and Saikia and Mahanta in Guwahati, Assam.^{16,17} Similar finding was found in the study done by Agarwalla et al.¹¹

The relationship between financial and nutritional status was found to be significant. It implies that independent financial status has a positive impact on nutrition of elderly as they can spend their money according to their likeness. Lack of dependency makes them stress free and more vigilant towards their health thus resulting into better nutritional status. Similar findings were found in Ferdous et al, Han et al and Mokhber et al.¹⁸⁻²⁰ In our study, a significant association between calorie intake and nutritional status was observed. Similar findings were seen in the study conducted by Agarwalla et al.¹¹ Similar observations were also revealed by Vedantam et al in their study in South India.²¹

The most common reasons cited for inadequate calorie intake were difficulty in chewing and swallowing (59.8%), and loss of appetite (54.3%). The inability of elderly, to take decisions about food intake (48.9%), lack of funds (44.5%) and lack of awareness (36.8%) were the other reasons cited. Similar findings were seen in the study conducted by Agarwalla et al.¹¹

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