

Nutritional status of elderly people using Mini Nutritional Assessment tool in an urban slum of Hyderabad

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Received: June 27, 2018; Accepted: July 28, 2018

ABSTRACT

Background: The elderly people are growing rapidly in India, and nutrition is an important element of health among them. **Objectives:** The objectives of this study were to assess the nutritional status of the elderly in an urban slum, Hyderabad. **Materials and Methods:** A cross-sectional study was conducted in the Shaikpet slum, Hyderabad. The people age 60 years and above were included in the study. To assess the nutritional health of the individual, three parameters are taken into consideration that they are dietary assessment, screening tool which includes mini nutritional assessment (MNA), and anthropometric assessment. **Results:** Malnutrition was found in 14.5% of the elderly people. It was due to the inadequate calorie intake. The mean age of the elderly people was 70.5 ± 4.6 years, mean body mass index was 22 ± 3 kg/m², and the mean MNA score was 21.5 ± 4.7 . **Conclusions:** The study emphasizes increased need to give attention to the nutritional needs of elderly and also to routinely screen malnutrition in elderly individuals.

KEY WORDS: Calorie Intake; Elderly; Mini Nutritional Assessment Tool

INTRODUCTION


Nutrition is a multifactorial entity which determines the health of an individual. Malnutrition can be defined as a state of imbalance in protein, energy, and other entities of nutrition. Malnutrition though affects both pediatric and geriatric age group, malnutrition in geriatric age group is always underdiagnosed. The prevalence of malnutrition is increasing in this population, and this has a negative influence on elderly people's health and quality of life.^[1]

Studies have shown that more than 50% of the older population is underweight^[2] and more than 90% has an energy intake below the recommended allowance.^[3] Studies

in developed countries found that up to 15% of community-dwelling and home-bound elderly, 23–62% of hospitalized patients and up to 85% of nursing home residents suffer from malnutrition.^[4]

Nutrition is an important determinant of health in elderly patients.^[5] Nutritional status assessment is essential for preventing or maintaining various chronic and acute disease and even for healing. Nutritional epidemiology is increasingly being used not only in the elucidation of disease origin and determining the risk factors but also in the planning and evaluation of nutritional programs.

Constant monitoring of the nutrition of older people is important to maintain good nutritional status and prevent the development of malnutrition.^[6] The mini nutritional assessment (MNA), a tool that has been validated in the elderly for measuring nutritional risk, was used to assess the malnutrition in the elderly.^[7] The aim of this study was to assess the nutritional health of the elderly people in an urban slum, Hyderabad.

Access this article online	
Website: http://www.ijmsph.com	Quick Response code
DOI: 10.5455/ijmsph.2018.0619528072018	

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MATERIALS AND METHODS

Study Design

This was a cross-sectional study.

Study Location

The study was undertaken in Shaikpet slum, Hyderabad district, Telangana, India. This is an Urban Health Training Centre of Apollo Institute of Medical Sciences and Research, Hyderabad.

Study Period

The study was conducted from July 2017 to May 2018.

Study Population

All the elderly people >60 years of age and who agreed to participate in the study were included in the study and seriously ill patients were excluded from the study.

Sample Size

A sample size of 200 was calculated taking the prevalence of malnutrition as 14%.^[8]

Nutritional Assessment

To assess the nutritional health of the individual three parameters are taken into consideration that they are as follows:

1. Dietary assessment: 24 h recall is used and is based on an interview during which the person recalls all food consumed in the previous 24 h.
2. Screening tools which include MNA: MNA tool is a total of screening score which includes 14 points and assessment which includes 16 points interpretation of scores was done as follows: Score <17: Malnourished, score 17–23.5: At risk of malnutrition, and score > 23.5: Well nourished.^[9]
3. Anthropometric assessment: The weight (kg), height (m), midupper arm circumference, and calf circumference were measured. The Quetelet index (kg/m^2) enables calculation of body mass index (BMI).

Ethical clearance was taken from the institutional ethics committee before the study. Informed consent was taken from the elderly people before the study.

Statistical Analysis

Data were entered into Microsoft Excel 2007. Mean and SD were calculated for the quantitative variables and Chi-square test was done for qualitative variables.

RESULTS

A total of 200 elderly people participated in the study. The demographic features of elderly people are shown in Table 1. Of them, 104 were female and 96 were male. The mean age of the elderly was 70.5 ± 4.6 years of age. About two-thirds of all elderly people were Hindu (67%) and literate (67.5%). The mean BMI and MNA score of the participants were $22 \pm 3 \text{ kg}/\text{m}^2$ and 21.5 ± 4.7 , respectively.

The nutritional status of the elderly people according to the MNA tool is shown in Table 2. Among the elderly people, 14.5% were found to be malnourished, 43% were at risk of malnutrition, and 42.5% were found to be well nourished. The Spearman's rank correlations were significantly correlated between the total MNA score and BMI ($r = 0.53$; $P < 0.001$) as shown in Figure 1. The association between nutritional status and calorie intake among elderly people is shown in Table 3. The malnutrition was significantly higher ($P < 0.001$) among elderly people having inadequate calorie intake.

DISCUSSION

This study explored the nutritional status of elderly people based on the MNA screening tool and calorie intake. Among the

Table 1: Demographic features of the 200 elderly people

Characteristics	Participants
	Mean±SD
Age (years)	70.5±4.6
BMI (kg/m^2)	22±3
MNA score	21.5±4.7
	n (%)
Gender	
Male	96 (48)
Female	104 (52)
Religion	
Hindu	134 (67)
Muslims	57 (28.5)
Christian	9 (4.5)
Education	
Literate	135 (67.5)
Illiterate	65 (32.5)

SD: Standard deviation, BMI: Body mass index, MNA: Mini nutritional assessment

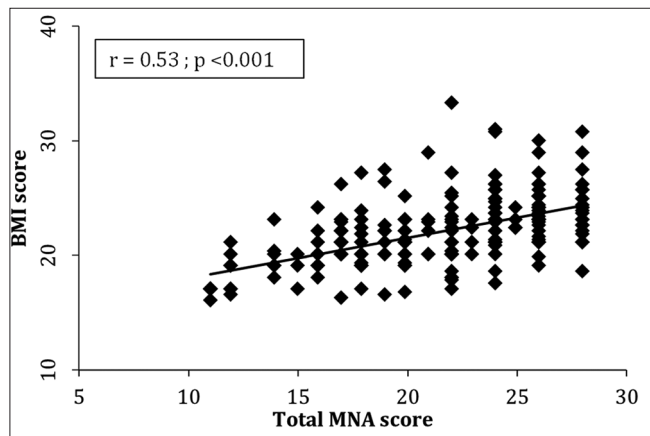
Table 2: Nutritional status of elderly people according to the MNA tool

MNA status	Frequency (%)
Well nourished	85 (42.5)
At risk	86 (43)
Malnourished	29 (14.5)
Total	200 (100)

MNA: Mini nutritional assessment

Table 3: Association between nutritional status and calorie intake among elderly people

Calorie intake	Nutritional status (n [% row wise])		Total	P value
	Well nourished (n=85)	Malnourished (n=29)		
Adequate	59 (88.1)	8 (11.9)	67 (100)	<0.001
Inadequate	26 (55.3)	21 (44.7)	47 (100)	

**Figure 1:** Scatter plot and Spearman correlation coefficient (r) of BMI and total MNA score. BMI: Body mass index, MNA: Mini nutritional assessment

studied population, 14.5% were malnourished and 43% were at risk of malnutrition according to the MNA scoring. Similar results were found in the studies done in rural Tamil Nadu, Vedantam *et al.*,^[8] Ferdous *et al.*,^[10] Baweja *et al.*,^[11] and Saka *et al.*^[12] Although the prevalence of malnutrition is higher, in the study conducted by Saeidlou *et al.*, 49.6% in a nursing home in Iran (2008)^[13] and Lahiri,^[14] 29.4% in rural population of West Bengal. The settings with the highest levels of malnutrition are nursing homes (up to 85%) and hospitals (up to 62%).^[15,16]

This study also revealed that more elderly are at risk of malnourishment (43%) than actually malnourished. A similar finding has been seen in studies among community elderly people from India and other parts of the world.^[11,17-21] A statistically significant relationship was observed between nutritional status and calorie intake. Reduced intake and unbalanced diet were seen in people who were malnourished. Similar observation of lower energy intake was seen in the group of women at risk of malnutrition when compared to women with adequate nutrition.^[22]

In this study, BMI and total MNA score had a significant relationship. Anthropometric measurements such as BMI and weight are important indicators of elderly peoples' health as they reflect a balance between intake and energy expenditure, muscle mass, amount of body fat, and protein storage. Our results support those of other studies.^[23-25]

Strength and Limitation of the Study

This study was successful in assessing the nutritional status of the elderly people as a routine method, but further

detailed analysis of the nutritional deficiency in the elderly can be only assessed by biochemical profiling and exclusion of comorbidities contributing to nutritional deficiency in elderly.

This study provides the importance of evaluating the nutritional status in elderly on a routine basis as majority of the population are in pre-malnutrition phase and preventing them to enter into malnutrition is easier to treat than malnutrition itself.

The technique of using 24 h recall method is not an accurate method for calculating the calorie intake of an individual as it may vary from day to day. Other techniques for calculating calorie intake should be considered.

Without the biochemical and hematological support, assessment of malnutrition is incomplete, to get a panoramic view of the actual nutritional status in elderly, a detailed study combining questionnaire, biochemical, and hematological profiles is required.

Malnutrition not only constitutes undernutrition but also includes overnutrition.

Further studies have to be made comparing undernutrition and overnutrition in elderly to assess in detail the malnutrition status in people over 60 years

CONCLUSIONS

By the study that was conducted for 1 year, it was concluded that 14.5% of the elderly population are undernourished and 43% of the population is on the verge of undernutrition, this provides the evidence that nutritional history of all people >60 years should be considered as vital information.

This project also emphasizes that the awareness of proper nutrition intake among the geriatric population is low. Thus, it is necessary to raise the awareness among the geriatric population to consume adequate amount of food rich in nutrients necessary.

Individuals having comorbidities and risks for developing malnutrition have to be given a detailed dietary plan so that they do not enter malnutrition pool. Not only individuals with comorbidities but also general population have to be evaluated on daily basis for the risk of malnutrition.

ACKNOWLEDGMENT

We would like to thank our Apollo Institute of Medical Sciences and Research, Hyderabad, and our research board to approve and give proper guidance and shape to our project would like to thank our Dean Dr. Dilip Mathai, our research head Dr. Ram Reddy, and our Community Medicine HOD Dr. Snigdha Pattnaik, for their constant encouragement and support. Last but not least, I would like to thank my almighty, family, and friends for their support.

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How to cite this article: Kutikuppala A, Mathur N, Prakash TLG. Nutritional status of elderly people using mini nutritional assessment tool in an urban slum of Hyderabad. *Int J Med Sci Public Health* 2018;7(11):885-888.

Source of Support: Nil, **Conflict of Interest:** None declared.