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Original Research Article

Nutritional status of the geriatric population in the field practice area of a medical college in Rajasthan

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ABSTRACT

Background: Ageing is a physiological process that starts from birth, continues throughout life, and ends with death. Poor nutrition is not a natural concomitant of ageing; older adults are at risk for malnutrition due to physiological, psychological, social, dietary, and environmental risk factors. The objectives of the study were to assess the nutritional status of elderly living in rural India and to study the factors related to nutritional status.
Methods: Community-based cross-sectional study was undertaken in the field practice area of Pacific Medical College and Hospital, Udaipur, Rajasthan. Predesigned and pretested questionnaire and nutritional status were assessed using mini nutritional assessment scale for elderly people.
Results: Out of the total 152 participants, 2 (1.3%) were having BMI less than 19, 11 (7.2%) were having BMI 19 to less than 21 and 43 (28.3%) were having BMI 21 to less than 23. Out of 152 participants, 30 (41.1%) males and 43 (54.4%) females were at risk of malnutrition. Six (8.2%) males and 5 (6.4%) females were suffering from malnutrition. However, the association of gender and nutritional status of elderly was not found to be statistically significant (p=0.258).
Conclusions: Due to the high prevalence of elderly who were malnourished or at risk of malnutrition, a more detailed evaluation, regular follow up & dietary intervention to reverse the situation is required.

Keywords: Nutritional status, MNA, BMI, Udaipur

INTRODUCTION

The percentage of the elderly is growing rapidly worldwide. The global number of the elderly is projected to rise from an estimated 524 million in 2010 to nearly 1500 million in 2050, with most of this increase in developing countries.[1] The factors underlying this transition are increased longevity, declining fertility, and aging of "baby boom" generations.[2]

India's elderly population is growing rapidly and accounted for 8.1% of total population in 2011.[3] Such a rapid rise in the elderly population will definitely pose several challenges. The lack of guaranteed sufficient income to support themselves, the absence of social security, loss of social status and recognition, unavailability of opportunities for creative use of time and persistent ill health are some of the daunting problems the elderly face in the country.[4]

Ageing is a physiological process that starts from birth, continues throughout life, and ends with death. Among numerous environmental factors that modulate ageing, nutrition plays a significant role. While poor nutrition is not a natural concomitant of ageing, older adults are at risk of malnutrition due to physiological, psychological, social, dietary, and environmental risk factors.[5]

Malnutrition in elderly patients is common because daily food consumption decreases with old age. Furthermore,

the consumed food is low in calories, contributing to nutritional deficiencies and malnutrition. The mini nutritional assessment (MNA) scale has been developed to diagnose the risk of malnutrition in elderly individuals.[6] The MNA tool is a well validated tool for assessing malnutrition in the elderly. The tool was shown to have an accuracy of 92% when it was compared with a clinical evaluation by two physicians specialists in nutrition, and 98% when it was compared with a comprehensive nutritional assessment, including biochemical tests, anthropometric measurements and dietary assessment.[7] This scale represents a practical evaluation instrument; it is not invasive, and it takes into account the nutritional state, health conditions, frailty and eventual diseases of elderly individuals.[8]

Malnourished elderly are more likely to require health and social services, need more hospitalization, and demand extra challenges from caregiver. So, early detection and prompt interventions are essential for prevention of malnutrition in this group.[9]

In this view, this present study was undertaken to assess the nutritional status of elderly living in rural India and to study the factors related to their nutritional status.

METHODS

This community based cross-sectional study was undertaken in Bhilo ka bedla, Pratappura, Rebario ki dhani and Oto ka guda villages which is the field practice area of Department of Community Medicine, Pacific Medical College & Hospital, Udaipur, Rajasthan. The study was conducted from January 2017 to February 2017.

Study population

All the elderly people above 60 years of age residing in these villages were included in the study. Those who were seriously ill were excluded from the study. Total 8 participants were excluded due to illness. Total 152 participants were included in the study purposively. Informed verbal consent will be obtained from all study participants.

Study tool

Predesigned and pretested questionnaire and nutritional status were assessed using MNA scale, an instrument designed by Nestle Nutrition Institute specifically for elderly people.[10]

The MNA scale comprised 18 questions based on the following components: anthropometric measurements, dietary questionnaire, global health and social assessment, and subjective assessment of health and nutrition.

The initial 6 questions were used as a screening tool; if the screening score is 11 or less, the assessment was continued to gain malnutrition indicator score (MIS).

The participants were classified as normal nutritional status, at risk of malnutrition, or malnourished based on the MIS.

- 24–30 points: normal nutritional status
- 17–23.5 points: at risk of malnutrition
- <17 points: malnourished

The weight for all of the subjects were measured and Participants were required to stand barefoot, wearing minimal clothes while being weighed using the same calibrated mechanical scale platform (the scale had a capacity of 125 kg and weight will be measured to the nearest 0.5 kg).

The heights of participants were measured using an height measuring scale. The elderly individual was instructed to stand erect against the support and facing forward. Height was measured to the nearest 0.1 cm. BMI measured as weight (kg) divided by squared estimated height (m).

The mid arm circumference measurements was conducted with a non-stretchable measuring tape. Participants were measured while standing up, with their trunk aligned with their legs and arms and their right arm outstretched. To determine the place where the tape should be fixed, an average point was marked between the acromion process and the olecranon process with the arm at a 90° angle.

The calf circumference was measured with a non-stretchable measuring tape, with the participant in dorsal decubitus and the left leg forming a 90° angle with the knee, at the largest diameter of the calf, without compressing the calf.

Statistical analysis

Data entry was done in MS Excel. Simple Quantitative data was analyzed by using descriptive and inferential statistical techniques via Epi-Info (7.1 version) and simple qualitative data was analyzed by Chi-Square test.

RESULTS

This study comprised a total of 152 participants. Table 1 shows the socio-demographic profile of study population. Out of the total participants, 110 (72.4%) belonged to the age group of 60–64 years. Out of total participants, 73 (48%) were males and 79 (52%) were females.

Table 2 shows that the mean BMI and MNA scores went on decreasing (deteriorating nutritional status) with increasing age.

Table 1: Socio demographic profile of study participants (n=152).

Variables	Number	Percentage (%)
Age (in years)		
60-64	110	72.4
65-69	21	13.8
70-74	15	9.9
≥ 75	6	3.9
Gender		
Male	73	48
Female	79	52

Table 2: Mean BMI and MNA scores of the study population by age groups.

Variables	Age group (years) (Mean±SD)			
	60-64 (n=110	65-69 (n=21)	70-74 (n=15)	≥ 75 (n=6)
BMI kg/m^2	23.7±1.8	22.7±1.8	23.3±1.5	22.1±1.2
MNA score	23.4±2.6	20.9±4.1	20.6±3.9	19.3±1.8

Table 3: Nutritional status of elderly according to body mass index (MNA scale).

Nutritional status (BMI)	Number	Percentage (%)
BMI (<19)	2	1.3
BMI (19 to less than 21)	11	7.2
BMI (21 to less than 23)	43	28.3
BMI (≥23)	96	63.2
Total	152	100

Table 4: Nutritional status as per MNA score and its association with gender.

Characteristics	Male (%)	Female (%)	Total (%)
Normal (24 to 30 points)	37 (50.7)	31 (39.2)	68 (44.7)
Risk of malnutrition (17 to 23.5 points)	30 (41.1)	43 (54.4)	73 (48.0)
Malnourished (<17 points)	6 (8.2)	5 (6.4)	11 (7.3)
Total	73 (100)	79 (100)	152 (100)

χ 2= 2.703; df=2; p=0.258.

Table 5: Nutritional status as per MNA score and its age group wise distribution.

Nutritional status as per MNA score	Age group 60-64 years (%)	Age group 65-69 years (%)	Age group ≥70 years (%)	Total (%)
Normal	60 (88.2)	06 (8.8)	02 (3.0)	68 (100)
Risk of malnutrition	47 (64.4)	10 (13.7)	16 (21.9)	73 (100)
Malnourished	03 (27.3)	05 (45.4)	03 (27.3)	11 (100)
Total	110 (72.4)	21 (13.8)	21 (13.8)	152 (100)

Table 3 shows nutritional status of elderly according to body mass index (BMI) (MNA scale). Out of the total 152 participants, 96 (63.2%) were having BMI 23 or greater, 43 (28.3%) were having BMI 21 to less than 23, 11 (7.2%) were having BMI 19 to less than 21, and 2 (1.3%) were having BMI less than 19.

Table 4 reveals that out of the 152 participants, 30 (41.1%) males and 43 (54.4%) females were at risk of malnutrition. Total 6 (8.2%) males and 5 (6.4%) females were suffering from malnutrition. Among all participants, 37 (50.7%) males and 31 (39.2%) females were well nourished. However, the association of gender and nutritional status of elderly was not found to be statistically significant (p=0.258).

Our study shows that out of total malnourished people, half of them belong to age group of ≥70 years where as almost 90% of the normal people belongs to the age group of 60-64 years (Table 5).

DISCUSSION

WHO has predicted that ageing population will present new challenges to health care. Thus, assessing nutritional status in the elderly is critical in determining health status.[11] The MNA is a practical noninvasive technique for rapidly evaluating potential risk of malnutrition in the elderly.[12] This study gives an insight into the priority issue of nutritional status in elderly in India.

In this study, 110 (72.4%) belonged to the age group of 60–64 years. Out of total participants, 73 (48%) were males and 79 (52%) were females. Whereas study conducted in rural Belagavi showed that 33.15% study participants belonged to the age group of 60–64 years and 62.64% participants were females.[13]

In this study, 96 (63.2%) participants were having BMI 23 or greater, 43 (28.3%) were having BMI 21 to less than 23, 11 (7.2%) were having BMI 19 to less than 21, and 2 (1.3%) were having BMI less than 19 according to MNA scale. Whereas a study done in rural Belagavi showed that Out of the total 190 participants, 85 (44.70%) were having BMI less than 19, 28 (14.70%) were having BMI 19 to less than 21, 11 (5.80%) were having BMI 21 to less than 23, and 66 (34.70%) were having BMI 23 or greater according to MNA scale.[13] Whereas a study done in rural Finland showed that 52 (30%) had a BMI of 30 kg/m^2 or more and 10 (6%) participants had a BMI below 20 kg/m^2.[14]

This study showed that out of the 152 participants, 30 (41.1%) males and 43 (54.4%) females were at risk of malnutrition. Total 6 (8.2%) males and 5 (6.4%) females were suffering from malnutrition. Among all participants, 37 (50.7%) males and 31 (39.2%) females were well nourished. However, the association of gender and nutritional status of elderly was not found to be statistically significant (p=0.258). In a study conducted in rural Belagavi, 31 (43.7%) males and 52 (43.3%) females were at risk of malnutrition. 18 (25.4%) males and 25 (21%) females were suffering from malnutrition and only 22 (31%) males and 42 (35.3%) females were well nourished, whereas the study conducted in Pakistan showed that 88 (23.16%) males and 72 (18.95%) females were at risk of malnutrition, 12 (3.16%) males and 9 (2.37%) females were suffering from malnutrition, and 109 (28.68%) males and 90 (23.68%) females were well nourished.[13,15] Another study conducted in Bangladesh showed 61.7% were at risk of malnutrition, 25.8% were suffering from malnutrition, and only 12.5% were well nourished.[16]

Our results showed more at risk of malnutrition than actually malnourished. This finding has been seen among community-dwelling elderly from India and other parts of the world.[17–21] This is primarily due to the fact that the MNA is better at identifying those at risk of malnutrition among healthy elderly in the community.[22]

CONCLUSION

In our study, out of total study participants, 73 (48%) were at the risk of malnutrition and 11 (7.3%) were malnourished as per MNA score. The results suggest that MNA is a useful tool in the identification of elderly at risk of malnutrition. Due to the high prevalence of elderly who were malnourished or at risk of malnutrition, a more detailed evaluation, regular follow up and dietary intervention to reverse the situation is required. Geriatric clinics may be set up at PHC level. Research efforts and nutrition education strategies should be directed towards health of the elderly to develop nutritional guidelines promoting successful aging.

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