

Original Research Article

An assessment of nutritional status of elderly in Bolangir district of Odisha: a community based study

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ABSTRACT

Background: Ageing is a physiological process that begins at birth, continues throughout life, and culminates in death. Poor nutrition is not a normal by-product of ageing; older persons are vulnerable to malnutrition due to physiological, psychological, social, nutritional, and environmental risk factors. Objective were to assess the nutritional status of elderly residing in rural areas with special reference to anthropometric measurements.

Methods: A community based cross-sectional study was conducted in Mursundi Village at Alagpur block of Bolangir district of Odisha, India. A total of sixty elderly of age 60 years or above were selected for the study through random sampling method. Data was assessed using a well-structured and pretested questionnaire. Information was collected from selected elderly people through personal interview by repeatedly visiting the study area.

Results: Out of the total 60 participants, the mean height of the male elderly was 149.5 ± 7.23 cm subsequently mean weight was 50.33 ± 8.89 kg and BMI score (22.97 ± 2.25 kg/m²) of the male elderly was within the normal range. Similarly, the mean height and weight of the female elderly participants were 151.4 ± 7.16 cm and 49.33 ± 6.69 kg respectively while the BMI mean score (21.34 ± 2.94 kg/m²) falls into to the underweight category. About 33.3% of the elderly males were normal, 43.3% underweight and 23.33% from overweight category. Similarly, majority females (26.66%) were normal, 50.0% were underweight and 23.33% from overweight category.

Conclusions: Nutritional status of elderly subjects especially among females is very poor as detected in this study. There is need and scope for geriatric nutritional interventions mainly through nutrition education in rural population.

Keywords: Nutritional status, Elderly, Malnutrition, Ageing

INTRODUCTION

Ageing is a physiological process that begins at birth, continues throughout life, and culminates in death. Nutrition is one of the many environmental elements that influence how we age. While malnutrition is not a natural part of ageing, older persons are at risk owing to physiological, psychological, social, nutritional, and environmental risk factors.¹ Malnutrition is widespread in older individuals because daily food consumption declines with age. Additionally, the food ingested is low in calories, resulting to nutritional deficits and malnutrition. The mini nutritional assessment (MNA)

scale was created to assess the risk of malnutrition in older people.²

The health of the elderly is an essential factor in determining a population's health condition.³ Malnutrition is especially frequent in the elderly since daily food consumption declines with age. Furthermore, the food consumed is low in calories, resulting to nutritional deficits and malnutrition. Multimorbidity is widespread with age, and it is reported to be more prevalent in underdeveloped nations.⁴

According to the 2011 census, the geriatric population (aged 60 years and over) accounts for 8.6% of the total population in India.⁵ According to the world health organization in the 2021, the number of elderly people in the world will increase from 1.0 billion to 1.4 billion in 2050 and there will be 2.0 billion elderly people, eighty percent of them will live in developing countries. The vast majority of them reside in rural India. The extent of the malnutrition among the India's elderly are under-reported. According to studies, more than half of the elderly population is underweight, and more than 90 percentages consumes less calories than the required amount.⁶

Thus, keeping all the points in view, this present study has been undertaken to assess the nutritional status of elderly residing in rural areas with special reference to anthropometric measurements.

METHODS

Study design

This study is a community based cross-sectional study.

Study period

This study was conducted during January 2023 to May 2023.

Study area

Mursundi Village in Alagpur Block of Bolangir district of Odisha, India.

Study population

A total of sixty participants of age 60 years or above were selected for the study through random sampling method. Age of the elderly was confirmed using any Government of India recognized identity proof.

Study tool

A well-structured and pretested questionnaire was developed to extract relevant information from the selected elderly. It contains all the information regarding demographic, socio-economic and anthropometric measurements. Information was collected from selected elderly people through personal interview by repeatedly visiting the study area.

The surveyors took four anthropometric measurements: weight, height, mid upper arm circumference (MUAC), and calf circumference. The respondents' body weight was measured to the nearest 0.1 kg on a digital weighing scale, and their height, mid arm circumference (MAC), and calf circumference were measured to the nearest 0.1 cm on a non-stretchable measuring tape.

Statistical analysis

The data collected data was analysed using Ms excel and SPSS version 21 software. Descriptive statistics like mean, standard deviation, frequency, and percentage were used. Analytical statistic like Z test and paired t test was applied. $P < 0.05$ was taken as statistically significant.

Ethical approval

Study was approved by the institutional ethics committee, Rama Devi Women's university, Bhubaneswar, Odisha. The verbal consent from all participants were obtained before interview. Confidentiality of data was maintained.

RESULTS

This study comprised a total of 60 participants. Table 1 shows the sociodemographic profile of study population. Out of total participants, 56.67% were male elderly and 50% female elderly from 60-70 years age group, 26.67% male elderly and 46.67 female elderly were from 71-80 years age group whereas only 16.67% male elderly and 3.33 female elderly were from 81-90 years of age group. All the elderly (100%) were belonging to Hindu religion. Majority of the elderly (70% male) and (76.66% female) belonged to other backward classes category followed by 26.67% male and 16.67 female elderly were from schedule caste category and only 3.33% male and 6.67 female elderly were from general category. majority of the elderly 90% male and 83.33% female belonged to nuclear families whereas only 10% male and 16.67% female elderly belonged to nuclear families. With respect to the family members of elderly, most of them 43.67% male and 53.33% had less or equal than 3 family members followed by 40% male 36.33% female elderly had 4 to 6 family members, 13.33% male and 10% female elderly had 7 to 9 family members whereas only 8% elderly had more than 10 family members.

Table 2 shows mean anthropometric measurements of the elderly. Out of the total 60 participants, the mean height of the male elderly was 149.5 ± 7.23 cm subsequently mean weight was 50.33 ± 8.89 kg and BMI score (22.97 ± 2.25 kg/m²) of the male elderly was within the normal range. Similarly, the mean height and weight of the female elderly participants were 151.4 ± 7.16 cm and 49.33 ± 6.69 kg respectively while the BMI mean score (21.34 ± 2.94 kg/m²) falls into to the underweight category. The mean mid arm circumference of the male elderly was 8.67 ± 1.81 cm subsequently mean calf circumference was 10.33 ± 1.61 cm. Similarly, the mean arm circumference and calf circumference of the female elderly were 9.05 ± 0.46 cm and 11.67 ± 0.12 cm.

Table 3 shows nutritional status of elderly according to Body Mass Index (BMI, WHO classification) Out of the total 60 participants, about 33.3% of the elderly males were normal, 43.3% underweight and 23.33% from overweight category. Similarly, majority females

(26.66%) were normal, 50% were underweight and 23.33% from overweight category.

Table 1: Sociodemographic profile of the elderly (n=60).

Particular	Male, (n=30) (%)	Female, (n=30) (%)	P value
Age (in years)			
60-70	17 (56.67)	15 (50)	0.123
71-80	8 (26.67)	14 (46.67)	
81-90	5 (16.67)	1 (3.33)	
Religion			
Hindu	30 (50)	30 (50)	0.034
Muslim	-	-	
Others	-	-	
Caste			
General	1 (3.33)	2 (6.67)	0.267*
OBC	21 (70)	23 (76.66)	
SC/ST	8 (26.67)	5 (16.67)	
Types of family			
Joint	3 (10)	5 (16.67)	0.125
Nuclear	27 (90)	25 (83.33)	
Members of family			
≤3	14 (46.67)	16 (53.33)	0.284*
4-6	12 (40)	11 (36.66)	
7-9	4 (13.33)	3 (10)	
Marital status			
Married	20 (66.67)	17 (56.66)	0.245*
Separated	-	4 (13.33)	
Widow/ widower	10 (33.33)	9 (30)	
Living arrangements			
With spouse	3 (10)	13 (43.33)	0.178
With family	25 (83.33)	12 (40)	
Alone	2 (6.67)	5 (16.66)	
Education			
Illiterate	13 (43.33)	20 (66.66)	0.034
Literate	3 (10)	10 (33.33)	
Primary	12 (40)	-	
Secondary	2 (6.67)	-	
Occupation			
Housewife		9 (30)	0.015
Pensioner	2 (6.67)	-	
Not working	27 (90)	16 (53.33)	
working	1 (3.33)	5 (16.66)	
Previous occupation			
Agriculture	17 (56.67)	15 (50)	0.169
Labour	11 (36.66)	15 (50)	
Govt employee	2 (6.67)	-	
Smoking			
Yes	6 (20)	-	0.121
No	24 (86.67)	30 (100)	
Others addiction			
Bhang	20 (66.67)	16 (53.33)	0.186
Tobacco	10 (33.33)	14 (46.67)	

Figures in parenthesis indicate percentage, p<0.05.

Table 2: Mean anthropometric measurements of the elderly (n=60).

Anthropometric measurements	Male, (n=30)	Female, (n=30)	P value
Height (cm)	149.5±7.23	151.4±7.16	0.234*
Weight (kg)	50.33±8.89	49.33±6.69	0.125
BMI (kg/m ²)	22.97±2.25	21.34±2.94	0.015
Mid arm circumference	8.67±1.81	9.05±0.46	0.189
Calf circumference	10.33±1.61	11.67±0.12	0.212*

Values are in mean±SD, p<0.05.

Table 3: Nutritional Status of Elderly according to Body Mass Index (WHO Classification).

Types of malnutrition	BMI range (Kg/m ²)	Male		Female	
		F	%	F	%
Under weight	<18.50	13	43.33	15	50.00
Severe thinness	<16.00	-	-	-	-
Moderate thinness	16.00-16.99	5	16.66	6	20.00
Mild thinness	17.00-18.49	8	26.66	9	30.00
Normal	18.50-24.99	10	33.33	8	26.66
Overweight	25.00-29.99	7	23.33	7	23.33
Obese	≥30	-	-	-	-

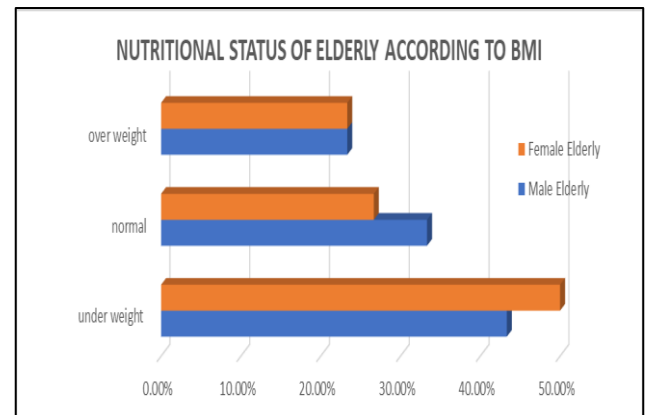


Figure 1: Nutritional status of elderly.

DISCUSSION

According to WHO, an ageing population will create new problems to health care. Thus, defining health condition in the elderly requires examining nutritional status.

The anthropometric assessment is a simple, non-invasive approach for assessing the risk of malnutrition in the

elderly. This study sheds light on the critical issue of nutritional status among India's elderly.

The findings of this study states that 56.67% were male elderly and 50 percent female elderly from 60-70 years age group, 26.67% male elderly and 46.67 female elderly were from 71-80 years age group whereas only 16.67% male elderly and 3.33 female elderly were from 81-90 years of age group comprising of higher early adulthood population in the study area. All the elderly (100%) were belonging to Hindu religion. Majority of the elderly (70% male) and (76.66% female) belonged to other backward classes category followed by 26.67% male and 16.67 female elderly were from schedule caste category and only 3.33% male and 6.67 female elderly were from general category. majority of the elderly 90% male and 83.33% female belonged to nuclear families whereas only 10% male and 16.67% female elderly belonged to nuclear families. With respect to the family members of elderly, most of them 43.67% male and 53.33% had less or equal than 3 family members followed by 40% male 36.33% female elderly had 4 to 6 family members, 13.33% male and 10% female elderly had 7 to 9 family members whereas only 8.0 per cent elderly had more than 10 family members.

Further it was found that 66.67% male and 56.66% female were married while 33.33% male and 30% female were widowed and only 13.33% female elderly were separated from their family. The highest percent (43.33%) of elderly male and 66.66% female were illiterate and 10% male and 33.33% female elderly were literate while 40% male completed primary education and 6.67% male elderly have attended till secondary education. In contrast, research done in Allahabad found that 106 (27.17%) were illiterate and 53 (13.54%) had finished high school, which was similar to our findings.⁷ These findings were very comparable to those obtained by the Allahabad research.⁷

About 30% elderly females were housewives followed by 90% male elderly were working and 53.33% female elderly were not working. About 56.67% male and 50% female elderly had agriculture as their previous occupation, 36.66% male and 50% female elderly were laborer previously and only 6.67% male elderly were Government employee. Mostly 20% of male elderly were smoking and rest male elderly were not smoking. All the female elderly were non-smokers. In addition to smoking, most male elderly (66.67%) had bhang addiction while 33.33% of male elderly had tobacco addictions whereas only 53.33% and 46.67% elderly women had bhang and tobacco addiction, respectively.

The mean height of the male elderly was 149.5 ± 7.23 cm subsequently mean weight was 50.33 ± 8.89 kg and BMI score (22.97 ± 2.25 kg/m²) of the male elderly was within the normal range. Whereas a study done in rural Finland showed that 52 (30%) had a BMI of 30 kg/m² or more and 10 (6%) participants had a BMI below 20 kg/m².⁸

Similarly, the mean height and weight of the female elderly participants were 151.4 ± 7.16 cm and 49.33 ± 6.69 kg respectively while the BMI mean score (21.34 ± 2.94 kg/m²) falls into to the underweight category. The mean mid arm circumference of the male elderly was 8.67 ± 1.81 cm subsequently mean calf circumference was 10.33 ± 1.61 cm. Similarly, the mean arm circumference and calf circumference of the female elderly were 9.05 ± 0.46 cm and 11.67 ± 0.12 cm.

In our study, about 33.3% of the elderly males were normal, 43.3% underweight and 23.33% from overweight category. Similarly majority females (26.66%) were normal, 50% were underweight and 23.33% from overweight category mainly due to decreased appetite and physical activity can be attributed to physiological changes during aging as well as medical conditions in the elderly. According to a study done in Pakistan, 88 (23.16%) males and 72 (18.95%) females were at danger of malnutrition, 12 (3.16%) males and 9 (2.37%) females were malnourished, and 109 (28.68%) males and 90 (23.68%) females were well fed.⁹ Other studies involving community-dwelling elderly have shown that chewing problems and difficulty preparing or eating full contribute to poor nutritional status.¹⁰

Our findings indicated that more female elderly people were at under nourished having mild and moderate thinness than elderly males. This discovery has been made among community-dwelling old people in India and other areas of world. Largely due to poor nutritional knowledge among community elderly people.¹¹⁻¹⁵

CONCLUSION

The results show that mostly female elderly people were having poor nutritional status than male elderly people. Considering the significant incidence of low nutritional status among the elderly, a greater emphasis on food and possible nutritional therapies is necessary. Lower income groups should be given special consideration to suit their unique demands. The development and execution of low-cost, prevention-based activities such as health, nutrition, and physical education might dramatically improve the elderly's chances of maintaining high nutritional status. Government, non-governmental organisations (NGOs), communities, families, and medical and social science colleges must place a greater focus on providing health care, social assistance, and nutrition services to elderly.

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