

A Cross Sectional Study on Nutritional Status and Risk Factors Associated with Malnutrition among Elderly Population in Hyderabad

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Abstract:


Introduction: The elderly population is growing much faster. Ageing is a global phenomenon and it is expected that by 2050 every country in the world will have substantial increase in population aged 60 years and above. Malnutrition is common among older people over 60 years of age. They are likely to experience morbidity, premature mortality, poor quality of life and reduced functional ability than normally nourished persons. Malnutrition increases health care costs, reduces productivity, and slows economic growth, which can perpetuate a cycle of poverty and ill-health. Hence combating malnutrition in all its forms is one of the greatest global health challenges. **Objectives:** 1) To assess the nutritional status among elderly population in Hyderabad. 2) To assess the risk factors which are associated with malnutrition among elderly population. **Method:** A Cross sectional study was conducted in July - September 2021 among elderly persons aged 60 years and above residing in urban slums of Hyderabad. Considering the estimated prevalence of malnutrition among elderly population to be 14.5%, the sample size was calculated as 198 and was rounded off to 200. Data was entered into Microsoft Excel and analysed using Epi Info version 7.2.2.6. A pre-designed, pre-tested questionnaire was used to collect data. Malnutrition was assessed using Mini Nutritional Assessment (MNA). **Results:** Among 200 participants, 52.5% were females. The mean age of the study population was 68.3 years. Among them 18% of the study participants were malnourished, 27% were at risk of malnutrition and 55% had normal nutritional status. **Conclusion:** Early diagnosis and prompt treatment of elderly people at high risk for malnutrition may improve their nutritional status and prognosis.

Keywords: Elderly, Malnutrition, Mini Nutritional Assessment (MNA)

Introduction:

The global population is ageing rapidly due to demographic transition, advances in medical technologies, urbanization, migration and changing gender norms. According to WHO, between 2015 and 2050, the proportion of the world's population over 60 years will nearly double, from 12% to 22%.^[1] By 2050, 80% of all older people will live in low- and middle-income countries.^[1] The World Health

Organization (WHO) has stated that aging populations will present new challenges to health care.^[2] The health of the elderly will be an important issue defining the health status of a population. The health problems faced by the elderly population includes nutritional problems, chronic non-communicable diseases like Diabetes, Hypertension, Heart disease, stroke, hearing loss, cataracts and refractive errors, back and neck pain, osteoarthritis,

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chronic obstructive pulmonary disease, depression, and dementia and others. Nutritional problem, especially undernutrition is one of the common public health problems in the older age group causing greater morbidity, mortality and economic loss especially in developing countries.

Although some of the variations in older people's health are genetic, much is due to people's physical and social environments – including their homes, neighborhoods, and communities, as well as their personal characteristics – such as their sex, ethnicity, or socioeconomic status.^[1] Environment have an important influence on the development and maintenance of healthy behaviour. Maintaining healthy behaviour throughout life, particularly eating a balanced diet, engaging in regular physical activity, and refraining from tobacco use and other addictions reduces the risk of non-communicable diseases and improves both physical and mental health.

The magnitude of malnutrition among the elderly population in India is under-reported. In India, a very few community studies have been conducted to estimate malnutrition among elderly.

Objectives:

- 1) To assess the nutritional status among elderly population in Hyderabad.
- 2) To assess the risk factors which are associated with malnutrition among elderly population.

Method:

A Cross sectional study was conducted in July - September 2021 among elderly persons aged 60 years and above residing in urban slums of Hyderabad. All the elderly population aged 60 years and above were listed out. Considering the estimated prevalence of malnutrition among elderly to be 14.5% based on the study done by Neeta Mathur et al, the sample size was calculated using the formula $4pq/l^2$ as 198 and was rounded off to 200.^[3] After taking permission from the Institutional Ethical Committee, interviews were conducted among the study participants who were chosen by simple

random sampling. All the participants who have given informed consent were included in the study. Those who were severely ill and those who did not give informed consent were excluded from the study. A predesigned, pre-tested questionnaire was used to collect data. Malnutrition was assessed using Mini Nutritional Assessment (MNA)^[4] with total score as 30 points. Malnutrition Indicator Score of 24 to 30 points indicates Normal nutritional status. A score of 17 to 23.5 points indicates At risk of malnutrition and less than 17 points indicates Malnourishment.

Anthropometric measurements were taken and it consisted of weight, height, mid upper arm circumference (MUAC) and calf circumference (CC). For MUAC, 24 cm was taken as cut off and for CC, 26.5cm as cut off.^[5] BMI < 18.5 kg/m² were considered underweight, those with BMI of 18.5-22.9 kg/m² were normal weight, those with BMI 23.0-24.9 kg/m² were overweight and those with BMI 25.0 kg/m² or above were obese, according to the WHO Asian adult body weight standard.^[6]

Statistical analysis : Data was entered into Microsoft Excel and analysed using Epi Info version 7.2.2.6. For continuous variables, mean and standard deviation(SD) were used to present the data. For categorical variables frequencies and percentages were used. Appropriate tests of significance were applied wherever necessary at 5% level of significance. The p value <0.05 was considered as statistically significant at 95% confidence level.

Results:

The mean age of the study population was 68.3 years. Figure 1 shows the distribution of the study participants according to the nutritional status. 18% (36) of the study participants were malnourished. Normal nutritional status was seen in 55% (110) of the study population and 27% (54) were at risk of malnutrition.

Table 1 shows the socio-demographic characteristics of the study participants. Among 200 participants, 52.5% (102) were females. Majority of the study participants (51%) were belonging to Hindu religion, 34% were literates and 59% were

Figure 1: Nutritional status of the study participants

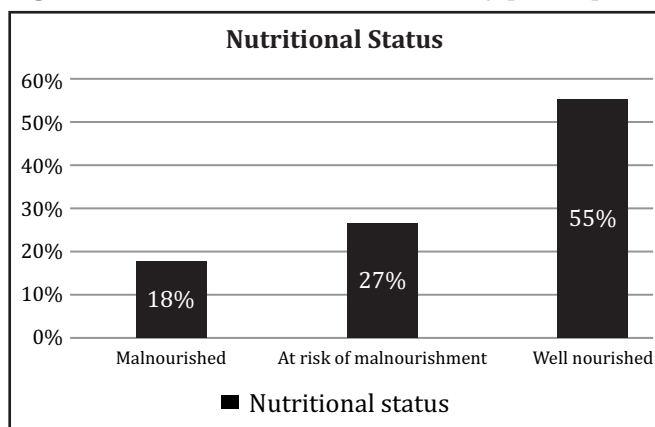


Table 1: Socio-demographic characteristics of study participants (n=200)

Variables		n (%)
Age (in years)	<65	90 (45)
	65-75	92 (46)
	>75	18 (9)
Gender	Male	123 (61.5)
	Female	77 (38.5)
Religion	Hindu	102 (51)
	Muslim	71 (35.5)
	Christian	27 (13.5)
Literacy status	Literate	68 (34)
	Illiterate	132 (66)
Marital status	Unmarried	48 (24)
	Married	140 (70)
	Separated/Divorced	12 (6)
Socio-economic class	III	58 (29)
	IV	24 (12)
	V	118 (59)

belonging to socio-economic class V according to modified Kuppaswamy's classification.

Table 2 shows the association between nutritional status and anthropometric measurements of elderly people. There was a significant association between nutritional status and the variables such as weight, Body Mass Index, Mid-Upper Arm Circumference and Calf circumference ($p < 0.05$).

Table 3 shows the comparison of socio-demographic characteristics with the nutritional status. The risk factors associated with malnutrition were old age ($p = 0.017$), illiteracy ($p < 0.05$) and inadequate calorie intake ($p = 0.006$).

Discussion:

This study was done to estimate the prevalence and risk factors associated with malnutrition among elderly population in Hyderabad. In the present study, 18% (36) of the study participants were malnourished, 27% (54) were at risk of malnutrition and 55% (110) had normal nutritional status. Age above 65 years ($p = 0.017$), illiteracy ($p < 0.05$), inadequate calorie intake ($p = 0.006$), body weight, Body Mass Index, Mid-Upper Arm Circumference and Calf circumference ($p < 0.05$) were statistically significant factors which were associated with the nutritional status in the present study.

In the present study, age above 65 years ($p = 0.017$) is a significant risk factor associated with the nutritional status. This is in accordance with the study conducted by Konda S et al which showed, older age was associated with lower MNA scores.^[7] Similar findings were also seen in a study done by Agarwalla R et al which showed that a significant relationship was observed between age groups and MNA status.^[8]

In the present study, there was a significant association between literacy status ($p < 0.05$) and malnutrition. A study done by Ghimire S et al showed that a higher educational level contributes to a better nutritional status.^[9] The reason for better nutritional status could be due to better lifestyle and higher literacy level.

In the present study, there was significant association between calorie intake ($p = 0.006$) and the nutritional status. Similar observations were seen in the study done by Vedantam et al in South India where low calorie intake due to problems with chewing and difficulty preparing or eating full meals contribute to poor nutritional status.^[10] Similar findings were also seen in a study done by Konda S et al which showed that lower MNA scores were

Table 2: Association between nutritional status and anthropometric measurements of elderly people (n=200)

Variable	Well nourished	At risk of malnutrition	Malnourished	p value
n (%)	110(55)	54(27)	36(18)	
Weight (kg)	66.2+3.2	59.8+ 4.3	49.2+ 6.4	0.0000001
Height (cm)	163+ 5.6	162+ 2.4	163+ 3.8	0.40
BMI (kg/m ²)	25+0.6	23.1+ 4.5	20.3+ 2.3	0.0001
MUAC(cm)	26.3+5.8	24.2+5.2	20.5+2.2	0.000001
CC(cm)	33.1+2.3	30.5+3.2	26.9+1.8	0.0001

p<0.05 was considered significant. ANOVA test was applied.

Table 3: Comparison of socio-demographic characteristics with nutritional status

Variables		Well nourished	At risk of malnutrition	Malnourished	Chi square	p value
Age (in years)	<65	60 (30%)	21(10.5%)	9(4.5%)	12.01	0.017
	65-75	44(22%)	26 (13%)	22(11%)		
	>75	6 (3%)	7 (3.5%)	5(2.5%)		
Gender	Male	71 (35.5%)	32(16%)	20(10%)	1.083	0.582
	Female	39 (19.5%)	22(11%)	16(8%)		
Religion	Hindu	56 (28%)	28(14%)	18(9%)	0.595	0.963
	Muslim	39 (19.5%)	20(10%)	12(6%)		
	Christian	15 (7.5%)	6(3%)	6(3%)		
Literacy status	Literate	58 (29%)	5(2.5%)	5(2.5%)	38.41	0.0000001
	Illiterate	52 (26%)	49(24.5%)	31(15.5%)		
Marital status	Unmarried	20 (10%)	18(9%)	10(5%)	6.662	0.157
	Married	82 (41%)	35(17.5%)	23(11.5%)		
	Seperated/Divorced	8(4%)	1(0.5%)	3(1.5%)		
Socio-economic class	III	32(16%)	14(7%)	12(6%)	4.369	0.358
	IV	9(4.5%)	10(5%)	5(2.5%)		
	V	69(34.5%)	30(15%)	19(9.5%)		
Calorie intake	Inadequate	31(15.5%)	31(15.5%)	11(5.5%)	10.18	0.006
	Adequate	82(41%)	37(18.5%)	8(4%)		
Comorbidity	Yes	68(34%)	42(21%)	10(5%)	0.221	0.895
	No	48(24%)	26(13%)	6(3%)		
Living independently	Yes	16(8%)	6(3%)	5(2.5%)	2.773	0.250
	No	100(50%)	57(28.5%)	16(8%)		

p<0.05 was considered significant

associated with those elderly people who had less than three meals daily.^[7]

In this study, the elderly people with malnutrition had a significantly lower mean weight, BMI, MUAC and Calf Circumference than those who were well nourished. A study done by Ghimire S et al in rural Nepal also showed similar findings.^[9]

Conclusion:

In the present study, 18% of the study participants were malnourished, 27% were at risk of malnutrition. Age above 65 years, illiteracy, inadequate calorie intake, body weight, Body Mass Index, Mid-Upper Arm Circumference and Calf circumference were statistically significant factors which were associated with the nutritional status in the present study.

Recommendations:

Early diagnosis and prompt treatment of malnutrition among elderly people may improve their nutritional status and prognosis.

Limitations:

The present study was carried out in urban slums of Hyderabad. The results cannot be generalized to elderly population in rural areas. Information regarding other risk factors including economic burden and problems associated with old age were not taken into account which might have an impact on the nutritional status.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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