Original Research Article

Assessment of nutritional status among geriatric population in rural Mangaluru: a cross sectional study

Shrivathsa D. N.[1]*, Chandana G. Manglik [1], Ranish Deelan Saldanha[2], Prajna P. Sharma[1]

[1]Department of Community Medicine, Kanachur Institute of Medical Sciences, Natekal, Mangaluru, Karnataka, India
[2]MBBS Student, Kanachur Institute of Medical Sciences, Natekal, Mangaluru, Karnataka, India

*Correspondence:
Dr. Shrivathsa D. N.,
E-mail: bhatvatsa@gmail.com

ABSTRACT

Background: The percentage of elderly is growing rapidly worldwide. They are at a risk of malnutrition due to physiological, psychological, social, dietary and environmental factors.The present study was conducted to find the malnourished elderly in the community. The aims and objectives of the study were to evaluate the nutritional status of elderly using Mini Nutritional Assessment (MNA) scales; to evaluate the dietary consumption in terms of total calories and protein intake; to assess the factors associated with the malnutrition; to educate regarding nutritional importance in elderly.

Methods: A community based cross-sectional study was conducted among the geriatric population (n=117) in rural Mangaluru using convenient sampling technique. After obtaining oral consent, mini nutritional assessment scale was used and socio-demography was collected. Total screening score of 14 and assessment score of 16 were summed up to get the total assessment score of 30 to determine the person's nutritional status.

Results: Majority (60.6%) of the study population was females and 39.4% were males. 53% population were Muslims and 51% belonged to nuclear family. According to MNA scale, 54 (46.7%) were at risk of malnutrition, 17 (14.5%) were suffering from malnutrition and rest 46 (39.3%) had normal nutritional status. There was a significant correlation of MNA score with BMI.

Conclusions: 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 the risk of malnutrition, a more detailed evaluation, regular follow up and dietary intervention is required.

Keywords: Geriatric, Nutritional status, MNA, Mangaluru

INTRODUCTION

In January, 1999 Govt of India adopted National Policy on elder persons which defines senior citizens or elderly as a person who is of 60 years or above.[1] The percentage of elderly is growing rapidly worldwide. The global number of 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.[2] The lack of guaranteed sufficient income to support themselves, absence of social security, loss of social status and recognition, unavailability of opportunities for creative use of time and persistent ill health are some problems faced by elderly in the country. Older adults are at a risk of malnutrition due to physiological, psychological, social, dietary and environmental factors.[2] Malnutrition is defined as 'a pathological state resulting from a relative or absolute deficiency or excess of one or more essential nutrients'. It comprises four forms: under nutrition, over nutrition, imbalance and specific deficiency.[3]

Different studies have shown that more than 50% of elderly population of India are suffering from malnutrition and more than 90% have less than the recommended intake.[1] Studies reported the following significant risk factors for malnutrition: age, general health decline including physical functions, Parkinson's disease, constipation, poor or moderate self-reported health status, cognitive decline, dementia, eating dependencies, poor appetite, loss of interest in life, basal oral dysphagia, signs of impaired efficacy of swallowing and institutionalization.[20]

These risk factors for malnutrition in older adults may be considered by health care professionals when developing new integrated assessment instruments to identify older adult's risk of malnutrition and to support the development of preventive and treatment strategies.[20]

Keeping all the above set facts in mind the present study was conducted to find the malnourished elderly in the community.

Aim and objectives

- To evaluate the nutritional status of elderly using mini nutritional assessment (MNA) scale.
- To evaluate the dietary consumption in terms of total calories and protein intake.
- To assess the factors associated with the malnutrition.
- To educate regarding nutritional importance in elderly.

METHODS

A community based cross-sectional study was conducted among the geriatric population (n=117) in rural Mangaluru using convenient sampling technique. The period of study was from April 2018 to June 2018.

Inclusion criteria

Person of 60 years of age and above and permanent resident of the area was taken as study subject.

Exclusion criteria

Person who is not willing to participate in the study was excluded.

Data collection

Oral consent was taken and validated questionnaire was used to conduct the study. The variables studied cover the profile of house hold in terms of gender, house hold size, social groups, APL/BPL, house hold structure, per capita monthly income, key variable, being the nutritional status of geriatric age group.

Questionnaire mainly focused on Mini Nutritional Assessment.[7]

Total screening score of 14 and assessment score of 16 were summed up to get the total assessment score on 30 to determine the person's nutritional status (whether malnourished / at risk of malnutrition / normal).

Data analysis

Data collected were entered in Microsoft Excel and data analysis was done using SPSS version 25 and presented using descriptive statistics, mean and standard deviation. Association between two attributes were seen using chi-square statistics. The results with $p<0.05$ was taken as statistically significant.

RESULTS

A total of 117 participants were included in the study. According to Table 1 which shows Socio-economic characteristics of the study participants, 64.9% were between 60-65 years of age, 28.2% were between 66-75 years of age and 6.8% were above 75 years of age. 53% population were Muslims and 51% belonged to nuclear family. Majority 60.7% of the study population were females and 39.3% were males 35% belonged to Class 3 SES.

According to Table 2, 68.4% people does not avail any schemes, 25.6% avail old age pension, and 4.3% people are having health insurance.

Table 1: Socio-economic characteristics of the study participants (n=117).

	Number	Percentage (%)
Age (in years)		
60-65	76	64.9
66-75	33	28.2
>75	8	6.8
Religion		
Hindu	53	45
Muslim	62	53
Christian	2	2

	Number	Percentage (%)
Occupation		
Unemployed	32	27.3
Unskilled	5	4.3
Semiskilled	59	50.4
Skilled	15	12.8
Shop owners	3	2.6
Semi profession	1	0.9
Profession	2	1.7
Gender		
Male	46	39.3
Female	71	60.7
Type of card holders		
APL	39	33.3
BPL	78	66.7
Type of family		
Nuclear	60	51
Three generation	1	1
Joint	56	48
Socio-economic status		
Class I	9	7.6
Class II	36	30.3
Class III	41	35
Class IV	25	21.3
Class V	6	5.12

Table 2: Various social schemes availed (n=117).

Schemes	Number	Percentage (%)
No Schemes availed	80	68.4
Widow Pension	2	1.7
Old age pension	30	25.6
Health Insurance	5	4.3

Table 3: Questions of mini nutritional assessment (n=117).

	Number	Percentage (%)
Food intake decline over the last three months		
Severe decrease in food intake	8	6.8
Moderate decrease in food intake	43	36.8
No decrease in food intake	66	56.4
Weight loss during the last three months		
Weight loss greater than 3 kg	5	4.3
Does not know	45	38.5
Weight loss between 1 and 3 kg	11	9.4
No weight loss	56	47.9
Mobility of the respondents		
Bed or chair bound	5	4.3
Able to get out of the bed but does not go out	18	15.4
Goes out	94	80.3
Psychological stress or acute disease in the past three months		
Yes	23	19.7
No	94	80.3
Neurological problems among the respondents		
Severe dementia or depression	2	1.7
Mild dementia	21	17.9
No psychological problems	94	80.3

	Number	Percentage (%)
Body mass index (BMI)		
BMI less than 19	24	20.5
BMI 19 to less than 21	18	15.4
BMI 21 to less than 23	55	47.0
BMI 23 or greater	20	17.1
Lives independently (not in nursing home or hospital)		
Yes	7	6.0
No	110	94.0
Takes more than three prescription drugs per day		
Yes	44	37.6
No	73	62.4
Pressure sores or skin ulcers		
Yes	14	12.0
No	103	88.0
Number of meals eaten by the respondent daily		
1 meal	1	0.9
2 meals	20	17.1
3 meals	96	82.1
Consumption markers of protein intake a) At least one serving of dairy products per day b) Two or more servings of legumes or eggs per week c) Meat, fish or poultry everyday		
If the respondents consume none or any one among the above	34	29.1
If they consume any two of the above	61	52.1
If they consume all of the above	22	18.8
Consumes two or more servings of fruits or vegetables per day		
No	46	39.3
Yes	71	60.7
Fluid consumption per day		
Less than three cups	6	5.1
Three to five cups	39	33.3
More than five cups	72	61.5
Mode of feeding		
Unable to eat without assistance	8	6.8
Self-fed with some difficulty	7	6.0
Self-fed without any problem	102	87.2
Self-view of nutritional status		
Views self as malnourished	19	16.2
Is uncertain of nutritional status	45	38.5
Views self as having no nutritional problem	53	45.3
In comparison with other people of the same age how does the respondent consider his/her own health?		
Not as good	16	13.7
Does not know	38	32.5
As good	46	39.3
Better	17	14.5
Mid-arm circumference (MAC)		
MAC less than 21 cm	19	16.2
MAC 21 to 22 cm	25	21.4
MAC greater than 22 cm	73	62.4
Calf circumference (CC)		
CC less than 31 cm	63	53.8
CC 31 or greater	54	46.2

Table 4: Malnutrition screening score (n=117).

Malnutrition screening score	Number	Percentage (%)
Normal nutritional status	46	39.3
At risk of malnutrition	54	46.2
Malnourished	17	14.5

Table 5: Current illness among the respondents (n=117).

Current illness among the respondents	Number	Percentage (%)
No illness	20	17.1
Diabetes mellitus	18	15.4
Hypertension	26	22.2
Joint pain	10	8.5
Diabetes and hypertension	12	10.3
Others	31	26.5

According to the Table 3 and 4, MNA scale, 54 (46.7%) were at risk of malnutrition, 17 (14.5%) were suffering from malnutrition and rest 46 39.3%) had normal nutritional status.

The malnutrition screening score of elderly assessed in relation to their BMI as tabulated in Table 3 and MNA score in Table 4 depicts that with BMI less than 19 were at risk of malnutrition and is statistically significant (χ^2=9.8655, p<0.00016). There was a significant correlation of MNA score with BMI.

According to this Table 5, 22.2% are hypertensive 15.4% are diabetic,10.3% are diabetic as well as hypertensive and 17.1% people does not have any illness.

DISCUSSION

In our study done according MNA classification, it was seen that out of 117 participants 54 (46.7%) were at risk of malnutrition, 17 (14.5%) were suffering from malnutrition and rest 46 (39.3%) had normal nutrition status. Our results revealed more elderly to be at risk of malnutrition than actually malnourished. This finding has been seen among the community dwelling elderly from India and other parts of world.[1,2,7,12]

In study done by Anantesh et al, 2017 prevalence of malnutrition was found to be 18.6%, 42.6% were well nourished and 38.7% were at risk of malnutrition.[1]

In the study done by Vedantam, et al out of 227 elderly subject 14% were malnourished and 49% at risk of malnourishment.[12]

There was significant correlation of MNA score with BMI as 47% of subjects had 23 or greater and 17.1% had BMI less than 19, 20.5% had BMI ranging between 19 to 21, 15.4% had BMI ranging between 21 to 23. In a study by Gandhi et al, in Rajasthan, 63.2% subjects were having BMI 23 or greater, 28.3% were having BMI

ranging from 21 to 23, 7.2% were having BMI ranging from 19 to 21 and 13% were having BMI less than 19 according to MNA scale.[2]

Our analysis showed that lower MNA score were associated with those subjects who take less than 3 meals per day. A similar study showed that the elderly who were malnourished or at the risk of malnourishment consumed only two meals per day.[12]

CONCLUSION

In our study, out of total study participants, 54 (46.7%) were at the risk of malnutrition and 17 (14.5%) 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 the risk of malnutrition, a more detailed evaluation, regular follow up and dietary intervention to reverse the situation is required. Research efforts and nutrition education strategies should be directed towards health of the elderly to develop nutritional guidelines promoting successful aging.

Recommendations

There is a pressing need to identify early those at risk and to develop targeted nutrition intervention programmes for prevention of the effects of untreated malnutrition that can lead to morbidity and to ensure healthy ageing.

Limitations

Convenient sampling was used.

REFERENCES

1. Ananthesh BG, Bathija GV, Bant DD. A community based cross-sectional study to asses malnutrition among elderly population residing in urban and rural areas of a district in Karnataka, India. Int J Community Med Public Health. 2017;4:51-8.
2. Shreyashkumar J. Gandhi, Choudary MK, Kumar R, Bhatnagar D. Nutritional status of the geriatric population in the field practice area of a medical college in Rajasthan. Int J Community Med Public Health. 2018;5:220-4.
3. Park K, Park's textbook of preventive and social medicine 24th ed. Jabalpur; Banarsidas Bhanot Publishers; 2017: 680.
4. Kavya C, Santosh A. Geriatric health: assessment of nutritional status and functional ability of elderly living in rural area of Bangalore Karnataka, India. Int J Community Med Public Health. 2016;3:3460-4.
5. Volkert D, Saeglitz C, Gueldenzoph H, Sieber CC, Stehle P. Undiagnosed malnutrition and nutrition-related problems in geriatric patients. J Nutr Health Aging. 2010;14(5):387-92.
6. Margareta D. Persson, Kerstin E. Brismar, et al. Nutritional Status Using Mini Nutritional Assessment and Subjective Global Assessment Predict Mortality in Geriatric Patients. Am Geriatr Society. 2002;50(12):1996-200.
7. Pai MK. Comparative study of nutritional status of elderly population living in the home for aged vs those living in the community. Biomed Res. 2011;22(1):120-6.
8. Gazzotti C, Albert A, Pepinster A, Petermans J. Clinical usefulness of the mini nutritional assessment (mna) scale in geriatric medicine. J Nutr Health Aging. 2000;4(3):176-81.
9. Arlappa N, Balakrishna N, Kokku SB, Harikumar R, Rao KM, Ravindranath M. Diet and nutritional status of the older adults in rural India. J Ageing Res Healthcare. 2016;1(1):44-57.
10. Garg KG, Sharma M, Kaundal R. A review on geriatrics - common problems of old age poeple and their management. Int Ayurvedic Med J. 2015;3(1):165-175.
11. Tripathi KM, Singh Y, Dubey SK, Sevan T. Geriatric Nutrition: Need for Better Ageing; South Asian J Food Technol Environ. 2016;2(3&4):432-7.
12. Vedantam A, Subramanian V, Rao NV, John KR. Malnutrition in free-living elderly in rural south India: prevalence and risk factors. Public Health Nutr. 2009;13(9):1328–32.
13. Morley JE. Symposium on 'Nutrition and the elderly Protein-energy malnutrition in older subject. Proceedings Nutr Society. 1998;57:587-92.
14. Singh DR, Shrestha S. Nutritional status of senior citizens living in old age homes of Kathmandu metropolitan municipality. Int J Community Med Public Health. 2016;3:1707-15.
15. Donini LM, Savina C, Rosano A, Cannella C. Systemic review of nutritional status evaluation and screening tools in the elderly. J Nutr Health Aging. 2007;11(5):421-32.
16. Abd Aziz NAS, Teng NIMF, Abdul Hamid MR, Ismail NH. Assessing the nutritional status of hospitalized elderly. Clin Interv Aging. 2017;12:1615-25.
17. Oliveira MRM. Nutritional status and functional capacity of hospitalized elderly. Nutrition. 2009;8:54.
18. Virtuoso-Júnior JS, Tribess S, Romo-Perez V, Oliveira-Guerra R. Factors associated to risk of malnutrition amongst elderly women in low-income communities; Colomb Med. 2012;43:54-62.
19. Fontes D, Generoso Sde V, Toulson Davisson Correia MI. Subjective global assessment: A reliable nutritional assessment tool to predict outcomes in critically ill patients, Clin Nutr. 2014;33(2):291-5.
20. Fávaro-Moreira NC, Krausch-Hofmann S, Matthys C, Vereecken C, Vanhauwaert E, Declercq A, et al., Risk factors for malnutrition in older adults: A systemic review of the Literature Based on Longitudinal Data. Adv Nutr. 2016;7(3):507-22.