



Nutritional status of institutionalized elderly population of Lucknow city

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ABSTRACT

The proportion of people aged 60 years is growing faster than any other age group in almost every country. The nutritional status has proven to decrease with age which affects the general health as well as oral health. The Mini Nutritional Assessment (MNA) designed by B. Vellas is a clinical assessment tool for grading nutritional status. A cross-sectional study was conducted to assess the nutritional status of the institutionalized elderly population of Lucknow city. All the population from all the old age homes of Lucknow city who were more than or equal to 60 years were included in the study. Mini Nutritional Assessment-Short Form (MNA-SF) was used to record the nutritional status. The sample included 287 elderly, of which 104 (36.2%) consisted of males, and 183 (63.8%) were females. The MNA score of the study sample showed that 78% were malnourished, 22% were at risk of malnutrition. We observed a high percentage of female (54.70%) were malnourished than male (23.30%). Within the age group of 60-65, 66-70, 71-75, 76-80, >80, we observed higher percentage of malnourished elderly population 21 (7.30%), 51 (17.80%), 61 (21.30%), 36 (12.50%), 55 (19.20%) respectively. 100% of the subjects showed nutritional deficits, a high percentage of females were more malnourished than males.

Keywords— Elderly, Older people, Nutritional status, Malnutrition

1. INTRODUCTION

The government of India in January 1999 adopted “National policy on the older person” which defines “senior citizen” or “elderly” as a person who is the age of 60 years or above¹. India presently has around 100 million elderly, and the number is expected to be around 323 million, by 2050². WHO defined Health as “it is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity”³.

Older people are vulnerable to malnutrition for many reasons including physiological and functional changes that occur with age⁴. Malnutrition in the elderly has an evident impact on their general health¹. It can be stated that the health of the population is determined by the economic and human development of the place where they live in. Similarly, the economic development is determined by the health of the individual proving it to have a cause and effect relationship⁵. The old age homes are one of the alternatives for the living arrangements of the elderly. The populations residing in old age homes are highly at risk for developing undetected malnutrition and nutritional deficiencies⁶. Mostly the nutritional intervention programs are directed toward infants, young children, adolescents, and pregnant and lactating mother leaving behind the elderly, Hence this study was done in Lucknow to assess the nutritional status of the institutionalized elderly population.

The Mini Nutritional Assessment (MNA) is a clinical assessment tool for grading nutritional status and evaluating malnutrition risk in elderly patients that do not require a dietician or nutritionist for its application. MNA is a well-validated technique with high sensitivity, specificity, and reliability.⁷

2. AIM

To assess the nutritional status of the Institutionalized elderly population of Lucknow city

3. OBJECTIVE

To collect the baseline data to find the nutritional status of the Institutionalized elderly population of Lucknow city.

4. MATERIAL AND METHOD

The present study was done to assess the nutritional status of the Institutionalized elderly population of Lucknow city. A cross-sectional study was conducted on the institutionalized elderly population aged 60 and above and staying in various old age home of Lucknow city. All the residents present on the day of examination were included in the study. Mentally compromised people

and those with cognitive impairment and with the presence of severe neurodegenerative disease were excluded. For further convenience, the age groups were divided into 5 subgroups according to their age. The various age groups were

- 60-65 years
- 66-70 years
- 71-75 years
- 76-80 years
- >80 years

Ethical clearance was obtained from the Institutional Ethical Committee of Babu Banarasi Das College of Dental Sciences, BBDU, Lucknow. Written informed consent was obtained from the governing authority of the residing institute. The nutritional status of elderly individuals was assessed using the MINI NUTRITIONAL ASSESSMENT SHORT-FORM (MNA®-SF) ⁸ questionnaire in its complete Hindi validated form given in the Nestle Website. This 6-item questionnaire was used to assess the malnutrition risk among the elderly. It is a clinical assessment tool for grading nutritional status and evaluating malnutrition risk in elderly patients that do not require a dietician or nutritionist for its application. According to MNA-SF screening, a person is considered malnourished with scores 0-7, at risk of malnutrition with scores 8-11 and well-nourished with scores 12-14.

5. STATISTICAL ANALYSIS

The strength of association between two categorical variables was evaluated with the Pearson chi-square test of independence. The significance level was set at $p < 0.05$. Statistical analyses were performed using SPSS (Version 16).

6. RESULTS

There were total 10 recognized old age homes present in Lucknow. The total sample obtained from all the institutes with complete forms were 287. The demographic data of the sample shows that out of the total of 287 elderly examined 104 (36.2%), were men and 183 (63.8%) were women. There were 28 elderly (9.8%) aged between 60-65 years, 74 elderly (25.8%) between 71-75years, 44(15.3%) elderly aged between 76-80 years, and the remaining 61 (21.3%) were more than 81 years old (Figure 1, figure 2)

Out of total 287 elderly 103(35.9%) had experienced a severe decrease in their food intake followed by 95(33.1%) experienced no change in their food intake and remaining 89(31%) had experienced a moderate decrease in food intake over the past 3 months. Maximum elderly 127(44.3%) had experienced weight loss between 1 and 3 kg during last 3 months, 89(31%) had weight loss more than 3 kg, 71(24.7%) were not aware of the change in their weight. Out of total 287 participants more than half of them i.e. 147(51.2%) were able to go out on their own, 114(39.7%) were able to get out of the bed with limited mobility and could not roam freely on their own, 26(9.1%) were bed or chair bound. When asked about if they were stressed in the past 3 months, majority 222(77.4%) gave a positive response, 65(22.6%) were not stressed. When observed it was found that 100(34.8%) had mild dementia and 7(2.4%) had severe dementia. When the Body Mass Index (BMI) of all the participants were calculated it was found that half of them 145(50.5%) had BMI less than 19, 86(30%) had BMI between 19 and 20, 54(18.8%) had BMI between 21 and 24, only 2(0.7%) had BMI ≥ 23 .

Out of 28(9.80%) participants aged between 60-65 years, 21(7.30%) were malnourished and 7(2.40%) were at the risk of malnutrition. In the age group of 66-70 years, 51(17.80%) were malnourished and 23(8.00%) were at the risk of malnutrition. For the age group of 71-75 years, 61(21.30%) were malnourished and 19(6.60%) were at the risk of malnutrition. 36(12.50%) in the age group of 76-80 years were malnourished and 8(2.80%) were at the risk. For the participants of more than 80 years of age, 55(19.20%) were malnourished and 6(2.10%) were at the risk. We observed a significant association between Age group and Nutritional status (Pearson Chi-Square =9.494, df=4, $p=0.050$). Within the age group of 60-65, 66-70, 71-75, 76-80, >80, we observed higher percentage of malnourished elderly population 21(7.30%), 51(17.80%), 61(21.30%), 36(12.50%), 55(19.20%) respectively. (Table 1, figure 3)

Out of 183(63.80%) females, 157(54.70%) were Malnourished and 26 (9.10%) were at the risk of malnutrition. 67 (23.30%) of males were malnourished and 37 (12.90%) were at the risk. We observed a significant association between gender and Nutritional status (Pearson Chi-Square =17.675, df=1, $p=0.001$). Gender wise we observed a high percentage of female (54.70%) were malnourished than male (23.30%) in the elderly population. (Table 2, figure 4)

6.1 Tables and figures

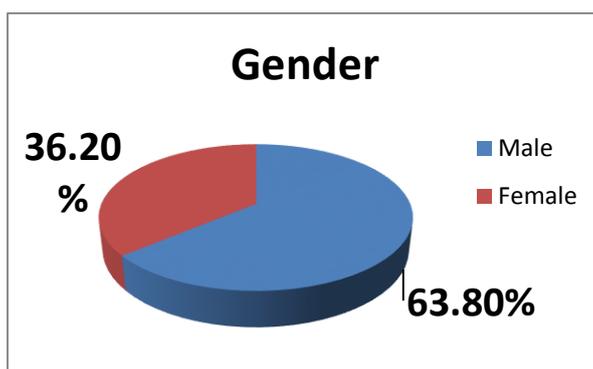


Fig. 1: Demographic distribution of the samples

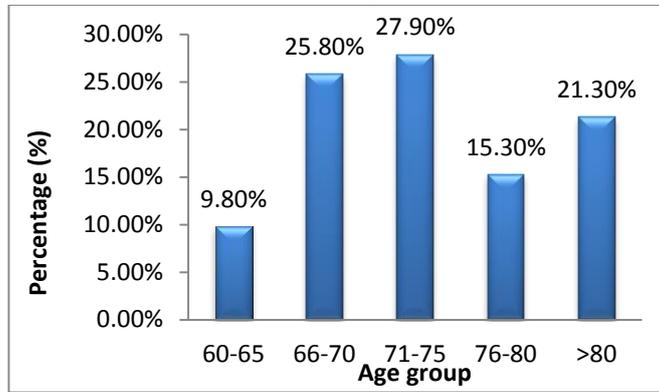


Fig. 2: Demographic distribution of the samples

Table 1: Age wise nutritional status of elderly

Age group	Nutritional status		Total
	Malnourished	At risk of malnutrition	
60-65	21(7.30%)	7(2.40%)	28(9.80%)
66-70	51(17.80%)	23(8.00%)	74(25.80%)
71-75	61(21.30%)	19(6.60%)	80(27.90%)
76-80	36(12.50%)	8(2.80%)	44(15.30%)
>80	55(19.20%)	6(2.10%)	61(21.30%)
Total	224(78.00%)	63(22.00%)	287(100.00%)

Pearson Chi-Square =9.494, df=4, p=0.050 (Significant)

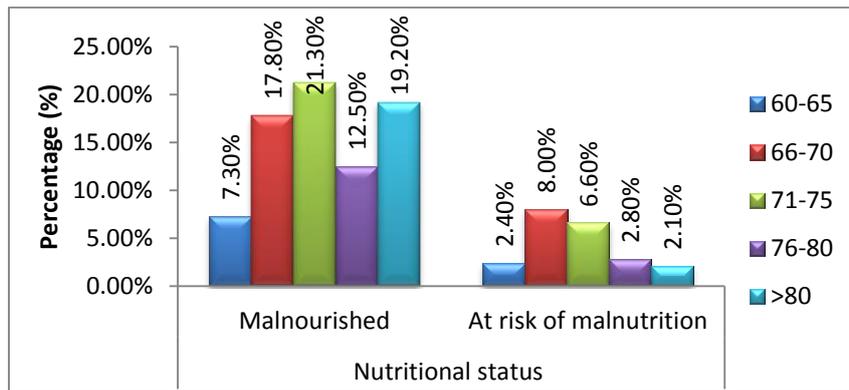


Fig. 3: Age wise nutritional status of elderly

Table 2: Gender wise nutritional status of the elderly

Gender	Nutritional status		Total
	Malnourished	At risk of malnutrition	
Female	157 (54.70%)	26 (9.10%)	183 (63.80%)
Male	67 (23.30%)	37 (12.90%)	104 (36.20%)
Total	224 (78.00%)	63 (22.00%)	287 (100.00%)

Pearson Chi-Square =17.675, df=1, p=0.001 (Significant)

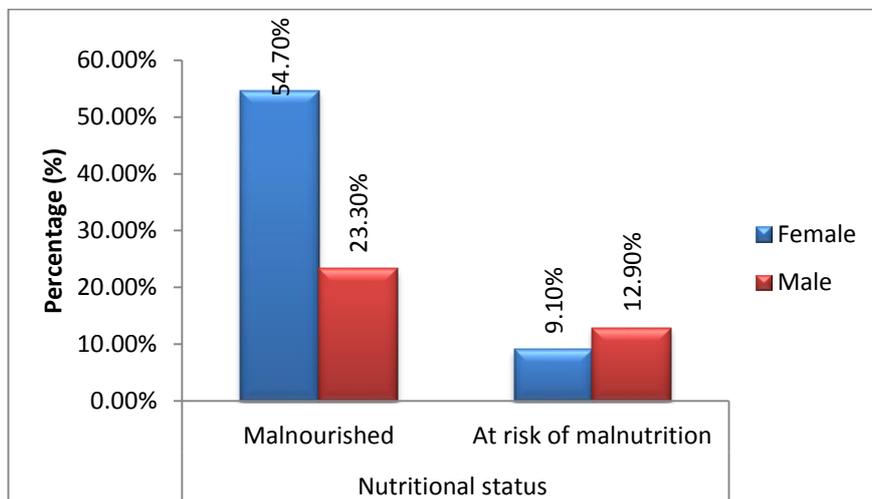


Fig. 4: Gender wise nutritional status of the elderly

7. DISCUSSION

Malnutrition in the elderly has an evident impact on their general health and quality of life. Studies report that oral health has an impact on food choice and on the intake of key nutrients, causing various nutritional problems. Other studies indicate that edentulous patients with no, or only one, prosthesis (upper or lower) experience more difficulty in chewing solid food, placing them at a greater risk of malnutrition.⁹ Hence the purpose of this research was to collect data for the assessment of nutritional status among the institutionalized elderly population of Lucknow city. Oral health checkup camps were arranged in various old age homes of Lucknow. Among the 10 institutions for the elderly, a total of 287 elderly who fulfilled the inclusion criteria were enrolled in the study. Short form (MNA) index: A 6-item questionnaire was used to assess the malnutrition risk among the elderly. The age and gender-wise distribution of subjects showed males to be 104(36.2%) and females 183(63.8%). The subjects were further categorized in five age groups. In both the genders maximum number 80(27.90%) of subjects were aged between 71-75 years and minimum number 28(9.80%) aged between 60-65 years, 44(15.3%) elderly aged between 76-80 years, 74(25.8%) aged between 66-70 years, subjects age more than 80 years were 61(21.3%). There was no significant difference in age of subjects in both genders. The mean age of the sample was 73.8±6.92. These results are similar to the observation by **Kshetrimayum et al**¹⁰. in the study conducted among institutionalized elderly of Mysore City (South India).⁵⁸ The mean age in the study conducted by **Miyazaki H et al**¹¹ show 78.0 years of male and 80.4 years in females. **Angelillo IF et al**¹² showed the mean age of elderly was 81.4 years. Mean age in the study conducted by **IM Kuc et al**¹³ in Edmonton was 70.9 years. **G. Soh et al.**¹⁴ study facilitates the mean age 74.9 years. Most of these studies are from a developed nation where life expectancy is higher and there is a well-developed health care system, the findings in the present study also indicate that life expectancy in India is going up.

Our study showed that 100% of participants in the study were either malnourished or at risk of malnourishment which differs from the study done by **M Kirtana Pai**¹⁵ in Manipal which showed that 76.8% subjects in old age home were either malnourished or were at risk of malnutrition. Even without an acute or chronic disease, the composition of body changes with age. Loss of muscle mass starts in the middle of adulthood and continues through old age. A dietary nutrient deficit with lower energy expenditure is associated with decreased weight and height in the elderly thus aging along with decreased nutrient intake and lack of exercise would have resulted in lower BMI and increased risk of malnutrition in elderly at old age homes. According to **Maria Luiza Amorim Sena Pereira et al**¹⁶ Approximately two-thirds of the evaluated elderly in elderly homes of Salvador where malnourished or at risk of malnutrition, according to MNA many of these have shown similar results, both in Brazil as well as in other countries. A prevalence of 6.1% and 37.4% for malnutrition and the risk of malnutrition respectively, was observed within the population of Lebanon by **Myrna El Helou et al.**¹⁷ Results from those published by **Guigoz et al**¹⁸ in 2006 in a systematic review of studies that included 30,000 elderly patients from different countries worldwide, especially in Europe and the United States, in which the proportion of malnutrition and risk of malnutrition were 23% and 46%, respectively The elderly at home are possess a greater risk of health problems resulting due to their nutritional status such evidence point to the nutritional vulnerability of institutionalized elderly, emphasizing the importance of nutritional care geared to this population, since malnutrition in this group is associated with increased morbidity and dependence. We observed a significant association between gender and Nutritional status more female (54.70%) were malnourished than male (23.30%) in the elderly population. The results differ from the results given by **Maria Luiza Amorim Sena Pereira et al**¹⁹ which states that when comparing genders, it has been observed that among men the prevalence of malnutrition (76.6%) was higher than in women (62.4%). Females were more malnourished than male in the study conducted by **Khin Thandar Aung**²⁰ in International Islamic University, Malaysia. The differences in the results could be due to the condition of women in Asian countries, women in Asian Countries lack the Nutrition they need.

8. CONCLUSION

The MNA score of the study sample showed that 78% were malnourished, 22% were at risk of malnutrition. So, 100% of the subjects showed a nutritional deficit, no one was found to be having adequate nutrition. Nutritional status showed that females were malnourished than male in the elderly population. Special emphasis should be made to fill the gap between the genders. Proper nutrition charts are made by a dietician to increase their nutritional status for betterment.

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