A Comparative Study of Nutritional Status among Elderly Population Residing in Community Dwellings and Old Age Homes

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Abstract: The population prevalence of older people has been growing worldwide. Nutrition is a prime concern for the optimal health of older persons. To compare the nutritional status among elderly population residing in community and old age homes of Pune city. A cross sectional study was conducted among elderly in one of the selected municipal corporation block and three old age homes of Pune city. The study was carried out from 1st September 2012 to 31st August 2014. Data were collected by questioning study participants with the help of pre-structured and pre-tested proforma. Mini Nutritional Assessment scale was used to assess the nutritional status of elderly. Data analysis were done using SPSS 19 Statistical package. Out of 200 elderly, 100 (50%) each were males and females. There were 66 males and 34 females in community group, however 34 males and 66 females were found in old age homes. In the study 86.55% (173/200) participants were literate and remaining 13.5% (27/200) were illiterate in all elderly. Majority of elderly in both the groups had normal appetite (94.5%) and bowel bladder (90.5%) habits. Only 9% had satisfactory nutritional status. However remaining majority of elderly was either at the risk of malnutrition i.e. 81.5% or malnourished i.e.9.5%. Very few elderly had satisfactory nutritional status, however majority of elderly were either at the risk of malnutrition or malnourished.
Keywords: Comparison**,** Elderly, Nutritional status, Community, Old age homes, MNA.

INTRODUCTION

The world's population is ageing: virtually every country in the world is experiencing growth in the number and proportion of older persons in their population. Population ageing is poised to become one of the most significant social transformations of the twenty-first century. According to data from World population Prospects : the 2017 Revision, the number of older persons those aged 60 years or over is expected to more than double by 2050 and to more than triple by 2100, rising from 962 million globally in 2017 to 2.1 billion in 2050 and 3.1 billion in 2100. Globally, population aged 60 or over is growing faster than all younger age groups [1].

Nutrition is a primary alarm for the optimal health of older persons. Prevention and treatment of malnutrition is the important goal in clinical nutrition. The early and precise diagnosis of malnutrition is essential in order to initiate nutritional therapy as soon as possible [2]. The scientific progress has reached a level where nutritional interventions may play a part in the prevention of degenerative conditions of age, improvement of quality of life and impact on health care burden and resources. Moreover a timely intervention can stop weight loss in elderly at risk of malnutrition. Evaluation of nutritional status is important for any nutrition or dietary modification [3].

The challenge in 21st Century is to delay the onset of disability and ensure optimal quality of life for older people. The World Health Day theme of the year 2012 [4] was also related to health issues of elderly population. This study was conducted with main objective of comparing nutritional status of elderly population residing in urban community and old age homes.

MATERIALS AND METHODS

A cross sectional study was conducted among elderly in one of the selected municipal corporation block and three old age homes of Pune city. The study

was carried out from 1st September 2012 to 31st August 2014.

Sample Size Calculation
The sample size was calculated by following formula [5]

$$n = \frac{4pq}{L^2}$$

Where p = prevalence of disease (cataract) in majority of elderly (6) = 68%
q = 100 - p   i.e. = 32% and

L = Allowable error = 10% of p= 6.8

Sample size (n) = $\frac{4 \times 68 \times 32}{6.8 \times 6.8}$= 188.23≃189

For current study estimated sample size was rounded to 200 and divided into two groups as mentioned above i.e. 100 in each group.

Selection of study population from urban community
One block was randomly selected from 74 blocks of Pune city. From this one block, elderly people were selected from houses till required sample size of 100 was reached.

Selection of study population from Old Age Homes
The study population was selected from 3 randomly selected old age homes from Pune city, which shelter both males and females.

Inclusion Criteria
Persons of 60 years and above and those who are willing to participate in study especially the study subjects from community who were residing in the particular block for more than six months period were included in the study.

Exclusion Criteria
Critically ill bed ridden elderly patient, elderly who don't have supporting document for age proof

Data collection
Collection of information from elderly in urban community
From the randomly selected single block one house was identified randomly to start the study. The immediate next house or nearby house visit was made to find elderly study subject in selected area. This procedure was repeated till desirable sample size of 100 was reached. The nature, purpose and objectives of the study were explained to the elderly chosen and their family members also and confidentiality was assured. During visit every effort was taken to relax the elders. After taking written informed consent the elderly was interviewed using the pretested preform. Interview and examination of female participants was carried out in presence of female attendant. It took around 45 min to examine one participant.

Collection of information from inmates of old age homes
A prior permission was obtained from concerned authorities of old age homes to conduct the study after explaining the object and method to them. The nature, purpose and objectives of the study were explained to the inmates of old age homes and confidentiality was assured. After taking written informed consent the inmates were examined in a separate room. The same procedure was followed for the collection of information and examination of inmates of old age homes as used for elderly in urban community.

Mini Nutritional Assessment (MNA) Scale [7]
MNA scale was used to assess the nutritional status of elderly.
It consists of questions and measurements grouped into four areas:
- Anthropometric measurements: Weight, height and weight loss.
- General assessment: Six questions related to life style, medications and mobility
- Dietary assessment: Eight questions related to number of meals, food and fluid intake and autonomy of feeding
- Self-assessment: Self-perception of health and nutrition.

The MNA score was calculated as the sum of the points assigned to the responses of the 18 items. Elderly were classified into following three groups according to the obtained score
- Above 23.5 - Satisfactory nutritional status.
- 17 to 23.5   -   At risk of malnutrition
- Below 17   - Malnutrition

STATISTICAL ANALYSIS
The analysis of data involved descriptive statistics such as mean, standard deviation, percentage and frequency. To test the association between two categorical variables, Chi -Square test and Fisher's exact test was used. P -value < 0.05 was considered to be statistically significant. Data analysis was done using SPSS 19 statistical software.

RESULTS
Total 200 study subjects were participated. Out of which 100 study subjects were residing in community dwellings and 100 were residing in Old age homes.

Table–1: Age and gender wise distribution of elderly in community and old age homes.

Sr. No.	Age group	Community		Total	Old age homes		Total	Total
		Male	Female		Male	Female		
1	60 - 69	45	26	71	19	27	46	117
2	70 - 79	19	6	25	11	22	33	58
3	80 - 89	2	2	4	4	14	18	22
4	≥ 90	0	0	0	0	3	3	3
Total		66	34	100	34	66	100	200

From table 1: out of 200 elderly, 100(50%) each were males and females. There were 66 males and 34 females in community group, however 34 males and 66 females were found in old age homes. The male elderly in community were nearly double to that of females and exactly opposite finding was observed in old age homes.

In the study M: F ratio was found to be 1.94:1 and 0.52:1for community elderly and for old age home respectively. In the study, for old age home nearly half i.e 46% elderly and for community group more than half i.e 71% elderly were observed in group of 60-69 years followed by one third i.e. 33% elderly for old age home and 25% elderly for community group were observed in 70-79 years age group. Only 3 females were observed ≥90 years and all were from old age homes. Mean age (S.D.) of community elderly in present study was noted to be 67.82 (5.84) years. Mean age (S.D.) for old age homes elderly was found to be 73.01(8.93) years.

Out of 200 study subjects majority 186(93%) belonged to hindu religion. Of these 186 elderly 93 each were from community and old age homes. Statistically no significant difference (p-value = 0.460) was observed between religion and elderly from community and old age homes. In the study 86.55% participants were literate and remaining 13.5% were illiterate in all elderly. Of 86.55% of all literate elderly 32% studied up to primary school level, 19% each were studied up to secondary and higher secondary level. Only 4(2%) elderly were studied up to post graduate level and of these 4 elderly, one female was from old age homes and remaining 3 were males from community elderly. No one in present study in both groups had any professional degree or diploma. Nearly equal numbers of elderly were observed in both groups with respect to their educational status.

In this study more than two third of elderly from both the groups i.e. 68.5% were either married or remarried while remaining 34.5% elderly were contributed to unmarried, widowed/ widowers and divorced category.

Interestingly all elderly in community were either married or remarried. However in old age homes more than half elderly i.e. 63% contributed to unmarried, widowed/widowers and divorced category. No one either from community or old age homes was found to be separated. For statistical analysis two groups were made. One is 'married category' including married and remarried elderly. However another 'Singles' category included unmarried, widows/widowers and divorced elderly. Fisher's exact test was applied to see the difference between two groups with respect to marital status of elderly. The difference was found to be statistically significant (p<0.001).

Table–2: Distribution of elderly in community and old age homes according to appetite, nature of sleep and bowel- bladder habits.

Sr. No.	Variable		Community			Old age homes			Total
			Male	Female	Total	Male	Female	Total	
1	Appetite	Normal	58	34	92	34	63	97	189
		Decreased	8	0	8	0	3	3	11
2	Sleep	Normal	53	27	80	30	44	74	154
		Disturbed	13	7	20	4	22	26	46
3	B/B habits	Normal	56	31	87	34	60	94	181
		Disturbed	10	3	13	0	6	6	19

For appetite: p = 0.213 (Fisher's exact test was used)
For sleep: χ^2 = 1.314, df. = 1 p = 0.251, For B/B habits: χ^2 = 2.85, df. = 1 p = 0.0914

Majority of elderly in both the groups had normal appetite (94.5%) and bowel bladder (90.5%) habits. Statistically no significant difference was observed regarding appetite (p = 0.213) and bowel bladder habits (p = 0.0914) between two groups of elderly. Nearly one fourth of elderly in total i.e. 23% from both the groups of community and old age homes had disturbed sleep. Statistically no significant

difference was observed between two groups of elderly with respect to disturbed sleep (p = 0.251).

The revised literature for present study did not have any mention about appetite, nature of sleep and bowel bladder habits in either community elderly or inhabitants of old age homes. Therefore it was not possible to give comparative account of such finding and discussion thereupon.

Table‑3: Distribution of elderly according to Mini Nutritional Assessment (MNA) score in both study groups.

Sr. No.	MNA score	Community			Old age homes			Total
		Male	Female	Total	Male	Female	Total	
1	> 23.5 (Satisfactory Nutritional status)	4	1	5	4	9	13	18
2	17.0- 23.5 (At the risk of malnutrition)	58	32	90	24	49	73	163
3	< 17 (Malnutrition)	4	1	5	6	8	14	19
Total		**66**	**34**	**100**	**34**	**66**	**100**	**200**

$\chi^2 = 9.59$, df = 2, p = 0.009

Table3 shows that out of total 200 elderly; very low elderly i.e. only 9% (18/200) had satisfactory nutritional status. However remaining majority of elderly were either at the risk of malnutrition i.e. 81.5% (163/200) or malnourished i.e. 9.5% (19/200).

At risk of malnutrition elderly were found more in community group (90%) as compared to 73% in old age homes. Though at risk of malnutrition elderly were found more in community group, malnourished elderly were found more in old age homes. (i.e.14% vs. 5%). Statistically significant difference was observed between two study groups regarding their nutritional status. (p= 0.009).

DISCUSSION

In the study mean age of the population was 70.34 and majority (58.5%) of them belonged to the age group of 60-69 years. Mini nutritional assessment scale was used in the present study.

The Mini nutritional assessment (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 physician's specialists in nutrition and 98% when it was compared with a comprehensive nutritional assessment, including biochemical tests, anthropometric measurements and dietary assessment [8].

In the present study only 9% elderly had satisfactory nutritional status. However remaining majority of elderly was either at the risk of malnutrition i.e. 81.5% or malnourished i.e.9.5%. Statistically significant difference was observed between two study groups regarding their nutritional status. (p= 0.009). Similar statistical difference was observed by M Kirtana Pai[3] between nutritional status of elderly population living in old age home and those living at home in Mangalore, Karnataka. M Kirtana Pai [6] revealed measurably more number of well-nourished elderly at home i.e. 83.3% as against only 5% well-nourished elderly from community in present study.

However they revealed less elderly at home were at risk of malnutrition i.e.14.7% as against 90% community elderly in present study. They also noted malnutrition in only 2% elderly at home as against 5% amongst community elderly in present study. Though different findings were noted by M Kirtana Pai in elderly at home as compared to community elderly in present study, the study findings amongst elderly at old age homes were comparable with inmates of old age home in present study. According to study carried out by Agarwalla *et al.* 15% were found to be malnourished and 55% were at risk of malnutrition. The association between nutritional status and older age group, female gender, dependent functional status, dependent financial status and inadequate calorie intake was found to be significant [9]. As per comparative study carried out by Pandve *et al.* in Pune, nutritional status was better in study subjects residing in community settings compared to old age homes [10]. According to Singh et al there is a greater risk of malnutrition among the elderly population living in old age homes, which seems to be worsening with the advancing age [11].

To conclude with, nutritional status is an important aspect especially of elderly population. It is recommended that Municipal Corporation should start a 'Permanent Screening Centre' at each ward office for detection of nutritional deficiency especially in old age homes.

REFERENCES

1. United Nations, Department of Economic and Social Affairs, Population Division. World Population Ageing 2015. As available from, http://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2015_Highlights.pdf
2. Machado RP, Coelho MS. Risk of malnutrition among Brazilian institutionalized elderly: a study with the Mini Nutritional Assessment (MNA) questionnaire. The journal of nutrition, health & aging. 2011 Aug 1;15(7):532.
3. Pai MK. Comparative study of nutritional status of

4. elderly population living in the home for aged vs those living in the community. Biomedical Research. 2011;22(1).:120-26.
5. World Health Organization. World Health Day 2012: ageing and health: toolkit for event organizers.
6. Mahajan BK, Khanal AB. Methods in biostatistics: for medical students and research workers. Jaypee Brothers Medical Publishers; 2010.
7. Pandve HT, Deshmukh P. Health survey among elderly population residing in an urban slum of Pune city. J Indian Acad Geriatr. 2010 Mar;6(1):5-8.
8. Cereda E. Mini nutritional assessment. Current Opinion in Clinical Nutrition & Metabolic Care. 2012 Jan 1;15(1):29-41.
9. Vellas B, Villars H, Abellan G, Soto ME. Overview of the MNA®-its history and challenges/discussion. The journal of nutrition, health & aging. 2006 Nov 1;10(6):456.
10. Agarwalla R, Saikia AM, Baruah R. Assessment of the nutritional status of the elderly and its correlates. Journal of Family & Community Medicine. 2015;22(1):39-43.
11. *Pandve HT, Sippy S, Suratwala P, Krishnani S, Fernandez K, Valekar S.* Health profile of elderly residing in the family settings and in the old age home: A comparative study. Journal of the Indian Academy of Geriatrics, 2015; 11:66-69.
12. 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.