

Original Research Article

## An Epidemiological Study of the Nutritional Status of the Elderly in Rural Population of Ambala District, Haryana

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### ABSTRACT

**Background:** Department of Community Medicine M.M. Medical Institute and Research Centre Ambala, Haryana, India. Geriatric population is a potentially vulnerable group for malnutrition as per 2011 census of the World Health Organization.

**Objectives:** To estimate the prevalence of malnutrition and risk of malnutrition among elderly population.

**Materials and Methods:** This community-based cross-sectional study was carried out in rural field area of MMIMSR Mullana Ambala Haryana, India among 300 elderly individuals aged  $\geq 60$  years during July 2015 to July 2016 by applying Mini Nutritional Assessment (MNA) questionnaire. Elderly individuals were interviewed after obtaining informed verbal consent.

**Results:** MNA showed 26% elderly had malnutrition and 64. % was at risk of malnutrition. Females were significantly more malnourished than males level ( $p < 0.001$ ), decreased food intake ( $p < 0.001$ ), and fewer consumption of meals ( $p < 0.001$ ) were independently associated with lower MNA scores.

**Conclusion:** Nutritional status of elderly subjects is very poor as detected in this study. There is need and scope for geriatric nutritional interventions in rural population.

**Key words:** Mini Nutritional Assessment, geriatrics, malnutrition, Haryana.

### INTRODUCTION

Aging is a global phenomenon. It is accompanied by a variety of physiological, psychological, economic and social changes that compromise nutritional status and affect nutritional requirements. <sup>[1]</sup> Globally it is estimated that there are 605 million people aged above 65 yrs. WHO has predicted that aging population will present new challenges to the health care <sup>[2]</sup> India has acquired the label of an aging nation with 7.7% of its population being more than 60 yrs old. There has been a sharp increase in the population of elderly in India due to demographic transition. This is attributed to decrease in mortality arising from longer life span of individuals and improvements in public health and medical services leading

to control of infectious diseases. <sup>[3]</sup> In India, the national health policy focuses on maternal health, child health and communicable diseases, the health status of the elderly has not been given due consideration. <sup>[4]</sup> A large number of elderly in India are residing in rural areas and about 30% are below poverty line in a vulnerable situation without adequate food. <sup>[5]</sup> The older population faces a number of problems ranging from absence of ensured and sufficient income to support themselves and their dependents, ill health, absence of social security, loss of social role, recognition and non-availability of opportunities for creative use of time. <sup>[6]</sup> Since nutrition of the elderly affects immunity and functional ability, it is an

important component of elderly care that warrants further attention. The few studies that have been done show that more than 50% of the older population is under weight and more than 90% have an energy intake below the recommended allowance. [7] Populations are aging. By 2025, the earth will house 1.2 billion elderly adults, of whom nearly 70 percent will live in developing countries. Poverty, a lack of pensions, the deaths of younger adult and the migration of younger people from rural to urban areas are among the factors that will compel older people to continue working. Adequate nutrition, healthy aging, and the ability to function independent. The importance of very existence of mankind on the earth was given to nutrition. It is believed that Hippocrates, the father of medicine, strict attention to the diet of his patients as feature of his therapeutic regimens. Ancient Indian texts give adequate indication of importance given to the diet and nutrition in health during ancient times, Aahara or the dietary philosophy has been central to the concept of ancient Indian system of medicine, Ayurveda. Prudent food with a strict dietary discipline was the hallmark of ancient Indian lifestyle and one of the secrets of long and healthy life which the Indians enjoyed in the Vedic times. Nutrition may be defined as the science of food and its relationship to health. It is concerned primarily with the part played by nutrients in the body growth, development and maintenance. The word nutrient or food factor is used for specific dietary constituents such as proteins, vitamins and minerals. Dietetics is the practical application of the principles of nutrition; It includes the planning of meals for the well and sick. Good nutrition means maintaining a nutritional status that enables us to grow well and enjoy good health. The science of nutrition bloomed during the 20<sup>th</sup> century. Vitamins and amino acid were discovered human nutritional requirements were established and the relationship between diet, nutrition and human body in health and

disease were recognized Derrick Jelliffe, a pioneer in nutrition introduced the term protein calorie malnutrition which was later modified to protein energy malnutrition and adopted by FAO/WHO committee in 1971 to describe both kwashiorkor and marasmus.

Globally, hunger and malnutrition are two of the most significant challenges malnutrition with its 2 constituents of protein-energy malnutrition and micronutrient deficiencies, continues to be a major health burden in developing countries. It is globally the most important risk factor for illness and death. Malnutrition is frequently part of a vicious cycle that includes poverty and disease. These factors are interlinked in such a way that each contributes to the presence and permanence of others. Socio-economic and political changes that improve health and nutrition can break the cycle, as can specific nutrition and health intervention [8] Malnutrition is a silent emergency. The challenge of addressing malnutrition lies in its complicated causes and the complex interplay of individual, maternal, familial, social and environmental forces that initiate and perpetuate malnutrition. Endemic poverty is perhaps the one feature common to almost all causes of malnutrition. Malnutrition can be defined as the state of being poorly nourished. It may be caused by the lack of one or more nutrients (under nutrition), or an excess of nutrients (over nutrition). In the ageing and sick population, malnutrition is an important problem that has been seen in hospitals, residential care and in the community. Malnutrition is not an inevitable side effect of ageing, but many changes associated with the process of ageing can promote malnutrition. For example, ageing is frequently associated with decreases in taste acuity and smell, deteriorating dental health, and decreases in physical activity, which may all affect nutrient intake. Any change in nutrient intake can lead to malnutrition with it [9] over nutrition or hyper alimentation is a form of malnutrition in which the intake of nutrients is oversupplied. The amount of

nutrients exceeds the amount required for normal growth, development, and metabolism. The term can also refer to: Obesity, which *usually* occurs by overeating, as well as: Oversupplying a *specific* nutrient, such as dietary minerals or vitamin poisoning. This is due to an excessive intake or a nutritional imbalance caused by fad diets. Over nutrition may also refers to greater food consumption than appropriate, as well as other feeding procedures such as parenteral nutrition.<sup>[10]</sup>

## MATERIALS AND METHODS

**Study Area:** This study was conducted in rural population of district Ambala, Haryana. As per census 2011, rural population of Ambala comprises of 6, 32,243 of which males are 2, 97,679 and females are 3, 34,564.

**Study Population:** The study was conducted in elderly population of Haryana residing in rural field practice areas of Department of Community Medicine of MM Institute of Medical Sciences & Research, Mullana. The three rural health centres of Department of Community Medicine caters to a population 1,36,178. As per survey registers there are 9436 elderly in the study area with 3,324 in Barara, 3,107 in Mullana and 3005 in Nahoni.

**Sample Sizes:** a sample size was calculated by using the formula:  $n = Z^2PQ/L^2$  As the aim of the study was to focus on nutritional status among elderly in rural area. So, all the malnourished people of the villages of age 60 years and above were used. Since the prevalence rate was 60%, the sample size was calculated to be 263 that are rounded off to 300. (As latest study available in Indian context was conducted in 2014 in west Bengal in Arkhali village analysis was done on total 235 elderly people and 60 % among them were found malnourished.

**Study Design:** A community based cross-sectional design was adopted for studying the health problems of elderly. Study participants were selected as per following inclusion and exclusion criteria.

**Inclusion Criterion:** All individuals more than or equal to 60 years of age

**Exclusion Criterion:** Individuals below 60 years of age those participants who were not willing or in position to give information due to any reason

**Study Period:** The study was carried out over a period of from July 2015 to July 2016. During this period finalization of study tool, field survey, data collection, data analysis and interpretation was done.

## Sampling Technique

Multistage sampling method was used to cover the required sample size. Three primary health centers are located in rural area of Ambala viz RHTC Barara, PHC Mullana and PHC Nahoni which are under the administrative control of department of community medicine MMIMSR Mullana (Ambala). Each centre was covering a population of (48107 Barara, 49913 Mullana and 39229 Nahoni). Total villages covered by these centers are, Barara which include 23 villages, Mullana which include 31 villages and Nahoni which include 30 villages. One centre was selected by lottery method. A village of the selected centre was listed and six villages were selected randomly. The list of elderly people of these villages was prepared by head count method and fifty elderly were available at the time of visit and given consent to participate were included in the study to complete the sample size.

## RESULTS

A total of 300 elderly subjects were included in the study, of which 159 were men and 141 women. Mean age for men was 69 years. Among the subjects 28% were illiterate and 72% had education only up to primary level. Majority (93.6%) of the subjects lived in joint family. According to the modified BG Prasad Scale, only 1% belonged to Class I status, and majority were from Class III (51%), Class IV (18%), and Class V (16%) SES of the 300 elderly subjects, 208 were married and the rest were widow/widower. Majority were financially dependent (77%) on other family members,

whereas 17% were partially dependent. Only 5 % subjects were financially independent. Mean malnutrition indicator score for men was 18 (SD=3.51) and that for women was 18.41 (SD=3.78). The MNA classified 26% as malnourished and 64% as at risk of malnutrition. Using body mass index as the only indicator, only 8.9% were found to be underweight. According to the MNA classification, women were more malnourished than men, which were statistically significant only 14% elderly consumed three meals daily, 47% consumed two meals daily, and consumption pattern varied with nutritional status. Daily protein consumption was less in malnutrition and at risk of malnutrition group. Two or more servings of fruits and vegetables were consumed by 65% subjects in normal nutritional status group but 12% and 38% subjects in risk of malnutrition and malnutrition group, respectively, Possible factors associated with the MNA scores ( $p < 0.15$ ) identified by univariate linear regression included age, sex, family income, literacy, financial dependence,

rates of malnutrition and risk of malnutrition (4.3% and 25.4%, respectively) than our study. [13] Our results showed more elderly to be at risk of malnutrition than actually malnourished. This finding has been seen among community-dwelling elderly from India and other parts of the world. [11,13-15] This is primarily because the MNA is better at identifying those at risk of malnutrition among healthy elderly in the community. More importantly, this emphasizes the fact that high prevalence of deficient protein-energy intake exists among the elderly without obvious malnutrition. Older age was associated with the lower MNA scores in our population. This finding has been shown in some previous studies, [12,13] whereas others have shown that age has no effect on the nutritional status. [16,17] We observed that the older subjects were less active and often reported reduced appetite and decreased food intake. It is apparent that increased focus on nutritional status is required as the age of the elderly increases. Elderly woman were found more malnourished in this study. Our analysis showed that the lower MNA scores were associated with those subjects who had fewer than three meals per day. A similar finding was reported in Bangladesh, where most of the elderly who were malnourished or at risk of malnourishment consumed only two meals daily. [12] Other studies involving community-dwelling elderly have shown that chewing problems and difficulty preparing or eating full meals contribute to poor nutritional status. [11,16] In this study, many elderly reported moderate-to-severe decline in food intake. The majority of these subjects indicated that decreased appetite was the cause for low food intake. Decreased appetite can be attributed to physiological changes during aging as well as medical conditions in the elderly. [18,19] In our study, lunch was often the major and single meal of the day, and dinner was often omitted. A previous study had shown that insufficient income and inadequate knowledge of nutrient requirements were possible factors associated with low energy

**Table 1: Factors associated with MNA scores in univariate and multivariate linear regression** Variable Univariate analysis regression model

	<i>p</i> -Vale
Age	0.001
Sex	0.108
Family income	0.001
Marital status	0.219
Literacy	0.001
Financial dependence	0.666
Full meals daily	0.001
Decline in food intake	0.001
$p < 0.15$	

## DISCUSSION

Previous study conducted using the MNA questionnaire in western Rajasthan showed a high prevalence of malnutrition and risk of malnutrition among the rural elderly compared with the urban elderly (11% and 62% vs. 2% and 36%, respectively). [11] Compared with the results from a large study among rural elderly of Bangladesh, [12] we found a similar high prevalence of malnutrition and risk of malnutrition among our population (29.4% and 60.4%, respectively). A large study conducted in Spain showed much lower



intake. We observed that lack of money was the main reason for not buying nutritious food. Level of education and expenditure on food are directly associated with nutritional status.

## CONCLUSION

Result shows that a large no. of elderly had low MNA scores. Considering the high prevalence of poor nutritional status among elderly, more focus on diet and possible nutritional interventions are required. Lower income group should receive particular attention to meet their special needs. A programme should start at govt. level for nutrition of elderly.

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