

GERIATRIC NUTRITIONAL STATUS IN RURAL AREAS OF VARANASIRavi Shankar¹, A. Mohapatra², S.C. Mahapatra³**ABSTRACT**

Background: Old age is a significant phase in person's life. Good health in this phase of life is the pre-requisite to good "Quality of life" and adequate nutrition is key to good health. The prevalence of chronic disease and functional disabilities including nutrition related problems increase steadily with the ageing. Ageing is associated with predictable changes in physiology and function, income, health and psychological well being with the potential impact on diet and nutrition status of the elderly. Objective: The specific objective of this study was to carry out dietary and an anthropometric assessment of the respondents for their nutritional profile. Methods- In order to assess the nutritional status of the elderly people, a field based cross sectional study was carried out in two selected villages in Rural Field Practice Area in Varanasi district of Uttar Pradesh. Two hundred forty individuals were included in the study. Anthropometric used and indices computed were as per standard technique.

Results: The majority of study subjects (71.24%) had energy intake below the recommended dietary allowance (RDA) by ICMR. Almost all elderly individuals (98.75%) consumed iron in amount less than recommended dietary allowance (RDA). In all, 50% of the elderly people had BMI < 18.5 and these subjects were suffering from chronic energy deficiency (CED). Significantly higher percentage of individuals' ≥70 years of age. (59.21%) had chronic energy deficiency than those between 60-69 years (45.12%) [$\chi^2=4.17, df=1$ p<0.02,]. Only 3.3% of elderly individuals were obese and had BMI >25. Chronic energy deficiency increases significantly with lowering of socio economic status [$\chi^2=32.82, df=2$ p<0.001].

Conclusion: There was wide spread under nutrition in the study subjects with half of them suffering from varying degree of chronic energy deficiency. The Severity of CED increased with advancement of age. Energy intake was marginally less than RDA among the elderly population.

Key Word: Nutrition Status, Elderly Nutrition

INTRODUCTION:

Old age is a significant phase in a person's life. Elders should not insure their "survival rather they must sustained their productivity and enjoy reasonable standard of life conducive to physical and emotional well being. Good health in this phase of pre-requisite of good" Quality of life" and adequate nutrition is key to good health.

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Maintaining a high quality of life is closely link to maintaining independence in activity of daily life. The prevalence of chronic diseases and functional disability including nutritional related problems increase steadily with aging. Aging is associated with predictable change in Physiology and function, income, health and psychological wellbeing with potential impact on diet and nutritional status of elderly¹.

The process of growing older may be accompanied by on set of increased proneness to illness, which may increase risk of nutritional deficiency. Nutritional deficiency or excess may contribute to pathogenesis of a number of common diseases in the elder. Therefore a description of webbing and health status of the elderly has to take into account their nutritional status.

The increase proportion of due to higher life expectancy's not necessarily devoid of any problems and infect it invites a lot of socio economic ,psychological Physiological and health and nutritional problems . Hence the health of the elderly has been attracting the attention of the medical professional psychologists, social scientist nutritionist and government and non-government organization all over the world. Adequate appropriate and sufficient nutrition is essential to health and wellbeing of elderly. General elderly people are nutritionally most vulnerable the primarily due to poor dietary intake. Other factor which contribute to the under nutrition among aged are decreased physical activity, mental depression mostly due to isolation mall distribution of food, poor eating habits, chronic ill health and dental problems.

In India there is a dearth of comprehensive information on the nutritional status of elderly. There is therefore an need to develop the nutritional status of elderly in rural area of Varanasi which is contribute to formulate policies and initiate strategies of wellbeing of elderly people . This study was carried out with over all in of assessing nutritional status of elderly in Rural Varanasi. The specific object of study was to conduct dietary and an anthropometric assessment of the respondance for their nutritional profile.

The old age people are precious asset on any country with rich experience and wisdom. They contribute their might for substances and progress of the nation². WHO defined elderly as those above the age of 65 years. In India elderly has been define as above 60 years of age. According to the United Nation's projection, by the year 2050, every third person in the universe, will be aged 60 year and above and by the year 2020, India will be among the top ten countries globally with the largest population of the elderly³ The population aged above 60 years and above is increasing rapidly in our country from 56 million in 1991 to 70 million in 1998 and expected to be 177million by 2020⁴.

In view of the increased longevity, when people tend to live longer and Nutritional problems are likely to become predominant the importance of proper research is being gradually realized. Hence the present study was under taken to overview the demographic and Nutritional status of elderly

MATERIALS AND METHODS

The study was conducted in rural field practice area of Rural Health Training Centre (RHTC) of Department of Preventive and Social Medicine, Institute of Medical science, Banaras Hindu University Varanasi in Chiriagoan Block.

The approach adopted for this study was cross sectional. Sample size estimation was based on the extent of chronic energy deficiency (CED) in the elderly people. Sample size 247 was calculated considering the

drop out rate 10 % on the basis of Pilot study (Prevalence of chronic energy deficiency was 64%). First the sampling frame was prepared for the two selected villages name Bariasnpur and Baria, which was within the boundary of RHTC. A list of house hold drawn up. House holds containing one or more person above 60 years were enlisted and regarded as elderly persons. Out of the total every alternate sample was drawn from constructed sampling frame which contain 490 elderly people. The total of 240 elderly individuals was interviewed with the help of predestined and pre-tested Performa which mainly contain to components. The first component sought information on demographic and Socio economic variables. The second components seek to delineated the nutritional profile of the individuals .Its record the information pertaining to directory in take by 24 hour recall methods and anthropometric elements of height and weight.

RESULTS AND DISCUSSION: **Table- 1:** Demographic & Socio-economic profile of the study population

The population aged 60 years and above was 7.95% of the total population of the study area with an increase in age the percentage of widow/widowers increased gradually and steadily. More than half of the female elderly subjects (51.9%) were widows. Almost all the study subjects were Hindus (98.7%), with the majority (64.6%) belonging to backward castes. Almost all subjects (89.6%) were either illiterate or just literate. Over half (51.2%) of the study subjects belonged to the Lower Socio-economic class. Most of the study population was involved in agro based occupation. Majority of the elderly (81.7%) lived in joint families

Variable	Categories	Distribution	
		No.	%
Age (yrs)	60 -69	164	68.3
	70-79	56	23.3
	≥ 80	20	8.4
Gender	Male	134	55.8
	Female	106	44.2
Caste/ Religion	General	43	17.9
	Backward Caste	155	64.6
	Schedule Caste	39	16.2
	Others (Muslims etc.)	03	1.3
Type of Family	Nuclear	31	12.9
	Joint	209	87.1
Occupation	Agriculture / Subsidiary Occup.	106	44.2
	Unemployed	57	23.8
	Labour	33	13.8
	Housewife	31	12.9
	Retired	13	5.4
Literacy	Illiterate	164	68.3
	Just Literate (Upto Primary)	51	21.3
	Literate	25	10.4
Socio-economic status (Per capita monthly income)	Lower (less than Rs.330)	123	51.2
	Middle (Rs.330-659)	76	31.7
	Upper (more than Rs.659)	41	17.1
Average Family Size	1-5	55	22.9
	6-10	119	49.5
	>10	66	27.6

Ideally, there are no specific nutrient requirements worked out for the elderly in India. However, one assumes some differences in the requirements of the elderly compared to those of young adults, because caloric intake is proportional to energy expenditure⁵. In case of minerals and vitamins, there is practically no difference⁵.

Basal metabolic rate gradually decreases after the attainment of maturity due to a decrease in muscle mass tissue and physical activity. Energy requirement is reduced by 11% in men and 10% in women, compared to that of young adults. Hence caloric requirement has to be adjusted taking into consideration the body weight⁵.

Table- 2: Distribution of elderly individuals according to Nutrient intake by percent of RDA

Nutrient	R.D.A. Percent					
	<80		80 - 100		≥100	
	No.	%	No.	%	No.	%
Energy	79	32.92	92	38.33	69	28.75
Protein	59	24.58	70	29.17	111	46.25
Calcium	122	50.83	10	4.17	108	45.00
Iron	225	93.75	12	5.00	03	1.25

Table – 3: Distribution of elderly individuals by Gender according to Nutrient intake by percent of RDA

Nutrient	Gender	R.D.A. Percent						χ^2 & p value
		<80		80 - 100		≥100		
		No.	%	No.	%	No.	%	
Energy	Male	47	35.07	47	35.07	40	29.86	$\chi^2=0.17$ p>0.50
	Female	32	30.19	45	42.45	29	27.36	
Protein	Male	39	29.10	32	23.88	63	47.02	$\chi^2= 0.71$ p>0.1
	Female	20	18.87	38	35.85	48	45.28	
Calcium	Male	61	45.52	02	1.49	71	52.99	$\chi^2 = 6.44$ p<0.02*
	Female	61	57.55	08	7.55	37	34.90	
Iron	Male	123	91.79	09	6.72	02	1.49	$\chi^2 = 0.14$ p>0.50
	Female	102	96.23	03	2.83	01	0.94	

Distribution of individuals according to intake of major nutrients as percent of RDA are presented in Table 2 and 3 which show that most of the elderly population (71.2%) consumed less than the RDA of energy, out of which nearly half had intake less than 80% of RDA. Slightly higher percentage of males (29.8%) consumed more than the RDA than females (273.5%). Protein intake was below the RDA in more than half (53.8%) of the individuals, out of which nearly 50% consumed below 80% of RDA. 55% elderly had calcium intake below the RDA out of which more than 90% consumed less than 80% of RDA. A significantly lower percentage of females (34.9%) consumed equivalent to or more than RDA of calcium than males (52.9%). This could be due to the apparently lesser amount of milk, the major source of calcium in the diet, being consumed by the elderly women.

The intake of iron was highly unsatisfactory. In about 94%, individuals the intake was less than 80% of RDA, while a negligible proportion of elderly (1.3% consumed more than or equal to RDA. The proportion of males and females with adequate iron intake was 1.5% and 0.9%, respectively.

Contrary to the results of this study, Vijayaraghavan *et al.* (2000) reported that about 65% elderly population consumed more than the RDA of energy⁶. Protein intake was more than the RDA in 70% elderly

while 23% consumed iron in amounts exceeding the RDA⁶. However, nearly similar percentage of individuals (48%) consumed more than the RDA of calcium⁶.

The nutritional status of the elderly was assessed based on Body Mass Index (BMI) as shown in **Table 4**. The prevalence of Chronic Energy Deficiency (CED) (BMI < 18.5) was 45.8% distributed into different nutritional grades of I (17.5%), II (10.4%) and III degree (17.91%) CED. It was observed that the proportion of CED (59.2%) was significantly higher in the age group of 70 years and above and the severity of CED from I to III degree increased with advancement of age. The proportion of obese elderly individuals was only 3.8% Similarly high prevalence of CED was observed by Vijayaraghavan *et al.* (2000) among rural elderly of 8 different states of the country⁶. They reported that the prevalence of CED was relatively more among males (53.5%) than among females (49.4%). The proportion of CED increased with increasing age among males. The prevalence of obesity was 4.2% in males and 7.7% in females. Studies in developed countries have shown a very low prevalence of under nutrition among elderly, for obvious reasons. Taylor stated that both in UK & USA malnutrition was found to be an uncommon problem, with obesity perhaps the most important issue. In a follow up DHSS survey only 6% men and 5% women under the age of 80 were described as under nourished⁷. According to Lovat (1996), prevalence of malnutrition was only 3% in free living people aged over 65 years⁸.

Table- 4: Age-wise distribution of elderly individuals according to BMI (James Classification)

Age (yrs)	No. of Cases	Body Mass Index (James Classification)									
		III Degree CED (<16.0)		II Degree CED (16-17)		I Degree CED(1-18.5)		Normal (18.5-25)		Obesity (>25)	
		No.	%	No.	%	No.	%	No.	%	No.	%
60-69	164	27	16.46	19	11.59	28	17.07	84	51.22	6	3.66
70-79	56	12	21.43	12	21.43	10	17.86	20	35.71	2	3.57
≥ 80	20	04	20.00	03	15.00	04	20.00	09	45.00	--	--
Total	1240	43	17.91	34	14.16	42	17.50	113	47.10	8	3.33

Note: All CED individuals have been treated as one group, so as all the normal and obese individuals, for computing χ^2

According to Socio-Economic Status: Table 5 shows that majority of elderly of the Lower socio-economic status (PCI <330Rs/month) (70%) suffered from CED(BMI<18.5).CED increased significantly with lowering of socio-economic status.

Table-5: Distribution of elderly individuals according to Socio-economic status (Modified Prasad Classification) by BMI

Socio-economic Class (Per Capita Income)	No. of cases	Body Mass Index			
		CED (<18.5)		Normal (≥ 18.5)	
		No.	%	No.	%
Upper ≥ 660	41	10	24.4	31	75.6
Middle 330- 659	85	30	35.3	55	64.7
Lower <330	114	79	69.3	35	30.7
		$\chi^2 = 32.82$		$p < 0.001^*$	

This finding is strengthened by the results of the study by Vijayaraghavan *et al.* (2000) which reports a higher proportion of CED among elderly belonging to SC/ST community (64.6%), illiterates (59.3%), those living in Kutcha houses (60%), labourer families (52%) and those who had no land (53.4%)⁶. Various factors responsible for such a situation could be economic constraints, lower consumption of food.

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