

# Assessment of nutritional and health status of elderly

CHANDRABHAGA PAWAR AND VIJAYA NALWADE

The present study was undertaken to find out the nutritional and health status of elderly. Three Hundred elderly men and women belonging to different income group were selected from parbhani city. Nutritional status was assessed by anthropometric measurements. Mean values of body weight, height, BMI and waist-hip circumferences were found to be more among men and women belonging to higher income group than that of low and middle income group. It was observed that more than 74 per cent elderly women and 68 per cent elderly men were under the normal category of BMI. whereas the per cent of overweight was same in elderly men and women. Health problems related to bones and joints, backache, leg pain, heart burn, constipation, impaired vision, and loss of teeth were found to be prevailing among more number of selected elderly. On the whole significant role of income on prevalence of health problems was noticed among selected elderly.

**Key Words :** Elderly, Nutritional status, Health problems, Income

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## INTRODUCTION

Ageing is the natural phenomenon of every human being associated with several physical, biological and psychological changes. In the fullest biological sense it designates the sequences of mental and physical change that begin at conception and end at death (Ensminger *et al.*, 1994). According to the latest estimates, the Indian aged population is the second largest in the world. The demographers project that it will be about 70 years round about 2025. This proportion of elderly people in India and similar trends in other countries indicate a need for more attention towards them. Data regarding nutritional

status of elderly are most needed for providing multiple facilities such as physical, social, economical, health and spiritual or emotional securities for wellbeing of elderly to have successful ageing their by quality of life. Therefore the study was undertaken to find out the nutritional status of elderly.

## METHODOLOGY

A total sample of 300 elderly comprised of men (150) and women (150) from the age group of 60 to 80 years was selected randomly from urban areas of Parbhani. They were divided into three groups according their monthly family income such as low income group (<Rs.15,000), middle income group (Rs.15,000-30,000) and high income groups (>Rs.30,000). One hundred in each group. The elderly were interviewed personally by investigator using questionnaire, So as to elicit the information regarding socio-economic status and age related health problems.

The anthropometric measurements like, height (cm),

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weight (kg), mid upper arm circumference (cm), waist circumference (cm), hip circumference, (cm) and skinfold thickness (mm), were measured following standard procedure (Jelliffe, 1966). waist-hip ratio and BMI was calculated. The collected data was consolidated, tabulated and analyzed statistically.

## OBSERVATIONS AND ASSESSMENT

Among the selected elderly number of elderly belonging to nuclear, joint and extended families were 148, 136 and 16, respectively. Forty one per cent were illiterate, 30.3 per cent were educated up to primary school level, followed by 13.3 per cent up to high school level, about 11 per cent were educated up to graduate level and only 4.6 per cent were educated up to post graduate level. It was found that 40.6 per cent elderly were homemaker followed by 33.3 per cent was retired from the job. Majority (38%) of the selected elderly had pension as a source of income followed by business

(35%) and farm (25%).

Prevalence of different health problems among the selected elderly is given in Table 1. Results showed that health problems related to bones and joints, digestive system, nervous system and other health problems were found to be prevailing among selected elderly. The per cent of elderly men having joint pain, backache, pain in bone, leg pain, and edema in joint was 61.3, 51.3, 20, 42.7, and 16, respectively. The above health problems were found in elderly women of 86, 72.6, 64.6, 39.3 and 26 per cent, respectively. Findings indicated that significantly more number of elderly women found to have complications related to bones and joints than that of elderly men. In case of health problems related to digestive system it was reported that maximum per cent of elderly men (34.6 and 32) and women (45.3 and 54.6) complained about constipation and heartburn, respectively. Statistical analysis indicated that all the health problems related to digestive system were

**Table 1 : Prevalence of different health problems among the selected elderly (n=300)**

Sr. No.	Health problems	Per cent of men and women elderly with different health problems		'Z' value
		Men (%) n=150	Women (%) n=150	
1.	Bones and joints			
	Joint pain	61.33(92)	86(129)	2.87**
	Backache	51.33(77)	72.66(109)	2.95**
	Pain in bone	20(30)	39.33(59)	5.44**
	Leg pain	42.66 (64)	64.66(97)	3.51**
	Arthritis	4 (06)	14.66(22)	8.97**
	Osteoarthritis	6.66 (10)	7.3(11)	0.86 <sup>NS</sup>
	Oedema in joint	16(24)	26(39)	4.10**
	Any fracture	2 (03)	4.66(07)	7.67**
2	Digestive system			
	Anorexia	4.66(7)	14.66(22)	8.33**
	Stomach pain	4.66(7)	17.33(26)	8.96**
	Constipation	34.6 (52)	45.33(68)	2.31*
	Indigestion	20(30)	26 (39)	2.29*
	Heart burn	32 (48)	54.66(82)	4.43**
3	Nervous system			
	Loss of memory	20(30)	29.3(44)	3.27**
	Nervousness	24.66(37)	31.33(47)	2.07*
	Headache	30(45)	52(78)	4.54**
	Insomnia	6.66(10)	10.66(16)	4.14**
4	Vision, teeth and ear			
	Impaired vision	66(99)	72(108)	0.75 <sup>NS</sup>
	Loss of teeth	48 (72)	52.66(79)	0.80 <sup>NS</sup>
	Impaired hearing	28.66(43)	28.66(43)	0

Figures in parenthesis indicate number

\* and \*\* indicate significance of values at P=0.05 and 0.01, respectively

NS =Non-significant

significantly more among elderly women as compared to elderly men.

Headache (30%), nervousness (24.6%), loss of memory (20%) and insomnia (6.6%) of elderly men reported to have health problems related to nervous system. On the other hand, 52 per cent, 31.33 per cent, 29.3 per cent and 10.6 per cent elderly women reported to have headache, nervousness, loss of memory and insomnia. From above results it can be said that all health problems related to nervous system were prevalent and found to be significantly higher among the elderly women than that of elderly men. Beside these near about 50 per cent elderly men and women had problems of loss of teeth. Majority (65%) of elderly had problem of impaired vision and around 30 per cent had impaired hearing. Results also indicated that the per cent of elderly women suffering from various health problems was significantly more than that of elderly men.

Prevalence of different health problems of the selected elderly of different income groups are given in

Table 2. Among the selected elderly low, middle and high income group a relatively high per cent of elderly found to have joint pain, followed by backache and leg pain. It was noted that elderly of high income group were having less health problems related to bones and joints than those from low and middle income groups. Among the health problems related to digestive system maximum per cent of elderly belonging to low income group (55) and middle income group (40) were complained about constipation followed by heart burn 51 and 37, respectively. On the other hand, more per cent (52) of elderly belonging to high income group had heart burn problem followed by constipation (28). The per cent of elderly of low income group reported to have headache (48%), nervousness (34%) and loss of memory (34%). Whereas impaired vision (66%), loss of teeth (50%) and impaired hearing (29%) was prevalent among elderly of middle income group. Results also showed that as the income of the family was increased, the health problems found to be decreased significantly. On the whole significant role of

**Table 2 : Prevalence of different health problems among the selected elderly of different income groups (n=300)**

Sr. No.	Health problems	Per cent of elderly with health problems of different income groups			'Z' Value		
		Low income (%)	Middle income (%)	High income (%)	a vs b	b vs c	a vs c
1.	Bones and joints						
	Joint pain	82	75	64	1.09 <sup>NS</sup>	1.94*	3.01**
	Backache	73	70	43	0.51 <sup>NS</sup>	5.74**	6.18**
	Pain in bone	41	32	16	3.03**	7.90**	9.99**
	Leg pain	60	58	43	0.41 <sup>NS</sup>	3.63**	4.02**
	Arthritis	10	13	5	3.31**	10.50**	8.33**
	Osteoarthritis	12	5	4	9.89**	3.16**	11.54**
	Oedema in joint	27	18	18	4.90**	0	4.90**
	Any fracture	6	3	1	8.66**	14.14**	15.81**
2.	Digestive system						
	Anorexia	14	8	7	6.75**	1.76*	8.13**
	Stomach pain	14	13	6	0.94 <sup>NS</sup>	8.89**	9.56**
	Constipation	55	40	28	3.86**	4.31**	7.66**
	Indigestion	34	21	14	5.73**	4.94**	9.60**
	Heart burn	51	37	52	3.89**	4.11**	0.24 <sup>NS</sup>
3.	Nervous system						
	Loss of memory	34	25	15	3.75**	6.08**	7.93**
	Nervousness	34	32	18	0.75 <sup>NS</sup>	6.73**	6.03**
	Headache	48	43	32	1.35 <sup>NS</sup>	3.60**	4.34**
	Insomnia	15	5	6	11.47**	2.5*	10.32**
4.	Vision, teeth and ear						
	Impaired vision	75	66	66	1.57*	0	5.47**
	Impaired hearing	38	29	19	3.31**	5.10**	9.14**
	Loss of teeth	58	50	43	1.82*	1.85*	4.91**

\* and \*\* indicate that significance of values at P=0.05 and 0.01, respectively

NS = Non-significant

income on prevalence of health problems was noticed among selected elderly.

Diabetes mellitus, heart diseases, hypertension and kidney diseases were commonly prevalent among the selected elderly. Among the 300 selected elderly 30 men and 31 women had hypertension followed by diabetes mellitus *i.e.* 26 men and 18 women. It was also noticed that there was increased in prevalence of hypertension with increasing income. Even more number of elderly belonging to high income group were having diabetes mellitus as compared to low and middle income group. Besides these 22 elderly was suffering from kidney diseases. Only around 4 per cent elderly found to have heart diseases.

Mean value of anthropometric measurements with SD values of the selected elderly men of different income group is given in Table 3. The body weight and height of the elderly men of high income group was found to be more as compared to elderly men of other income groups. But it was not significant statistically ( $P < 0.005$ ).The

estimated values of body mass index (BMI) of the selected elderly of low income group, middle and high income groups were found to be  $22.41 \pm 3.60$ ,  $23.22 \pm 3.38$  and  $23.80 \pm 3.23$ , respectively. The body mass index of elderly belonging to high income group was found to be slightly more as compared to elderly of middle and low income groups.

Mean values obtained for waist ( $95.38 \pm 13.6$ cm) and hip circumference ( $104.84 \pm 6.38$  cm) of elderly men belonging to the higher income group was found to be more than that of values obtained for waist ( $93.62 \pm 9.18$  cm) and hip circumference ( $102.06 \pm 9.06$  cm) of elderly men belonging to low income group. However difference was not significant statistically. Higher values were obtained for waist-hip ratio of elderly men belonging to the low family income group than that of middle and high income group. The mean values of mid arm circumference of the elderly belonging to low, middle and high income groups were  $25.14 \pm 5.50$ ,  $25.53 \pm 5.40$  and  $26.71 \pm 3.75$  cm, respectively.

**Table 3 : Anthropometric measurements of the selected elderly men of different income group (n=150)**

Anthropometric indices	Mean values with SD of different anthropometric measurement of the selected elderly men of different income groups			'Z' value		
	Low income (n=50)	Middle income (n=50)	High income (n=50)	a vs b	b vs c	a vs c
	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD			
Body weight (kg)	57.54 $\pm$ 9.45	61.2 $\pm$ 10.78	64.24 $\pm$ 7.29	0.310 <sup>NS</sup>	0.244 <sup>NS</sup>	0.553 <sup>NS</sup>
Body height (cm)	160.18 $\pm$ 5.84	161.82 $\pm$ 7.41	164.44 $\pm$ 6.71	0.051 <sup>NS</sup>	0.080 <sup>NS</sup>	0.131 <sup>NS</sup>
Body mass index	22.41 $\pm$ 3.60	23.22 $\pm$ 3.38	23.80 $\pm$ 3.23	0.181 <sup>NS</sup>	0.126 <sup>NS</sup>	0.307 <sup>NS</sup>
Triceps skinfold (mm)	15.56 $\pm$ 2.43	16.93 $\pm$ 2.23	17.16 $\pm$ 2.06	0.101 <sup>NS</sup>	0.327 <sup>NS</sup>	0.429 <sup>NS</sup>
Waist circumference (cm)	93.62 $\pm$ 9.18	95.38 $\pm$ 10	95.62 $\pm$ 13.60	0.093 <sup>NS</sup>	0.012 <sup>NS</sup>	0.106 <sup>NS</sup>
Hip circumference (cm)	102.06 $\pm$ 9.06	103.56 $\pm$ 9.51	104.84 $\pm$ 6.38	0.073 <sup>NS</sup>	0.061 <sup>NS</sup>	0.135 <sup>NS</sup>
Waist/Hip ratio	0.91 $\pm$ 0.03	0.89 $\pm$ 0.04	0.88 $\pm$ 0.05	0.365 <sup>NS</sup>	0.158 <sup>NS</sup>	0.547 <sup>NS</sup>
Mid arm circumference(cm)	25.14 $\pm$ 5.50	25.53 $\pm$ 5.40	26.71 $\pm$ 3.75	0.078 <sup>NS</sup>	0.230 <sup>NS</sup>	0.308 <sup>NS</sup>

NS =Non-significant

**Table 4 : Anthropometric measurements of the selected elderly women of different income groups (n=150)**

Anthropometric indices	Mean values with SD of different anthropometric measurement of the selected elderly women of different income groups			'Z' value		
	Low income (n=50)	Middle income (n=50)	High income (n=50)	a vs b	b vs c	a vs c
	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD			
Body weight (kg)	50.66 $\pm$ 8	53.8 $\pm$ 8.89	57.96 $\pm$ 9.89	0.30 <sup>NS</sup>	0.65 <sup>NS</sup>	0.67 <sup>NS</sup>
Body height (cm)	152.91 $\pm$ 5.84	153.84 $\pm$ 7.27	154.44 $\pm$ 7.99	0.03 <sup>NS</sup>	0.03 <sup>NS</sup>	0.04 <sup>NS</sup>
Body mass index	21.75 $\pm$ 3.58	22.60 $\pm$ 3.66	23.92 $\pm$ 3.76	0.19 <sup>NS</sup>	0.50 <sup>NS</sup>	0.48 <sup>NS</sup>
Triceps skinfold (mm)	15.84 $\pm$ 4.02	17.03 $\pm$ 3.46	17.17 $\pm$ 3.34	0.37 <sup>NS</sup>	0.07 <sup>NS</sup>	0.41 <sup>NS</sup>
Waist circumference (cm)	88.58 $\pm$ 7.64	90.16 $\pm$ 8.40	92.82 $\pm$ 9.52	0.08 <sup>NS</sup>	0.25 <sup>NS</sup>	0.23 <sup>NS</sup>
Hip circumference (cm)	97.85 $\pm$ 9.2	98.16 $\pm$ 9.08	101.06 $\pm$ 10.09	0.01 <sup>NS</sup>	0.25 <sup>NS</sup>	0.16 <sup>NS</sup>
Waist/Hip ratio	0.85 $\pm$ 0.05	0.88 $\pm$ 0.04	0.86 $\pm$ 0.05	0.47 <sup>NS</sup>	0.63 <sup>NS</sup>	0.15 <sup>NS</sup>
Mid arm circumference (cm)	22.25 $\pm$ 4.16	24.85 $\pm$ 4.37	25.40 $\pm$ 5.60	0.56 <sup>NS</sup>	0.19 <sup>NS</sup>	0.67 <sup>NS</sup>

NS=Non-significant

From the above results it is evident that mean value of all the estimated body measurements namely weight (cm), height (cm), triceps skin fold (mm), mid arm (cm), waist and hip circumferences (cm) were found to be more in elderly belonging to high income group than that of low and middle income groups (Dobhal and Raghuvanshi, 2012; Vats, 2006 and Ayaskar and Kulkarni, 2009).

Anthropometric measurements of the selected elderly women of different income groups are given in Table 4. The mean values of body weight of the elderly women from high income group were found to be more as compared to elderly women from low and middle income groups. Even the mean value of body height of the elderly women of the high income group was more than that of elderly of low and middle income group but difference was not significant. The mean body mass index in the elderly women of low, middle and high income group was  $21.75 \pm 3.58$ ,  $22.60 \pm 3.66$  and  $23.92 \pm 3.76$ , respectively. The mean values of waist ( $92.82 \pm 9.52$ ) and hip circumferences ( $101.06 \pm 10.09$  cm) of the elderly women belonging to the high income group was reported to be more than those of elderly women of low and middle income groups. However, much difference was not noticed in waist-hip ratio of the selected elderly women of different income groups. The average values for triceps skin fold of elderly women of low, middle and high income groups were  $15.84 \pm 4.02$ ,  $17.03 \pm 3.46$  and  $17.17 \pm 3.34$  mm, respectively. The mid arm circumference of elderly women of high income group was more ( $25.4 \pm 5.60$  cm) than that of elderly women of other two

income groups. From the above results, it is evident that the mean values of estimated body measurements weight, height, BMI, triceps skinfold, waist and hip circumference were more among elderly women of high income group except, waist-hip ratio but the difference was not significant statistically.

Categorization of the selected elderly men basing on BMI of different income group is given in Table 5. The percentage of underweight was found to more in low income group (8%) as compared to other two income groups. More (68) per cent of elderly men of high income group were under normal category than that of low income group (66%) and middle income group (60%). The prevalence of overweight was found to be more (30%) among elderly men belonging to middle income group than that of low income group (22%) and high income group (26%). It was noticed that the per cent of obesity among selected elderly men of all three income group was found to be same.

Categorization of the selected elderly women basing on BMI of different income group is given in Table 6. The prevalence of underweight was found to be more (14%) in elderly women of middle income group than that of low income (10%) and (4%) high income group. In category of normal BMI it was observed that a relatively more per cent (74%) of selected elderly women were noticed in low income group than that of elderly women of middle income (66%) and high income (60%) groups. On the other hand, per cent of overweight and obesity was more in women belonging to high income group as compared to low and middle income group. Results

**Table 5 : Categorization of the selected elderly men of different income group based on BMI (n=150)**

BMI	BMI values of the selected elderly men of different income group					
	Low income (n=50)		Middle income (n=50)		High income (n=50)	
	No.	Per cent	No.	Per cent	No.	Per cent
<18.4 Underweight	4	8	3	6	1	2
18.5-24.9 Normal	33	66	30	60	34	68
25-29.9 Overweight	11	22	15	30	13	26
>30 Obesity	2	4	2	4	2	4

**Table 6 : Categorization of the selected elderly women of different income level based on BMI (n=150)**

BMI	BMI values of the selected elderly women of different income groups					
	Low income (n=50)		Middle income (n=50)		High income (n=50)	
	No.	Per cent	No.	Per cent	No.	Per cent
<18.4 Underweight	5	10	7	14	2	14
18.5-24.9 Normal	37	74	33	66	30	66
25-29.9 Overweight	6	12	7	14	15	14
>30 Obesity	2	4	3	6	3	6

indicated that more prevalence of underweight was noticed in middle income group and high income group while per cent of elderly women in normal category was more among low income group. On the contrary, overweight and obesity was significantly more among elderly women belonging to high income group.

In conclusion it can be said that more number of elderly women found to have complications related to bones and joints, digestive system, nervous system, teeth and vision than that of elderly men. Results also showed that as the income of the family was increased, the health problems found to be decreased significantly.

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