Food consumption pattern and nutrient intake of elderly

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The present study was undertaken to find out the food consumption pattern of 300 selected elderly from Parbhani city. Pattern of food consumption was assessed by interview method by using pretested questionnaire schedule. One tenth of the representative sample (30) was randomly selected for assessing the food and nutrient intake by 24 hours recall method.It was found that the habit of taking mixed cereal diet in both lunch and dinner was prevailing among elderly of the present study. Maximum elderly followed two meal patterns. It was also found that most of elderly were consuming seasonal vegetables and fruits. Intake of nutrients like energy, protein, iron, fat, thiamin, niacin and vitamin C by the elderly men and women were found to be less than RDA. Among the selected elderly the per cent adequacy for different nutrients varied from 57.14 to 136 in men and 59.76 to 122 for women. The highest per cent adequacy was recorded in the providing calcium in men and women while the lowest per cent adequacy was recorded in providing Riboflavin and Iron in elderly men and women.

Key Words : Elderly**,** Food consumption pattern, Food and nutrient intake

INTRODUCTION

The Ageing of population is on the increase world over in recent times. Indian aged population is the second largest in the world. Currently, about 107 million Indians are elderly, constituting about eight per cent of the total population. It has been projected to raise to 179 million in 2031 and 301 million in 2051(Kanfade and Sharma, 2012). These demographic facts and trends make the elderly in India an increasingly important segment of the population pyramid in the coming years. The functional capacity and health of the elderly depend, to a greater extent, on their nutritional status and food security. It is also evident from the available literature that average diet and nutrient intake of elderly were found to be deficient as compared to recommended daily allowances suggested for elderly (Devi, 2011 and Bhatnagar, 2012). Diet plays an important role in the ageing process. Many physical and mental problems of the older people may be prevented or cured by proper nutrition. Data regarding nutritional status of elderly are most needed for providing multiple facilities such as physical, social, economic, health and Spiritual or emotional securities for wellbeing of elderly to have successful ageing. Hence the study was undertaken to know the food consumption pattern, food and nutrient intake of elderly.

METHODOLOGY

The present investigation was carried out to know the food consumption pattern and nutrient intake of the elderly from Parbhani city of Marathwada region of

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Maharashtra state. A total sample of 300 elderly from the age group of 60 to 80 years was selected randomly from Parbhani to study food consumption pattern. One tenth of the representative sample of elderly 30 (15 men and 15 women) from a total sample were randomly selected for assessing the intake of different foods and nutrients by 24 hours recall method.

All subjects were interviewed with the help of pretested questionnaire schedule. The information regarding their dietary habits, frequency of consumption of different food groups in a day etc. were collected. The actual food intake of the selected elderly was recalled for the immediate past 24 hours. The intake of different nutrients per day by each selected elderly was then calculated from the food intake values using nutritive value of Indian foods (Gopalan *et al.,* 2010). Food and nutrients adequacy was calculated based on recommended dietary allowances. The obtained data was consolidated, tabulated and analyzed statistically. Simple arithmetic means with standard deviations and 'z' test were applied to determine the difference between two attributes.

OBSERVATIONS AND ASSESSMENT

Out of 300 selected elderly(238) were vegetarian while the other (62) were non-vegetarian. Maximum (204) number of elderly followed two meal pattern, while the remaining 79 and 17 were following three and one meal pattern of food intake in a day. A relatively high (80) per cent of elderly were stated to be vegetarian and the remaining 20 per cent were reported to be non-vegetarian. Among the non-veg foods fish was preferred by maximum number of elderly followed by chicken and mutton. Less number of non-vegetarian elderly was eating non-veg daily in majority of elderly weekly two to three times non-veg consumption was noticed.

Maximum number (249) of elderly was consuming tea while 27 elderly were taking milk and only 6 elderly were taking coffee. *Poha* (140), *upma* (70), moth bean *usal* (30), idli (10) and *sheera* (5) were the different items of food preparations reported to be taken by the elderly in breakfast. The various food preparations stated to be consumed by elderly in lunch were rice (270), chapatti (194), jowar roti (150), curry (194), dhal (250), chutney (158) and salad (110), whereas, rice (120), chapatti (170), 72 jowar roti (110), dhal (245), curry (175) and *khichadi* (150) were the different foods to be consumed by elderly

in dinner. Salad (150), pickle (25) and *papad*(20) were the different side dishes reported to be taken by elderly along with the food preparation in lunch and dinner.

All most all elderly (299) were taking green leafy vegetables. More than 51.66 per cent of elderly were taking green leafy vegetables daily, 41.33 per cent were twice a week and only 7 per cent were taking weekly. Commonly consumed green leafy vegetables by the elderly were spinach, fenugreek leaves, *shepu, ambat chukka* etc.

Out of 300 elderly 225 elderly were consuming fruits. It was found that 142 were taking fruits twice a week, 72 and 32 elderly were taking weekly and daily. Consumption of seasonal fruits was common most practices followed by (211) selected elderly. Apple, *sapota,* pomegranates, water melon, orange, grapes and banana were the most preferred fruits among elderly men and women. In case of consumption of milk it was observed that 31.33 per cent elderly had habit of drinking of milk. Majority 65 of elderly were drinking milk one time in a day, 18 and 11 elderly were taking two and three times in a day, respectively. On the whole it can be said that the most of the elderly men and women have following two meal pattern. Maximum number of elderly was taking cereal and pulses in breakfast, lunch and dinner. Most of the elderly were vegetarians. The consumption of green leafy vegetables was found to be high in elderly. Mostly seasonal green leafy vegetables were preferred by the selected elderly like Spinach, fenugreek leaves, *shepu* and *ambat chukka.* It was also found that most of the elderly were consuming seasonal fruits like apple, *sapota*, pomegranate, water melon,

Table 1 : Mean value of food intake by the selected elderly men and women

	Food stuff Mean value of food intake by elderly (g)	
	Men (n=15) Mean ± SD	Women (n=15) Mean ± SD
Cereals	252.66 ± 56.24	217.33 ± 41.82
Pulses	52.66 ± 22.50	52 ± 16.88
Green leafy vegetables	50 ± 37.79	30 ± 31.62
Other vegetables	77.33 ± 45.77	64 ± 35.21
Roots and tubers	33.33 ± 44.98	53.33 ± 44.18
Fruits	75.33 ± 56.80	60 ± 63.24
Milk and milk product	260 ± 121.30	246.66 ± 106
Sugars and jiggery	12 ± 7.51	18 ± 10.82
Nuts and oil seeds	8.33 ± 2.43	7 ± 2.53
Fats and oils	22.66 ± 7.03	23.66 ± 6.11

orange, grape sand banana were consumed by selected elderly. It was also noticed that maximum number of elderly drinking tea than that of milk and coffee.

Average values of intake of different foods by the selected elderly men and women are given in Table 1. The average intake of cereals, pulses, green leafy vegetables, other vegetables, roots and tuber, fruits, milk and milk products, sugar and jiggery, nuts and oilseed and fats and oils were 252.66±56.25g, 52, 66±22.50g, 50±37.79 g, 77.33±45.77 g, 33.3±44.98 g, 75.33±56.8 g, 260±121.30 g, 12±7.51 g, 8.33±2.43 g and 22.66±7.03

g., respectively by the elderly men.

Cereals 217.3±41.82 g, pulses 52±16.88 g, green leafy vegetables 30±31.62 g, other vegetables 64±35.21g, roots and tuber 53.33±44.18 g, fruits 60±63.24 g, milk and milk products 246.6±106 g, sugar and jiggery, 18±10.8 g, nuts and oilseed 7±2.53 g and fats and oils 23.66±6.11 g fats and oils 23.66±6.11g, respectively by the elderly women.

The mean intake of different nutrients by the selected elderly men is presented in Table 2.

The average intakes of nutrients by the selected

Table 2 : Average intake of different nutrients by the selected elderly women compared with Recommended Dietary Allowances (RDA)

Nutrients	Mean ± SD	RDA	'Z' value	
Energy (Kcal)	1746 ± 213.4	1900	2.79	2.79*
Protein (g)	44.78 ± 9.42	46.5	0.70	0.70[NS]
Fat (g)	24.61 ± 5.31	25	0.28	0.28[NS]
Iron (mg)	12.55 ± 4.30	21	7.61	7.61**
Calcium (mg)	733 ± 243.85	600	2.11	2.11*
Thiamine (mg)	0.87 ± 0.13	1.00	2.16	2.16*
Riboflavin (mg)	0.68 ± 0.13	1.1	14	14**
Niacin (mg)	10.66 ± 1.63	12	3.19	3.19**
Vitamin C (mg)	36 ± 12.4	40	1.31	1.31[NS]

* and ** indicate significance of values at P=0.005 and 0.01, respectively   NS=Non-significant

Table 3 : Average intake of different nutrients by the selected elderly men compared with Recommended Dietary Allowances (RDA)

Nutrients	Mean ± SD	RDA	'Z' value
Energy (Kcal)	1814 ± 388.08	233	05.15**
Protein (g)	48.84 ± 5.97	53.3	2.27*
Fat (g)	29.08 ± 3.63	30	0.98[NS]
Iron (mg)	14.01 ± 5.97	17	1.94*
Calcium (mg)	816 ± 369.9	60	02.26*
Thiamine (mg)	1.17 ± 0.03	1.2	0.42[NS]
Riboflavin (mg)	0.80 ± 0.28	1.4	8.57**
Niacin (mg)	13.12 ± 3.19	16	3.55**
Vitamin C (mg)	34 ± 18.32	40	1.2[NS]

* and ** indicate significance of values at P=0.05 and 0.01, respectively   NS=Non-significant

Table 4 : Per cent adequacy of different nutrient intake by elderly men and women

Parameters	Men (n=15)	Women (n=15)	'Z' value
Energy (Kcal)	77.81	91.89	1.09[NS]
Protein (g)	91.63	96.30	0.53[NS]
Fat (g)	96.9	98.4	0.27[NS]
Iron (mg)	82.41	59.76	1.41[NS]
Calcium (mg)	136	122	0.61[NS]
Thiamine (mg)	97.5	87	1.09[NS]
Riboflavin (mg)	57.14	61.81	0.26[NS]
Niacin (mg)	82	88.8	0.53[NS]
Vitamin C (mg)	85	89.5	0.36[NS]

NS=Non-significant

elderly men were energy (1814±388.08 Kcal), protein (48.84±5.97 g), fat (29.08±3.63g), Iron (14.01±5.97mg), calcium (816±369.9 mg), thiamine (1.17±0.03 mg), riboflavin (0.80±0.28 mg), niacin (13.12±3.19 mg) and vitamin C (34±18.32mg). In conclusion, it can be said that the intake of all nutrients by the selected elderly was less than Recommended Dietary Allowances (RDA). Except calcium, which was found to be more than Recommended Dietary Allowances.

The mean intake of different nutrients by the elderly women is presented in Table 3.

The mean intake of different nutrients by the selected elderly women like, energy, protein, fat, iron, calcium, thiamine, riboflavin, niacin, vitamin C were 1746±213.4 kcal, 44.78±9.42g, 24.6±5.31g, 12.55±4.30 mg, 733±243.85mg, 0.87±0.13mg, 0.68±0.13mg, 10.66±1.63mg, 36±12.4 mg , respectively. Intake of all the nutrients by the selected elderly women was found to be less than that of Recommended Dietary Allowances (RDA) but for calcium. On the whole, the significant difference was noticed in theintake of energy, protein, iron, calcium, riboflavin and niacin.

On the whole, it can be said that intake of majority of nutrients like energy, iron, thiamine, riboflavin and niacin by the selected elderly women were found to be significantly less than Recommended Dietary Allowances. On the other hand, intake of calcium was significantly more among elderly women.

The per cent adequacy in the intake of different nutrients per day by the elderly men and women in comparison with the recommended dietary allowances is presented in Table 4.

The per cent adequacy was calculated by considering the recommended dietary allowances as 100 per cent. A marked variation was noticed in per cent adequacy of different nutrients by the selected elderly men and women. Among the selected elderly the per cent adequacy for different nutrients varied from 57.14 to 136 in men and 59.76 to 122 for women. The per cent adequacy for nutrients like energy (91.89), protein (96.30), fat (98.4), riboflavin (61.81), niacin (88.83) and vitamin C (89.5) was more among elderly women than that of elderly men. On the other hand, the value of per cent adequacy of iron (82.41), calcium (136) and thiamin (97.5) were found to be more in elderly men than that of elderly women.

It is evident from the results that the diet consumed by the elderly men and women was inadequate in providing all the nutrients in required amount as per the recommended dietary allowances for elderly (ICMR, 2010) except calcium. The highest per cent adequacy was noticed in providing calcium (136) and the lowest in riboflavin (57.14). From the above finding, it can be inferred that per cent values of adequacy in the intake of all the nutrients by the elderly women were more than that of elderly men.

Hence, it can be concluded from the findings that the diet of elderly women was found to better than the elderly men. On the whole, it can be said that the diet of elderly men and women was inadequate in supplying almost all the required nutrients as compared to Recommended Dietary Allowances

In conclusion it can be said that the diet of men and women was adequate in supplying almost all the required nutrients as compared to recommended dietary allowances there for special attention should be paid to the improvement of availability of sufficient and nutritious food to have overall wellbeing of elderly. Similar work on the related topic was also done by Paul and Shalinee (2011) on nutrient intake of menopausal women suffering from osteoporsis. Kaur and Kochhar (2012) on the impact of nutrient of intake and physical activity on the reduction of symptoms in female suffering from orthritis, Kaur (2014) on nutrient intake of daily food at risk of colonory heart subjects, Rai *et al.* (2010) on nutrient uptake and performance status of breast cancer patients.

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