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A Study based on the dietary behavior and food consumption pattern of elderly

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ABSTRACT

Nutrition vitally affects all phases of life. It is true, that in majority of elderly people, it very difficult to change some of the already established food habits, carried over from childhood. All old age homes located in Varanasi district were purposively selected for the present study. Information collected on demographic, socio-economic variables and dietary intake of respondent was estimated by food frequency list and 24 hours recall method. It was found that most of the respondents were daily utilizing wheat & rice products, pulses, other vegetables than leafy, roots & tubers, milk products and as well as mustard oil in old age homes.

Introduction

Nutrition vitally affects all phases of life. It is an important factor in health and diseases and in prevention and recovery. Each phase of life has unique nutritional demands; normal ageing is associated with physiological changes that contribute to modifications in nutrient requirement which may be further compounded by diseases and drugs. On the other hand, ageing may be affected by nutritional intake of a person in his early years.

It is true, that in majority of elderly people, it very difficult to change some of the already established food habits, carried over from childhood. Food habits get influenced by several factors such as family, education, occupation, economic status, lifestyles and cultural norms. Factors which have a negative influence on the health and nutrition of the elderly are lack of family support, feeling of unwantedness, economic constraints, lack of value system among the members in the family, stressful conditions leading to tensions, loneliness leading to disinterestedness in living and eating, resulting in malnutrition. Hence, an effort has been made here to find some relevant data.

Methodology:

All old age homes located in Varanasi district were purposively selected for the present study. The total number of old age homes situated in Varanasi was enlisted with the total number of elderlies residing in different old age homes. Total enumeration process was adopted for the study. The total 156 elderly individuals were interviewed with the help of pre-designed interview-schedule. Information collected on demographic, socio-economic variables and dietary intake of respondent was estimated by food frequency list and 24 hours recall method. Computerized software package SPSS was applied for the data analysis as well as for statistical calculations of different measures.

Result and Discussion:

Table No.1 Sex wise distribution of respondents according to the food habit.

Food Habit	Sex					
	Male		Female		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
Vegetarian	23	46.0	90	84.9	113	72.4
Non-Vegetarian	27	54.0	16	15.1	43	27.6
Total	50	100.0	106	100.0	156	100.0
χ^2 =25.76 , df =1 , P<0.001						

The distribution of elderly was done in table1 based on their food habits. The result points out that majority (72.4 per cent) of the respondents were vegetarian and rest (27.6 per cent) was non-vegetarian may be due to non-vegetarian foods referred as Tamshik food and socially unaccepted according to Indian mythology. The fraction of females (84.9 per cent) was more in comparison to the males (46.0 per cent) in the vegetarian food habit category and may be due to widowhood they were not taking non-vegetarian foods. The difference between male and female respondents in food habit was statistically highly significant. Elderly people may eat less meat for a variety of historic and economic factors, and because the liking or taste for meat may decline in later years (Gregory et al., 1990).

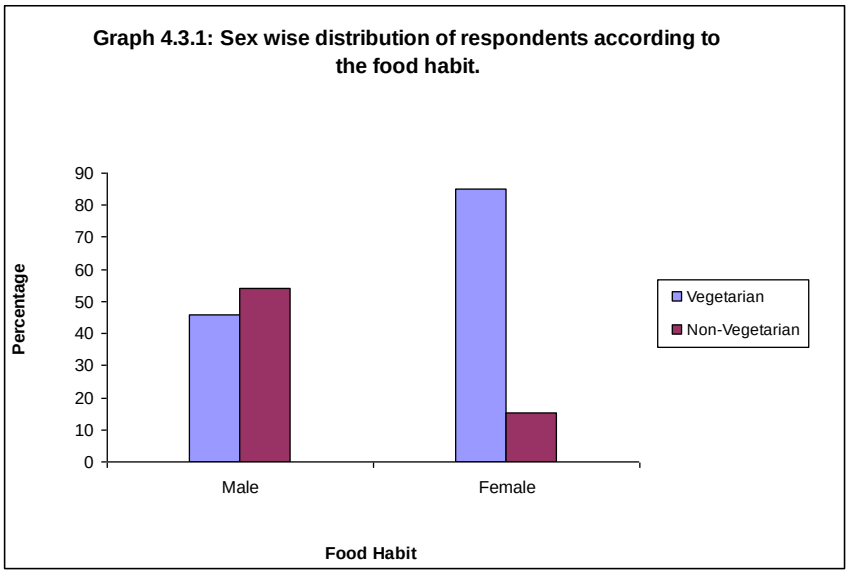

Table No. 2 Caste wise distribution of respondents according to the food habit.

Food Habit	Caste Group							
	SC/ST		OBC		General		Total	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
Vegetarian	1	16.7	37	66.1	75	79.8	113	72.4
Non-Vegetarian	5	83.3	19	33.9	19	20.2	43	27.6
Total	06	100.0	56	100.0	94	100.0	156	100.0
χ^2 = 13.03, df= 2, P<0.001								

The food habit of the elderly was also considered according to their caste and given in table no. 2. The table depicts that out of the total respondents 79.8 per cent of general caste, 66.1 per cent of OBC and only 16.7 per cent of SC/ST was vegetarian, while in non-vegetarian a just reverse trend was obtained. The statistical tool signifies the fact that there was highly significant difference in the various caste-groups in connection to food habit.

Table No. 3 Sex wise distribution of respondents according to the frequency of meals consumption.

Meals per day	Sex					
	Male		Female		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
3	11	22.0	33	31.1	44	28.2
4	19	38.0	41	38.7	60	38.5
5 and above	20	40.0	32	30.2	52	33.3
Total	50	100.0	106	100.0	156	100.0
χ^2=1.99, df=2, P>0.05						
Average Number of meals ± SD	4.22±091		3.97±0.82		4.05±0.86	
t=1.71, df-154, P>0.05						

The number of meals in a day was analysed to find out quantitative as well as qualitative consumption of nutrients. It was classified consisting frequency of meals per day and sex of the elderly inmates of old age homes in table 3. It explains that majority of the respondents (38.5 per cent) took four meals per day which comprises 38.7 per cent females and 38.0 per cent males. In 33.3 per cent and 28.2 per cent of respondents the frequency of meals per day was more than 5 and 3 respectively. The average frequency of meals per day was 4.05±0.86 in the elderly, while it was (4.22±0.91) in male respondents and (3.97±0.82) in females, but difference was statistically insignificant. It clearly shows that the pattern of taking meal in a day was similar for male and female elderly of old age homes because in majority of old age homes food is supplied by common kitchen to all of the residents either male or female. Freisling et al. (2009) concluded from the study older adults that food frequency index was significantly related age, gender and the educational level of the subjects.

Table No. 4 Distribution of respondents according to the frequency of consumption of different food groups.

Food groups	Frequency									
	Daily		Once in two days		Weekly		Sometimes		Never	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
Cereals										
Wheat products	132	84.6	20	12.8	03	1.9	01	0.7	-	-
Rice products	105	67.3	24	15.4	19	12.2	08	5.1	-	-
Other cereals	-	-	-	-	01	0.7	155	99.3	-	-
Pulses	113	72.4	24	15.4	15	9.6	04	2.6	-	-
Vegetable										
Leafy vegetables	15	9.6	17	10.9	118	75.6	06	3.8	-	-
Other Vegetables	102	65.3	53	34.0	01	0.7	-	-	-	-
Roots and tubers	133	85.3	17	10.9	-	-	06	3.8	-	-
Fruits	20	12.8	03	1.9	51	32.7	82	52.6		
Non-vegetarian										
Meat	-	-	01	0.7	12	7.6	02	1.3	141	90.4
Fish	-	-	27	17.3	-	-	-	-	129	82.7
Egg	02	1.3	-	-	34	21.8	02	1.3	118	75.6
Milk products	144	92.2	-	-	01	0.7	09	5.8	02	1.3
Fats and oils										
Hydrogenated fat	-	-	-	-	-	-	52	33.3	104	66.7
Refined oil	22	14.1	-	-	02	1.3	124	79.5	08	5.1
Mustard oil	136	87.2	-	-	-	-	20	12.8	-	-
Deshi ghee	21	13.5	-	-	02	1.3	65	41.7	68	43.6
Butter	-	-	-	-	-	-	-	-	156	100.0

The table 4 shows the distribution of respondents according to the frequency of consumption of various food products. It was noted that cereals and pulses form the bulk of the diet in the elderly. The majority of the respondents (84.6 per cent, 67.3 per cent & 72.4 per cent) were consuming wheat & rice products and pulses daily. Followed by the frequency of consumption once in two days (12.8 per cent, 15.4 per cent & 15.4 per cent) and the respondents reported the frequency of sometimes were in (0.7 per cent, 5.1 per cent & 2.6 per cent) respectively. Chen et al. (2003) reported that vegetable (54%), fruit (20%), grain (15%), soy (4%) and snack (3%) group were the top five fiber providers for the elderly population.

Out of total respondent green leafy vegetables were consumed by only 9.6 per cent of respondents daily, 10.9 per cent once in two days whereas majority (75.6 per cent) of the respondents consumed weekly. The other vegetables roots & tubers and fruits were consumed daily by 65.3 per cent, 85.3 per cent and only 12.8 per cent of elderly while it was consumed once in two days by (34.0 per cent, 10.9 per cent & 1.9 per cent) respectively. The consumption of fruits in 32.7 per cent and 52.6 per cent of the respondents was weekly and occasionally respectively.

Out of the total respondents majority of elderly (90.4 per cent, 82.7 per cent & 75.6 per cent) never consumed meat, fish and egg respectively. The remaining respondents were taking non-vegetarian foods occasionally, weekly and alternatively. There was a clear age associated shift toward less frequent consumption of meat, fish, seafood, grains, fruits and vegetable, and tea in man and women (Tsai et al. , 2005)

The milk and its products were consumed daily by majority 92.2 per cent of respondents and remaining 5.8 per cent, 1.3 per cent and only 0.7 per cent of elderly were consuming occasionally, never and weekly respectively. In 1980, 47% had whole milk at least once in 3days and 60% had low fat or skim milk. By 1989, only 26% had whole milk at least once, whereas 73% had low fat or skim milk reported by Koehler (1994).

The frequency of various type of fats and oils was also observed which shows that 66.7 per cent, 5.1 per cent and 43.6 per cent elderly were never used hydrogenated fat, refined oil and deshi ghee, while it was consumed occasionally by majority of the respondents (33.3 per cent, 79.5 per cent & 41.7 per cent) respectively. Hundred per cent elderly were not consuming butter at all. The majority of the elderly 87.2 per cent were utilizing mustard oil daily in their meal preparation and rest 12.8 per cent were reported for occasional consumption.

It may be concluded that majority of the respondents were daily utilizing wheat & rice products, pulses, other vegetables than leafy, roots & tubers, milk products and as well as mustard oil in old age homes because most of the respondents were dependent on food supplied by the old age homes and having lack of money. Tucker et al. (1992) found that those with diets high in milk, cereals and fruits had the highest intake of micronutrients. Harinarayan et al. (2004) found that the dietary intake in the urban group was high in calories, milk, milk products and vegetables. The major cereal consumed was rice. The daily consumption of milk and milk products was only 5% of their total energy intake.

Table No. 5 Distribution of respondents according to the food groups consumed.

Food groups	Male			Female		
Quantity (raw) g./ml.	Present Study		ICMR	Present Study		ICMR
	Mean	±SD		Mean	±SD	
Cereals	244.30	78.84	350.00	234.86	62.30	225.0
Pulses	36.20	24.96	50.00	31.32	22.47	40.00
Vegetables	132.90	89.55	200.0	123.54	110.65	150.0
Green leafy vegetables	7.60	28.01	50.0	15.94	49.87	50.0
Roots and tubers	136.80	93.85	100.0	133.96	96.37	100.0
Fruits	86.10	73.96	200.0	60.66	72.53	200.0
Milk and milk products	421.00	301.74	300.0	282.78	282.50	300.0
Sugar	18.60	10.10	20.0	16.89	12.82	20.0
Fats and oils	10.80	5.28	25.0	10.80	6.80	20.0
Nuts and oilseeds	1.84	5.22	-	0.19	1.94	-

The above table depicts that the meal consumed by elderly consists of various food groups. The consumption quantity of cereals and pulses in male was (244.30±78.84) g./day and (36.20±24.96) g./day. The mean intake of these food items were reported (234.86±62.30) g./day and (31.32±22.47) g./day by female elderly respectively. (Vijayaraghavan et al., 2000) found that the consumption of cereals and millet was above the RDI. Diet surveys carried out by NNMB (1979-2002) indicated that as in other age groups, cereals and millets form the bulk of dietary of the elderly. Mean intakes of pulses are low both in males and females (31g. and 27 g. respectively). The dietary intake of pulses was less than RDA in both sexes similar to the present study.

The average intake quantity of vegetables, green leafy vegetable, root & tubers and fruits were accounted to be (132.90±89.55), (7.60±28.01), (136.80±93.85) and (86.10±73.96) g./day in male elderly group and (123.54±110.65), (15.94±49.87), (133.96±96.37) and (60.66±72.53) g./day respectively in females. Similarly, as present study, the consumption of green leafy vegetables was reported less than RDI in both the sexes by Vijayaraghavan et al., 2000. Palaniappan et al. (2001) reported that smokers consume significantly fewer fruits and vegetable than non-smokers.

The other important food groups like milk products and sugar were consumed (421.00±301.74) g./day and (18.60±10.10) ml./day by male elderly while it was (282.78±282.50) ml./day and (16.89±12.82) ml./day by female elderly respectively.

The average consumption of fats & oils was found to be (10.80±5.28) ml./day in males and (10.80±6.80) ml./day in female respondents of the old age homes.

It was clear from the table that mean quantity of consumption in males of all food group i.e., cereals, pulses, vegetables, green leafy vegetables, fruits, sugar, fats & oil except roots & tuber and milk product were less than the RDA for while in female elderly it was found to be less in pulses, vegetables, green leafy vegetables, fruits, milk products, sugar and fats & oils and more in cereals and roots & tubers than the RDA. Bhooma et al. (2005) conducted a study in two old age homes in Podanur of Coimbatore city and reported that intake of cereals, pulses, green leafy vegetables, fruits, roots & tubers and milk &milk products was found to be less compared to the quantities suggested by Pasricha and Thimmayamma for the elderly, similarly as results of the present study. Tsai et al. (2006) conducted a study on elderly Taiwanese and the study revealed age associated changes in food consumption frequency of all food groups, except dairy. There was a clear age associated shift toward less frequent consumption of meat, fish, seafood, grains, fruits and vegetable, and tea in man and women. These results suggest that there is an overall decrease in total intake frequency of different food groups may be due to dependence in food availability, loss of appetite, loss of denture and lack of purchasing power.

Conclusion:

Majority of the respondents were vegetarian and the proportion of females was more in comparison to the males in the vegetarian food habit category. The average frequency of meals per day was 4.05±0.86 in the elderly. Most of the respondents were daily utilizing wheat & rice products, pulses, other vegetables than leafy, roots & tubers, milk products and as well as mustard oil in old age homes. Intake of cereals, pulses, green leafy vegetables, fruits, and milk & milk products was found to be less compared to the quantities suggested by Pasricha and Thimmayamma for the elderly. Thus, it can be concluded that the intake of iron by the subjects was poor mainly due to cereal dominated meal pattern of the old age homes with limited access to milk and milk products and less frequent inclusion of green leafy vegetables and most of the respondents were dependent on food supplied by the old age homes and having lack of money.

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