

Dietary pattern of post-menopausal women

D. PRAVEENA

Menopause is perhaps the most striking event occurring during the middle age in women and represents the end of woman's reproductive life. Women spend a significant part of their lives in post-menopausal states. The present study was conducted on 600 postmenopausal women in Thiruvananthapuram district to assess their dietary pattern. Pretested interview schedule was administered in person to the women by the investigator. Dietary adequacy was assessed by 24 hr recall method and the mean individual intake of nutrients was compared with the Recommended Dietary Allowance (RDA). Results showed pulses green leafy vegetables, eggs, meat, preserved foods were least frequently used foods. Data revealed that the diet of the women were inadequate in major and micronutrients.

Key Words : Post-menopausal women, Dietary pattern, Recommended dietary pattern

How to cite this article : Praveena, D. (2015). Dietary pattern of post-menopausal women. *Food Sci. Res. J.*, 6(2): 268-272.

INTRODUCTION

Menopause is characterized endocrinologically by evidence of decreasing ovarian activity, biologically by decreasing fertility and clinically by alterations in menstrual cycle intervals. Natural menopause is recognized to have occurred after 12 consecutive months of amenorrhea, for which there is no other obvious pathological or physiological cause (WHO, 1996). Menopausal health demands priority in Indian scenario due to increase in life expectancy and growing population of menopausal women. Women experience a panoply of physiological changes during menopausal transition and afterwards. Hormonal changes that characterize menopause are likely to influence the nutritional needs and habits of women. Tardivo *et al.* (2010) reported only a very low percentage of post-menopausal women who ate correctly. A number of observational epidemiological studies have dealt with risk factors of chronic diseases,

namely cardiovascular disease (CVD) and osteoporosis, in post-menopausal women. Studies aimed principally at assessing the dietary adequacy during post-menopausal period are scarce. The present study, therefore, was planned to assess the dietary pattern in women in post-menopausal years.

METHODOLOGY

The area selected for the study was Thiruvananthapuram district. In Thiruvananthapuram district Chirayinkeezhu (Rural) and Thiruvananthapuram taluk (Urban) were selected by purposive sampling method. Post-menopausal women between the age 45-55 years were selected. A total of 600 post-menopausal women who had completed minimum one year after their last menses and also not more than two years after the attainment of menopause were carefully selected from the identified women. Dietary adequacy of the respondents was assessed by 24 hours recall method. The nutrient intake was calculated using nutritive value given in the food composition table. Mean intake of nutrient was compared with the Recommended Dietary

AUTHOR FOR CORRESPONDENCE

D. PRAVEENA, Department of Food Technology, TKM Institute of Technology, Karuvellil, KOLLAM (KERALA) INDIA
Email : praveena_devadas@yahoo.co.in

Allowance for Indians (Gopalan *et al.*, 2004).

OBSERVATIONS AND ASSESSMENT

Diet is a vital determinant of health and nutritional status of people. The dietary habits of individuals vary according to socio economic factors, regional customs and traditions (Bamji *et al.*, 1996). Dietary data on individual is collected to obtain more precise measurement of average nutrient intake to determine inadequacies, if any. Assessment of food intake of individuals range from a qualitative type of inquiry to those of a more quantitative nature.

All the subjects were non-vegetarians in rural area and in urban area 82.67 per cent were non-vegetarians 12.67 per cent were vegetarians and 4.66 per cent were ovo vegetarian.

Though there is substantial evidence suggesting that vegetarianism is a healthy food practice which can lower the risk of a number of chronic diseases including cardiovascular diseases. In the present study it was found most of them were non-vegetarians. It depicts the typical Kerala dietary pattern. Fish was the non-vegetarian item consumed by most of the subjects which is again a healthy dietary practice.

Food frequency :

Usual intake in terms of frequency with which various food items are consumed is recorded. The frequency data may be of a higher order of accuracy although more limited than quantitative data obtained by other methods.

The food frequency pattern on the subjects is presented in Table 1.

Consumption pattern of cereals by the subjects in both rural and urban area showed rice as their staple diet. Renganathan (1996) had reported that the diet of coir workers was found to predominate in cereals. Pulse consumption pattern showed that 40.33 per cent of subject in urban area included pulses once a week while in rural area 26.67 per cent included pulses in their diet monthly. Black gram dhal and red gram dhal were used by all the subjects. Consumption pattern of Keralites, as reported by Kerala Statistical Institute (2001) revealed that 98 per cent of the Keralites are habituated to non-vegetarian foods and hence cheaper fish based preparations were preferred to extravagant pulse based

preparations. This might have been the reason for the less frequent purchase and use of pulse based recipes. 47.67 per cent of rural subjects consume leafy vegetables once in a month while in urban area 47.33 per cent consume green leafy vegetable once in week.

Tapioca was most preferred in rural area 47.00 per cent of the subjects in rural area consume roots and tubers daily. In urban area 37.00 per cent consume tubers thrice a week. The results have been found to be in concurrence with ICMR (2002) that tapioca is the most commonly used tuber by the common population of Thiruvananthapuram. The reason is its easy availability and low cost compared to other tubers.

Regarding the consumption of other vegetables 29.67 per cent of subjects in rural area consume other vegetables only rarely while 67.00 per cent of the urban subjects consume other vegetables daily.

The consumption of fruits was very less among the selected subjects. Only 11.67 per cent of the subjects in urban area consume fruits daily. 38.33 per cent of the subjects in rural area consume fruits monthly. Similar finding were also revealed in diet survey conducted among Kerala fisherwomen by Krishna (1988) and Karuna (1993) that foods like vegetables and fruits which are major sources of vitamin and minerals are rarely included in diet. The low frequency of use of green leafy vegetables and fruits indicated the ignorance on the importance of this food groups and is reflected in their health status. The rare use of these food items could be related to their habitual pattern of diet consisting of rice, fish and tapioca.

Milk was mainly incorporated in their diet in the form of tea and coffee. In rural area subjects preferred black tea. Consumption of milk as such or as curd was low in the diet of the subjects. According to Puhazhandi and Satyasai (2002) Women in households belonging to low socio-economic group are less likely than other women to eat items from each type of food group listed and their diet is particularly deficient in fruits and milk or curd.

Fish consumption among the subjects indicated that 62.67 per cent of the subjects in rural area consume fish daily while 40.00 per cent in urban area consume fish daily. Fish has got its newly recognized value and antithrombogenic effects because of its n-3 PUFA content, which acts directly upon lipid metabolism by preventing accumulation of fats and cholesterol. (Arora,

1996) Even a low habitual intake of fish equivalent to two dishes a week may be of value in the prevention of coronary heart disease. 50.67 per cent of the subjects in rural area consumed meat rarely While in urban area 52.00 per cent consumed meat weekly once. Regarding the consumption of egg 49.00 per cent of the rural subjects consume egg occasionally while 71.00 per cent of urban subjects consume egg rarely.

WHO (2005) reports there is a strong positive relationship between the level of income and the consumption of animal protein, with the consumption of meat, milk and eggs increasing at the expense of staple foods. Because of the recent steep decline in prices, developing countries are embarking on higher meat consumption at much lower levels of gross domestic products than the industrialized countries did some 20 – 30 years ago. Urbanization is a major driving force influencing global demand for live stock products. Urbanization stimulates improvements in infrastructure, including cold chains, which permit trade in perishable goods. Compared with the less diversified diets of the rural communities, city dwellers have a varied diet rich in animal proteins and fats, and characterized by higher consumption of meat, poultry, milk and other dairy products.

Oil and fat is included in the daily diet of all the subjects. Sugar and jaggery is avoided by diabetic subjects. Goodman *et al.* (1997) reports A plant based diet-low in fat and high in fibre and legumes whole grain foods, vegetables and fruits - may reduce the risk of

endometrial cancer but postmenopausal women are not aware of these facts.

Frequency of consumption :

On the basis of the food frequency table the food items were grouped as daily used, frequently used foods, less frequently used foods and least frequently used foods.

Table 2 gives the classification of food items based on food frequency table.

Table 2 reveals the use of Cereals, beverages, fish daily, spices and condiments, roots and tubers were frequently used foods. Less frequently used foods included other vegetables, milk, sugar and jaggery. Pulses, green leafy vegetables, egg, meat, preserved foods were least frequently used foods.

All adult women in India consume cereals every day; their diets tend to be monotonous and there is very little dietary diversity. Fruits are eaten daily by only 8 per cent of women and only one-third of women eat fruits at least once a week. Almost one-third of women in India never eat chicken, meat or fish and very few women (only 6 %) eat chicken, meat or fish every day. Eggs are consumed less often than chicken, meat or fish (NNMB, 2002). The present data is also in concurrence with this data.

Nutrient intake of the subjects:

Nutrient intake of the subjects (600) was assessed by 24 hour recall method. In 24 hour dietary recall

Table 1 : Distribution of the subjects based on food frequency pattern

	Daily		Thrice a week		Twice a week		Weekly once		Monthly once		Occasionally		Never	
	R	U	R	U	R	U	R	U	R	U	R	U	R	U
Cereals	300	300	-	-	-	-	-	-	-	-	-	-	-	-
Pulses	25	43	35	42	22	14	96	121	80	27	42	52	-	-
Leafy Veg..	-	33	23	48	34	37	59	142	143	38	41	2	-	-
Roots and Tubers	141	113	25	111	31	33	15	1	49	42	39	-	-	-
Other Veg.	89	201	10	21	56	62	32	1	112	15	1	-	-	-
Fruits	10	35	19	24	21	59	86	37	115	77	49	68	-	-
Milk and milk products	119	262	-	26	-	-	14	-	-	-	167	13	-	-
Fish	188	120	58	117	3	11	1	-	4	-	46	-	-	52
Meat	-	-	-	-	-	74	13	156	152	18	135	-	-	52
Egg	-	-	-	-	-	-	-	-	153	213	147	49	-	38
Oil and Fat	300	300	-	-	-	-	-	-	-	-	-	-	-	-
Sugar and Jaggery	252	196	-	-	-	-	-	-	-	-	18	29	30	75
Processed foods	-	-	-	-	-	-	-	-	-	50	50	250	250	-
Spices and condiments	150	250	75	50	75	-	-	-	-	-	-	-	-	-

Table 2 : Classification of foods based on frequency of consumption

Groups	Food items
Daily used foods	Cereals, beverages, fish
Frequently used foods	Spices and condiments, roots and tubers
Less frequently used foods	Other vegetable, milk, sugar and Jaggery
Least frequently used foods	Pulses, green leafy vegetables egg, meat, preserved foods.

method, subjects are asked to recall the specific food item they ate during the previous day describing the nature and amount of each food (Williams, 1993) Standard cups and spoons were used to facilitate the subjects to quantify the amount of food intake. From this the raw food equivalents were calculated using the food composition tables published by Indian council of Medical Research (Gopalan *et al.*, 2004).

Table 3 depicts the mean nutrient intake of the subjects in comparison with the recommended allowances (sedentary activity).

It was observed that the mean protein intake of the subjects in rural area was 32 g which was thirty six per cent less than RDA, in urban area the protein intake was found to be 47 g which was only six per cent less than the specified RDA.

The mean intake of fat was found to be 19 g rural subjects and 45.14 g for urban subjects which was found to meet ninety five per cent and two hundred and twenty five per cent, respectively. It is in line with various studies conducted which report fat content is more in urban Kerala diet.

The mean energy intake of rural subjects was 1478 Kcal, which satisfied seventy nine per cent of the recommended allowance. Mean energy intake of urban subjects was found to be 2028 Kcal satisfying more than recommended allowance. The mean fibre intake among rural subjects was 2g which was sixty per cent less than the RDA while the mean fibre intake of urban subjects was 2.89 (40 % less) .

The mean intake of calcium was found to 228 mg in the case of rural subjects and 295 mg for urban subjects which was found to meet fifty seven per cent and seventy four per cent, respectively of the RDA for them.

The mean iron intake of rural subjects was 5.64 mg which satisfied about twenty per cent of recommended allowance. Mean iron intake of urban subjects was found to be 11.54 mg satisfying forty per cent of the recommended allowance.

Nutrients like carotene, Thiamine, Riboflavin, folic acid, in the diets of rural subjects were 173µg, 0.78mg, 0.37 mg, 34µg, respectively. These nutrients were only sufficient to meet seven per cent, eighty nine per cent, thirty four per cent, thirty four per cent of the RDA, respectively for rural subjects. The mean intake of the above nutrients were of 319µg, 0.8 mg, 0.58 mg and 45.77 µg, respectively in the diets of urban subjects meeting thirteen per cent, eighty nine per cent, fifty two per cent and forty six per cent of the RDA, respectively.

The mean intake of niacin and vitamin C of rural subject was found to be 8mg and 20mg which satisfied sixty seven per cent and fifty per cent of recommended allowance. Mean intake of niacin and vitamin C among

Table 3 : Distribution of the subjects based on the mean nutrient intake

Nutrient	RDA*	Rural (n = 300)			Urban (n = 300)		
		Mean nutrient intake	Percentage of RDA met	% Deficit/ Excess	Mean nutrient intake	Percentage of RDA met	% Deficit/ Excess
Protein g	50	32	64	-36	46.52	94	-6
Fat g	20	19	95	-5	45.14	225	+125
Energy Kcal	1875	1478	79	-21	2027.70	108	+8
Fibre g	5	2	40	-60	3	60	-40
Calcium mg	400	228	57	-43	295.00	74	-26
Iron mg	30	5.64	20	-80	11.54	40	-60
Carotene µ g	2400	173	7	-93	318.63	13	-87
Thiamine mg	0.9	0.78	89	-11	0.8	89	-11
Riboflavin mg	1.1	0.37	34	-66	0.58	52	-48
Niacin mg	12	8	67	-33	10.25	85	-15
Free folic acid µ g	100	34	34	-66	45.77	46	-54
Vitamin C mg	40	20	50	-50	35	87	-13

urban subjects was 10.25mg and 35mg which satisfied eighty five per cent and eighty seven per cent of recommended allowance.

In a study conducted by Shatrugna *et al.* (2007) on dietary intake of adult women in Hyderabad revealed the diets were typically cereal pulse based with very low intake of protective foods such as milk and milk products, flesh foods, fish, fruits and vegetables. Intake of major nutrients such as energy and proteins were below the RDA for these women. There was gross inadequacy in the intakes of many other nutrients also.

It can be concluded from the present study that dietary intake of post-menopausal women was deficient in almost all the major as well as micronutrients. So there is a need for nutrition education to the subjects regarding the importance of balanced diet.

LITERATURE CITED

- Arora, S. (1996).** The wonderful world of spirulina, our women, **1** (1) : 21.
- Goodman, M.T., Wilkens, L.R. and Hankin, J.H. (1997).** Association of soy and fibre consumption with the risk of endometrial cancer *American J. Epidemiology*, **146** (4) 294 – 603.
- Gopalan,C., Sastri, B.V.R., Balasubramaniam,S.C., Deosthale,Y.G. and Pant, K.C. (2004).** *Nutritive value of Indian Food, National Institute of Nutrition*, 47-79.
- ICMR (2002). Nutrient Requirements and recommended Dietary Allowances for Indians, NIN, Hyderabad, 40-50.
- Karuna, M.S. (1993).** Nutritional status of women engaged in fish vending in Thiruvananthapuram district, Ph.D. (FS&N) Thesis, Kerala Agricultural University, Thrissur, 165.
- Kerala Statistical Institute (2001). Socio-economic changes in Kerala –A study based on selected Localities KSI Thiruvananthapuram, 203.
- Krishna,S. (1988) .** Some observations on the food consumption pattern and nutritional status of marine fisherwomen community, Marine Fisheries Information Service.
- National Nutrition Monitoring Bureau (NNMB) NNMB Reports (2002). National Institute of Nutrition, Hyderabad, 1978 – 2002.
- Puhazhandi,V. and Satyasai, K.J.S. (2002).** Empowerment of Rural women through Self Help Groups :An Indian Experience, National Bank News Review, Mumbai, **18**(2) : 39-47.
- Shatrugna,V., Kulkarni,B., Kumar,A., Rani,U. and Balakrishna (2007) .** Early onset of osteoporosis in women from the low socio – economic group – role of nutrition, Nutrition news, NIN, 28, No.4 Oct.
- Tardivo, A.P., Nahas-Neto, J., Nahas, E.A.P., Maesta, N.,Rodrigues, M.A.H. and Orsatti, F.L. (2010).** Associations between healthy eating patterns and indicators of metabolic risk in postmenopausal women. *Nutr. J.*, **9** : 64–72.
- Williams, S.R. (1993).** *Nutrition and diet therapy*, Mosby Publication, 7th Ed., 321-327
- WHO (1996). Research on menopause (WHO Report series. No.866) Geneva, Switzerland: World Health Organization.
- WHO (2005). Technical Report series, 916, Diet Nutrition and prevention of chronic diseases WHO Geneva AITBS Publishers Delhi.

Received : 22.06.2015; Revised: 22.08.2015; Accepted : 01.09.2015