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Nutrient Intake of Lactating Mothers from Rural and Urban Areas

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Introduction

The expectant and lactating mothers are considered as nutritionally vulnerable group especially in the developing countries of the world. Due to nursing process mothers are subjected to nutritional stresses. Frequent pregnancies followed by lactation increase the health risk of mothers resulting in a high maternal mortality. The success of lactation as well as the health status of infant depends entirely on type of diet consumed by women during pregnancy and lactation. The quality and quantity of mother's milk is maintained upto some extent by drawing the nutrients from her body reserve indicating additional demand for different nutrients during lactation. Diets consumed by many lactating mothers in our country are poor and lack in many nutrients. Thus special attention should be given to the diet of mother during lactation. The diets of the lactating mothers vary from place to place. The study was planned to have an idea of nutrient intake of lactating mothers living in rural as well as urban areas so that necessary modification can be suggested in their diet and nutrient intake for improving nutritional status of the mothers and infants too.

Material and Methods

For the present investigation 150 lactating women from urban areas of Hisar and 140 lactating women from two villages of Hisar were selected by simple random method. For collection of information an interview schedule was and pre-tested on rural as well as urban areas. Depending on suggestion of the subjects necessary were made in the interview schedule. Informations were collected by constant home visits to the subjects. Dietary intakes were collected using 24 hour recall method for three consecutive days.

Cooked foods were converted to their raw equivalents and nutritive value was calculates as per values given by Gopalan 1991 . The nutrient intake of three days was

calculated and mean was taken. Mean nutrient intake was compared to the Indian RDA given by ICMR 1990 . The data were analyzed statistically using appropriate tools.

Results and Discussion

General Information

The general information about the respondents is discussed in Table 1. Out of total respondents studied, seventy two per cent of the rural and 46 per cent of urban mothers were in the age group 20-30 yrs. and rest belonged to age group 30-40 years. Most (71.5%) of the rural respondents studied were illiterate, 23.5% were educated till primary and none was graduate. In contrast 47.2 per cent of urban mothers were graduate and 42 per cent were educated till matric and only 7.5% were illiterate. Monthly income of maximum (52.0%) rural subjects ranged from Rs. 2000-3000/- whereas 54.0 per cent of the urban subjects had monthly income between Rs. 3000 to 4000/-. Majority (65%) of rural respondents and only 29% urban respondents belonged to joint families. Most (72%) of the rural respondents had large family i.e. family members were above five but higher per cent (74.7%) of urban lactating mothers had family members below five. Around seventy two per cent of urban and 53.3% of rural lactating mothers had 1-2 children. Only 5.4% of rural mothers had 5-6 children. Most of the rural as well as urban mothers were breast feeding their babies.

Table 1: General Information about Respondents

Variables	Rural (n=150)	Urban (n=150)
Age		
20-30 years	108 (72.0)	69 (46.0)
30-40 years	42 (28.0)	81 (54.0)
Education		
Illiterate	107 (71.5)	10 (7.5)
Primary	35 (23.5)	21 (14.0)
Matric	9 (6.0)	56 (42.0)

Graduate & above	-	63 (47.2)
Monthly Income		
Rs. 1000-2000	64 (36.5)	13 (8.6)
Rs. 2000-3000	78 (52.0)	56 (37.4)
Rs. 3000-4000	8 (5.5)	81 (54.0)
Type of Family		
Joint	98 (65.3)	44 (29.3)
Nuclear	52 (34.7)	106 (70.7)
Size of Family		
Below 5	42 (28.0)	112 (74.7)
Above 5	108 (72.0)	38 (25.3)
Number of Children		
1-2	80 (53.3)	108 (72.0)
3-4	62 (41.3)	42 (28.0)
5-6	8 (5.4)	-
Breast Feeding Practices		
Breast feeding their baby	130 (86.7)	117 (78.0)
Not breast feeding their baby	20 (13.3)	33 (22.0)

Figures in parentheses indicate percentage.

Diet and Nutrient Intake

Most (79.0%) of the rural lactating mothers were vegetarian and only 16 per cent were eggetarian and only 5.0 per cent were taking non vegetarian food. Among urban mothers 44 per cent and 40 per cent were vegetarian and eggetarian, respectively (Table 2). About general meal pattern, it was observed that almost all the urban mothers were taking three meals daily whereas among rural mothers most of them were consuming

two meals and only few consumed three meals (Table 3). Rural mothers consumed missi roti or chapati with either chutney or lassi in breakfast whereas at lunch and dinner they consulted chapati with either dhal or vegetable only. On the other hand urban mother had more variety in their meal and included bread, biscuit, vegetables and salad in their meal which was generally not included m meals of rural mothers.

Table 2: Food Habits of Lactating Mothers

Food Habits	Urban	Rural
Vegetarian	76 (44.0)	119 (79.0)
Non-Vegetarian	24 (16.0)	7 (5.5)
Eggetarian	60 (40.0)	24 (16.0)

Table 3: Typical Meal Pattern of Lactating Mothers

Meals	Urban	Rural
Early morning	Tea, Biscuit or Ladoo-1	
Breakfast	Bread or Parantha Curd or Pickle Tea 1 cup	Missi Roti or Chapati, Chutney Lassi/Tea
Lunch	Chapati/Rice, Dhal, Vegetable, Salad, Curd	Chapati, Dal/Vegetable
Evening Time	Milk/Tea	Milk/Tea, Bread/Biscuit
Dinner	Chapati, Dhal/Vegetable, Salad	Chapati, Dhal

Regarding consumption of foods from various food groups it was observed that intake of almost all the food groups except milk and milk products in urban and fats and oils in rural lactating mothers was low, (Table 4). Mean daily cereal intake of rural mothers was 86.8 per cent of RDA whereas that of urban mother was significantly (P/0.05) lower i.e. 74.7 per cent of RDA. Daily intake of pulses was significantly lower than RDA in both rural as well as urban lactating mothers. However the pulse consumption of urban mothers was higher in urban than rural lactating mothers. The mean daily green leafy

vegetables consumption of rural lactating mothers was only 10.6 ± 7.0 g and that in urban was 22 ± 8 g which is significantly lower than RDA in both the cases. Consumption of roots and tubers was 44 ± 6 g/day and 25 ± 7 g/day in rural and urban lactating mothers, respectively. Higher intake of roots and tubers was due to more consumption of potatoes among rural mothers in their diet. Intake of other vegetables was also below RDA in lactating mothers. The mean daily consumption of fruits was almost negligible in rural mothers i.e. only 4.5 ± 10.3 g. Most of the rural mothers were not consuming any fruit at all. They consumed only locally available guava and orange which was consumed occasionally. Consumption of milk was adequate in urban lactating mothers whereas it was significantly lower and below RDA in rural mothers. Fat intake was higher in rural subjects than in urban. The above findings indicated that intake of most of the food groups was below RDA except that of milk in urban and fats and oils in rural ladies.

Table 4: Food Consumption Pattern of Lactating Women

	RDA g	Urban		Rural		Level of b significance
		Mean intake g	% of RDA	Mean intake g	% of RDA	
Cereals	495 (Sed)	360 ± 57a	74.7	482 ± 30	86.8	P/0.01
	555 (Mod)					
Pulses	55	34.3 ± 5.1	62.4	25.6 ± 5.2	46.5	P/0.01
GLV	50	22 ± 8	55.0	10.6 ± 7.0	26.5	P/0.01
Roots & Tubers	50	25 ± 7	50.0	44 ± 6	88.0	P/0.01
Other Vegetable	60	40.5 ± 13.2	67.5	32.3 ± 12.1	53.8	P/0.01
Fruits	30	18.6 ± 3.5	62.0	4.5 ± 10.3	24.2	P/0.01
Milk & Milk Products	250	300 ± 55	120.0	200 ± 40	66.7	P/0.01
Fats & Oil	40	30 ± 5.1	75.0	51.6 ± 14.2	129.0	P/0.01
Sugar &	40	32.6 ± 5.3	31.5	40.1 ± 8.0	1.00	P/0.01

Jaggery						

a = Values are mean ± SD b = Comparison between urban and rural

Ses = Sedentary worker Mod = Moderate worker

Many research workers have reported low intake of various food groups varying from place to place. Gupta and Sharma 1980 also observed a significant importance in the diet of lactating mothers. There was no consumption of green leafy vegetables, high consumption of milk, sugar, fats and nuts while cereals and pulses were found to be low. Devadas et. al. 1983 also reported lower intake of cereals (27%), pulses (33%) and negligible intake of green leafy vegetables by lactating mothers when compared to ICMR (1980) recommendations. The intake of other foods also fell short of recommended intake, while studying food consumption pattern of lactating women residing in rural and suburb area of Hisar. Dhaliwal et al. 1983 also observed that food intake of all the foods except milk and milk products was below RDA. Rawtani and Verma 1989 reported that lactating women belonging to desert areas subsisted mainly on cereals. Milk, pulses, roots and tubers and other vegetables were consumed in small amount, whereas green leafy vegetables, fruits, nuts, egg and meat were completely lacking in their diets.

Nutrient Intake

Daily mean nutrient intake of rural and well as urban lactating mothers is discussed in Table 5. The daily mean energy intake of lactating mothers in 0-6 months lactation group was in urban mothers 2049 ± 779 KCal in rural mothers. This energy intake corresponded to 84.5 per cent of RDA in urban and 86.0 per cent of RDA in rural mothers. Almost similar energy intake was observed in rural and urban lactating mothers in 6-12 month lactation period. The protein intake was 73.9 per cent RDA in urban mothers in 0-6 month of lactation period, whereas in urban mothers it was significantly higher and was 78.9 per cent of RDA. In 6-12 months of lactation also the protein intake of rural mothers (56.7 ± 11.6 g) was significantly (0/0.05) higher than that of urban mothers (53.5 ± 12.4 g). This higher protein intake in rural mothers was due to more intake of cereals by them as their pulse intake was very low. Similarly, Chaudhury 1985 reported lower intake of energy and protein in 30 lactating women of Bangladesh. The vitamin A intake in the lactating mothers was below RDA. However, it was significantly higher in urban mothers than in rural mothers. The intake of green leafy vegetables in urban mothers was better than the rural mothers. The vitamin C intake of rural lactating mothers was very low which was 49.5 per cent of RDA. It was

due to very low consumption of citrus fruits by them. In urban mothers the vitamin C intake was significantly higher than that of rural subjects. The mean daily iron intake of urban subjects was 26.6 ± 12.0 mg whereas in rural it was only 19.3 ± 6.8 mg. The iron intake of rural lactating mothers was significantly lower than that of urban. The calcium intake of urban and rural lactating mothers was 80.2 and 76.7 per cent of RDA, respectively. The cereals had important contribution in calcium intake however, urban mothers had adequate consumption of milk also which is important source of calcium. The daily thiamine and riboflavin intake was below RDA in both rural and urban lactating mothers but it was higher in rural ones due to more consumption of cereals.

Table 5: Nutrient Intake of Lactating Mothers from Hisar

		Urban		Rural		
	RDA g	**Mean intake g**	**% of RDA**	**Mean intake g**	**% of RDA**	**Level of b significance**
Calories (KCal)						
0-6 mth	2425/2775	2049 ± 245	84.5	2387 ± 229	86.0	P/0.05
6-12 mth	2275/2625	1935 ± 213	85.0	2260 ± 203	86.1	NS
Protein (g)						
0-6	75	55.4 ± 11.3	73.9	59.2 ± 12.0	78.9	P/0.01
6-12	68	53.5 ± 12.4	78.8	56.7 ± 11.6	83.4	P/0.01
Vit A (ug)	950	700 ± 186	77.8	506 ± 177	52.6	P/0.01
Vit C (mg)	80	633 ± 10.6	79.1	39.6 ± 8.3	49.5	P/0.01
Iron (mg)	30	26.6 ± 12.0	88.7	19.3 ± 6.8	64.3	P/0.01
Calcium	1000	802.0 ± 192	80.2	767.3 ± 205	76.7	P/0.05
Thiamine (mg)						
0-6	1.5	1.3 ± 0.6	86.7	1.36 ± 0.4	90.7	NS
6-12	1.4	1.2 ± 0.4	83.7	1.30 ± 0.5	92.8	P/0.05
Riboflavin (ug)						

0-6	1.8	1.4 ± 0.4	77.8	1.5 ± 0.3	83.3	P/0.05
6-12	1.7	1.3 ± 0.5	76.5	1.4 ± 0.4	85.3	P/0.05

a = Values are mean ± SD

b = Comparison between urban and rural

Similar findings have been reported by Rawtani and Varma (1989) who also observed that diets of lactating mothers from desert areas of Jodhpur were deficient in important nutrients. Abakoda and Hussain 1980 while studying the nutrient of lactating Yoruba mothers in Nigeria reported that intake of energy, protein, riboflavin and ascorbic acid 83%, 88%, 55% and 34% of RDA, respectively whereas the intakes of iron, calcium and thiamine at the RDA.

Bhatia et. al. 1981 also found that diets of rural and urban lactating mothers of Varanasi were deficient in calories, calcium, retinol, ascorbic acid and niacin as compared to ICMR recommendations. In a survey conducted on lactating mothers it was reported that mean nutrient intakes covered only 73% of recommendations for energy, 79% for protein, 52% for calcium, 89% for iron and 55% for vitamin A. According to Devadas et. al. (1983) also the intake of calories, protein, calcium, iron, vitamin A, riboflavin and ascorbic add by nursing mothers was less than the recommended allowances.

The impact of income, family size and education was further investigated on the intake of energy, protein, vitamin C and iron. It was found that the income of the mothers was significantly associated with the intake of energy, protein, vitamin C and iron (Table 6). Higher the income higher was the consumption of these nutrients. Rajbhandari and Gujral 1981 also observed that lactating mothers with low income consumed less of all the nutrients than the high income mothers. The family size had no impact on the calorie and protein intake. However, the vitamin C and iron intake was influenced by the family size. Bigger the family size lower was the intake of vitamin C and iron. The education of the mother had impact on intake of energy, vitamin C and iron but had no effect on protein intake.

Table 6: Association of Nutrient Intake with Income, Family Size and Education of Mothers

Variables	Energy	Protein	Vit C	Iron
Income	19.86**	9.82*	24.76**	18.94
Family size of mothers	NS	NS	11.40*	11.26*
Education of mothers	9.67*	NS	9.84*	10.24*

*X2 Value significant at P/0.05

** X2 value significant at P/0.01

NS = Not significant

The study revealed that nutrient intakes of most of the foodstuffs and nutrients were below the RDA. The intake was influenced by the availability of food, food beliefs, lack of knowledge, income etc. Thus the study recommended that nutrition education should be imparted to women for creating awareness among them for their increased nutritional requirement. The study also suggested that Government -should design program to provide supplementary foods to the lactating mothers for improvement in their own health status and ultimately the child.

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