Original Research Article

Socio-Economic Status and Nutrient Intake of Below Poverty Line (BPL) Families Living in a Slum of Delhi

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ABSTRACT

India was successful in achieving self-sufficiency by increasing its food production but it could not solve the problem of chronic household food insecurity. This study was conducted to assess the socio-economic status and dietary pattern for all individuals within the families Below Poverty Line (BPL) living in a slum of Delhi. The data was collected from 40 BPL families living in the slum of Seemapuri, Delhi using the standardized procedures and equipment. Majority of the families belonged to schedule caste. Three-fourth of the fathers were daily wagers and 95 % mothers were housewives. Majority of the families were living in semi-pucca houses, using shared toilet and had access to drinking water. The intake of energy, protein, fat, vitamin C and B-complex vitamins were much higher in adults as compared to children in the BPL families owing to higher consumption of cereals, pulses, roots and tubers, fat and meat by fathers and mothers. However, diets of infants and preschoolers were deficient in most of the nutrients. In comparison, nutrient composition of the diets of older children (7-18 years) was better than younger ones (7months - 6years) and poorer than adults in the family. Unequal distribution of food items was seen among the family members living in an urban slum.

Keywords: Food Insecurity, Dietary Pattern, Malnutrition, Nutrient Deficiency, Urbanization.

INTRODUCTION

The First Millennium Development Goal (MDG) is to reduce the poverty and hunger by half by 2015. According to the 2016 Global Hunger Index (GHI), India has made substantial progress in reducing hunger, falling by 22.4 percent since 2000. [1] According to latest Food and Agriculture Organization report, 805 million people are still chronically undernourished. [2] Food security means everyone has the right to have the adequate food in a quantity and quality to satisfy their dietary needs. Food security at national level may not indicate food security at household level. Data from (NNMB, 2002) [3] had shown that only one-third of the children were consuming adequate diet in terms of energy and protein and the proportion was higher in the adolescents and adults i.e. 50% and 70-80% respectively. This shows that unequal distribution of the food amongst family members living in the household. "At the household level, food security is defined as access to food that is adequate in terms of quality, quantity, safety and cultural acceptability for all household members". [4] It is difficult to determine the total food intake of the family members because the food products are not shared proportionately

within the household and it is important that food intake should be evaluated in relation to the nutrient requirements on the basis of age, sex, physical activity and energy expenditures. [5] Reduction in the overall daily calorie intake in the household occurs due to increase in the household size. [6] The main reason for the food insecurity in the urban poor is Urbanization. Therefore, increasing urbanization has resulted in a faster growth of slum. The slum people are the worst affected by the food insecurity and lacking of government schemes. [7] Urban poor are define in the terms of inadequate provision of housing, shelter, water and sanitation and other basic amenities along with the special needs of vulnerable group that includes women and children. [8] The nutritional status of the slum children is worst amongst all urban areas.

At the household level, the availability of the adequate food does not imply that the food is distributed among all the members of the same household according to their physiological needs. Due to the faulty intra-familial distribution of food and family choice of food, the worst sufferers are women of child bearing age and children in urban slum. [9]

MATERIALS AND METHODS

The selection of the slum was done using purposive sampling method. Seemapuri is located in the east of Delhi, where people had been living without the basic amenities of life. A list of all BPL families was obtained from the fair price shop of the area and all BPL families living in the slum of Seemapuri were identified. The present study was undertaken on a sample of 40 households. Forty BPL families were selected using systematic random sampling method for data collection. First household was selected using random sampling method and thereafter the data is collected from every fifth house until the data was available for 40 BPL families. A written consent was obtained from the head of the household

before data collection. Data collection was initiated after obtaining ethical clearance.

The data were collected through structured questionnaire from primary caregiver (mother/father/grandmother) of the household. Data were collected on socio-economic-demographic status and dietary pattern of every individual in the family. Data on dietary intake were collected through 24-hour recall questionnaire about the total raw and cooked amount of the food in the last 24 hours for the family and amount consumed by all the family members.

Both qualitative and quantitative data were organized and analyzed statistically. All data were consolidated and systematically coded in Microsoft excel 2007. Frequencies and percentages of each parameter of Socio-demographic information were calculated. Mean adequacies of nutrient intake were computed as compared with balanced diet (ICMR, 2011) and RDA (ICMR, 2010). [10] Mean intake of energy, protein, fat, calcium, vitamin A, vitamin C, iron, thiamine, niacin etc. for each subject will be calculated using NSI CALCULATOR (www.nutritionsocietyindia.org). The values obtained were assessed by comparing with respective RDA (ICMR, 2010) and percent adequacies for all nutrients were calculated. Mean adequacies for intake of various nutrients were analyzed for assessing differences in consumption pattern by various age groups using ANOVA, test of significance. All the results were tested at 5% significance level.

RESULTS

The data include family type, family size, and family monthly income, religion educational and occupational status of family members and type of house, source of drinking water, toilet facility and health seeking facility. The mean size of the family was 4.0 ± 0.99. Out of 40 families 21 were Muslims and 19 were Hindus. All the families were nuclear. Ninety percent of the families belonged to schedule caste, while

7.5% belonged to other backward class (Table 1). Fathers had better educational attainment than mothers. One third fathers and half of the mothers were illiterate (Figure 1). Of 83 children enrolled in the study, 54 were below 6 years of age and did not go to school. Remaining 29 children were going to school of which 28.9 % were studying in primary classes, 6 % in upper primary classes.

Table1. Family type, mean family size and age-wise distribution of family members

| Age group	n	Mean Age ± SD
Mother	40	24.3 ± 3.71
Father	40	27.8 ± 4.95
Infants and preschoolers	61	5.1±1.15
6-12months	15	8.5 ± 1.80
1-3 years	31	2.0 ± 1.03
4-6 years	15	5.0 ± 0.63
Children and adolescents	20	12.4±0.54
7-9 years	14	7.3 ± 0.74
10-12 years	1	11.0 ± 1.0
13-15 years	2	14.3 ± 0.57
16-18 years	3	17 ± 0
Mean family size	4.0±0.99	
Number of Children in the family		
One	18(45)	
Two	7(17.5)	
Three	13(32.5)	
Five	2(5)	
Religion		
Hindu	19(47.5)	
Muslim	21(52.5)	
Caste		
SC	36(90)	
OBC	3(7.5)	
General	1(2.5)	
Numbers in parentheses denote percentages		
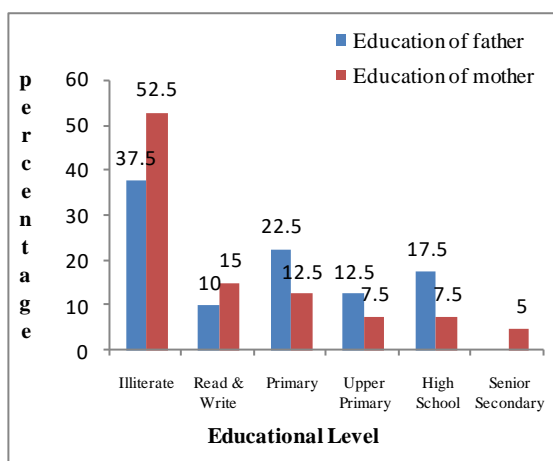
Figure 1. Educational Status of families

Figure 2 showed that majority of fathers (55%) were industrial laborers, 25% were rag picker. Majority of mothers (95%) were housewives. More than three-fourth of the families (77.5%) were living in their own houses. Majority (80%) of the families had semi-pucca houses. Majority of the households (85%) had no provision of tap water at home and were using public tap as a source of drinking water. Only 12.5% of families were equipped with toilet facilities at home and 87.5% using mobile toilet van in the community. All families had color T.V at home and were using public transport for commuting. All families were using LPG for cooking food at home. Mean monthly family income was Rs.6950±1449.3.
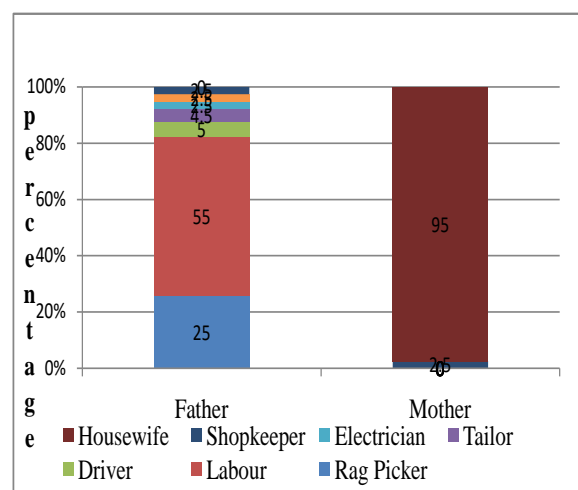

Figure 2. Occupation of the families

The data (Table 2) showed that nutrient intake of calorie, protein, fat, vitamin C and B-complex vitamins were much higher in adults as compared to children in the BPL families. This could be attributed to higher consumption of cereals, pulses, roots and tubers, fat and meat by fathers and mothers. The diets of mothers were deficient in iron, in spite having higher consumption of meat in their daily diets. However, diets of infants and preschoolers were deficient in most of the nutrients like energy, protein, iron, calcium, fat, B-complex vitamins etc. In comparison, nutrient composition of the diets of older children (7-18 years) was better than younger ones (7 months -6 years) and poorer than adults in the family.

Table 2. Mean daily intake and mean percent adequacies of various nutrients by families, as compared with RDA (ICMR, 2010)

Nutrients	Fathers (n=40)		Mothers (n=40)		Infants & Pre-schoolers (n=61)		Children & adolescents (n=22)		F-value
	Mean intake	Mean % adequacy	Mean intake	Mean % adequacy	Mean intake	Mean % adequacy	Mean intake	Mean % adequacy	
Energy(kcal)	2004.6±261.39	86.1±50.25	1694.0±197.02	89.1±30.33	667.6±412.45	38.9±60.66	1299.6±1023.67	57.4±50.34	9.43*
Protein (g)	64.7±19.96	107.8±80.33	58.0±20.32	105.4±99.62	18.8±14.87	58.7±100.51	51.4±40.67	111.1±90.45	3.60*
Fat (g)	40.89±17.02	163.5±56.09	42.5±16.89	212.5±101.24	20.6±20.67	73.1±54.86	32.0±17.52	85.9±70.45	3.264*
Zinc (mg)	7.02±2.01	58.5±30.11	5.92±1.52	59.1±22.33	4.0±2.09	50.1±20.65	4.0±2.67	42.8±34.66	2.95*
Calcium(mg)	500.38±298.06	83.9±60.22	493.7±262.6	82.2±60.45	297.9±189.23	49.1±20.89	353.0±300.09	45.9±30.22	7.560*
Vitamin A (µg)	22.8±17.34	3.8±1.23	24.4±16.27	4.0±3.08	15.8±10.55	3.52±2.78	13.1±10.12	2.1±0.9	3.304*
Thiamine (mg)	1.38±0.44	94.0±68.98	1.18±0.33	117.5±90.28	0.7±0.43	87.0±60.62	0.7±0.21	70.1±60.3	2.493*
Riboflavin (mg)	0.8±0.24	51.5±30.33	0.81±0.33	73.9±55.64	0.4±0.34	40.9±20.54	0.5±0.11	41.1±34.12	7.525*
Niacin (mg)	17.6±6.99	97.9±80.32	15.7±6.99	74.7±30.99	9.3±3.9	65.6±27.92	11.4±7.55	80.6±79.89	2.910*
Vitamin C (mg)	55.4±43.02	138.5±104.33	55.2±40.09	137.9±112.4	18.8±10.56	47.0±30.08	31.6±25.98	83.1±73.29	14.29*
Iron (mg)	15.7±5.08	92.9±17.54	13.4±4.62	63.8±29.94	4.1±2.71	31.4±20.86	9.4±4.45	39.1±20.56	21.54*
Folic Acid (µg)	134.6±65.9	67.3±54.08	123.7±59.4	61.8±50.66	80.1±76.45	63.3±70.81	66.7±50.45	43.9±38.98	0.810*
*, ANOVA test, 'F' value significant at p <0.05									

DISCUSSION

The present study was conducted on families (n=40) having the BPL card residing in urban slum. Mean family size of the present study was lower than the mean family size of 4.6 surveyed in NFHS-3 for Delhi state and other studies carried out in urban slums of Delhi [11] the mean family size was 5.5±2.5. This could be because selection criterion used in the present study included mainly nuclear families and families with at least one child between the age group of 1-3 years.

A stated that urban slums have an underserved population and face a variety of problems like improper sanitation and hygiene, inadequate food and water supply and other basic amenities. [12-13]

A recent study conducted in an urban slum of south Delhi had reported that nearly one fourth of the households were earning less than Rs.5000 monthly. [12]

The data from present study was compared with the urban Delhi data from two recent national surveys i.e. National Family Health Survey-3 and District Level Household Survey-3. The mean family size of present study households (4.0) was much less than DLHS-3 (5.0) and NFHS-3 (4.6). All families in present study had access to toilet facility (shared / community toilet / own flush) which was comparable with DLHS-3 and NFHS-3. However, data from NFHS-3 revealed that about 49.4% had access to television which is much lower than present study data (100%). Most of the families in the present study had access to drinking water (including public tap, hand pump, submersible, and water tankers) which was comparable with DLHS-3 and higher than NFHS-3 data. Majority of the families were living in semi-pucca houses whereas data from NFHS-3 showed that only 12 % of families were living in semi-pucca houses. [14-15]

Data from NNMB survey (2002) [3] revealed that only a third of the preschool and school age children were consuming diets adequate in protein and energy, the proportion of which was higher in adolescents (about 50%) and in adults (about 70-80%).

A study had shown that 28 to 52% calorie deficiency in children and 2 to 24 % of deficiency in adolescents. [16]

CONCLUSION

India has among the world's largest urban population. The main reason for food insecurity in the urban poor is urbanization. The slum people are the worst affected by the food insecurity and inadequate nutrient intake. However, the data from dietary intake clearly indicated that diets of adults in the family, both fathers and mothers, were nutritionally much better than children. The diets of younger children (7 months -5 years) were inadequate in most of the

nutrients making them most vulnerable group followed by older children (children and adolescents). Improvement in the productivity and socio-economic condition responsible for strenghthening household food security. Nutrition and health education programme should be conducted within the families to generate the awareness about intrafamilial nutrient intake for improvement in nutritional status of vulnerable group.

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