

# Food and nutrition security: An assessment of pre-school children

MANOJ KUMAR AND PRAMILA PRASAD

Food and nutrition security is broadly characterized by three pillars: Availability, accessibility and absorption. Millions of children suffer from food and nutrition insecurity resulting in chronic undernutrition. The social composition along with the inability to buy foods also plays a role in food insecurity. Nutrition security implies physical, economic and social access to balanced diet, clean drinking water, safe environment and health care for every individual. Several programmes, missions and acts including a National Nutrition Policy (1993), National Nutrition Plan of Action (1995), National Nutrition Mission, have been formulated. Integrated Child Development Services (ICDS) is one of the most important schemes for the improvement of nutritional status of preschool children. But they have not achieved nutritional goals. The present study was aimed to assess to adequacy of diet and nutrition and its impact on the nutritional status of pre-school children of rural AWCs of Bhagalpur and Banka Districts of Bihar. For this purpose 200 pre-school children were randomly selected from AWCs to assess the diet intake and adequacy by 24 hours recall method, and calorie and micronutrient were calculated and compared to RDA. For the nutritional assessment, anthropometry tools and WHO growth standards (2006) were used. Out of 200 children only 16 per cent of the children were getting full diet, while 84 per cent were not getting full diet, of which 20 per cent children were getting ½ diet compared to RDA, protein intake was only 16 per cent compared to daily requirement. Minerals and vitamins intake including calcium, iron, iodine, zinc, and vitamin A were less than 25 per cent compared to daily requirement. Environment and sanitation was poor in common. No single child was getting pure drinking water. Due to low intake of food and nutritional diet resulting 52 per cent children undernourished in which 22 per cent severely undernourished, and 48 per cent were normal. It may be concluded that food and nutrition Insecurity leads to undernutrition in children. Food and nutrition security must be ensured through the ICDS and other National Nutritional Programmes for combating malnutrition in India.

**How to cite this article :** Kumar, Manoj and Prasad, Pramila (2012). Food and nutrition security: An assessment of pre-school children. *Food Sci. Res. J.*, 3(1): 1-4.

**Key Words :** Food, Nutrition security, Undernutrition, Diet, RDA

## INTRODUCTION

Food is as essential for living as air is for breathing. But food security means something more than getting two square meals. Food and nutrition security is broadly characterized by three pillars: Availability, accessibility and absorption (Nutritional Outcomes). Availability of food, which is function of production and where absolutely essential may be imported. Access to food which is a function of purchasing power and

employment. Absorption of food in the body which is a function of clean drinking water, safe environment and health care (preventive and curative) for every individual. Food and nutrition insecurity results in chronic undernutrition. Apart from human suffering malnutrition is one of the major causes of morbidity, mortality, loss of national productivity and medical expenses. Undernutrition contributes 60 per cent of deaths due to infectious disease like malaria, measles, diarrhoea, pneumonia and perinatal disorders in preschool children. After over 60 years of independence the resistant problems of undernutrition persist though some of the severe clinical forms have declined and magnitude. According to last survey of NFHS (2005-2006), the prevalence of low birth weight (LBW) is nearly 30 per cent, about 55 per cent of preschool children are underweight (Weight for age), and 50 per cent stunted (Weight for height). Micronutrient deficiencies mainly iron deficiency

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Anemia (70% women and children), iodine deficiency disorder and vitamin A deficiency contribute to the public health problems. Several programmes, mission and acts including a National Nutrition Policy (1993), National Nutrition plan of Action (1995), National Nutrition Mission (2001) have been formulated with scientific and technological underpinning. But they have not achieved goals. Currently there is an ongoing exercise in developing a National Food Security Bill which will confer on every Indian the legal right to food. Integrated Child Development Service (ICDS) is one of the important mega schemes for the improvement of nutritional status of children up to age of 0-6 years. The ICDS the main outlet for public spending on child nutrition has been in existence since 1975, it operates through centers in villages called Anganwadi (AWCs) where local workers provide nutrition and health services. Unfortunately improper functioning of ICDS programme has not succeeded in making a significant dent in reducing child malnutrition. The present study was aimed to assess to adequacy of food and nutrition and its impact on the nutritional status of preschool children.

### METHODOLOGY

The present study was conducted on preschool children. 200 preschool children were randomly selected from rural areas including AWCs of Bhagalpur and Banka Districts of Bihar. The duration of the study was 6 months (January to June-2011). The preschool children up to age 3-6 years belonged to BPL family or low income groups. For the assessment of food and nutrition adequacy a questionnaire was developed. Diet frequency, adequacy and type of diet by 24 hours recall method were used. The method was asked about the diet of their children to obtain the accurate data. Then the data obtained were calculated, analyzed and compared to RDA. For the assessment of the diet, its impact and nutritional status some tools and technique suggested by new WHO growth standards (2006), and anthropometry assessment were used, like weight, height, mid arm circumference, chest circumference, head circumference, then analyzed and classified according to WHO growth standards, *i.e.* underweight (weight for age) stunted (weight for height), wasted (height for age), and compared to last report of NFHS survey (2005-2006).

### OBSERVATIONS AND ASSESSMENT

The result of the present study have been discussed and presented under the following heads with figure and graph:

#### Dietary intake:

The daily calorie intake of preschool children shows (Fig. 1) only 32 per cent children getting full calorie diet, when it was calculated and compared with RDA, then found that 20 per cent children getting more than half of the recommended diet.

The recommended daily calorie intake of preschool children is 1690/kcal. Fig. 1 shows more than 50 per cent children not getting full diet due to unavailability for BPL (Below Poverty Line) family.

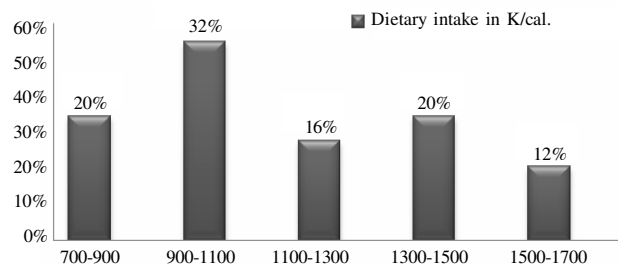


Fig. 1. Daily dietary intake (RDA-1690 k/cal)

#### Protein intake:

When the protein intake analyzed, it was found that 40 per cent children were not getting recommended daily protein in diet. 60 per cent were children getting sufficient amount of protein by daily dietary intake. Protein is the main nutrient for physical growth of children. The recommended daily protein intake in preschool children is 30g.

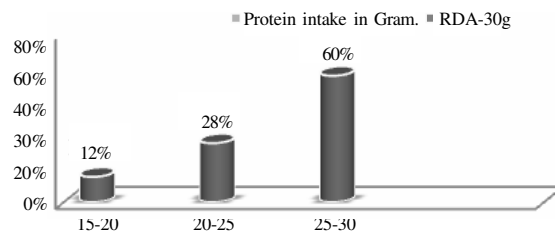


Fig. 2. Daily protein intake (g)

#### Fat intake:

When the data of fat intake were analysed it was found that only 04 per cent children were getting adequate fat compared to RDA. 60 per cent children were getting only 05-10g fat. The daily recommended fat intake is 25g/day. Very low

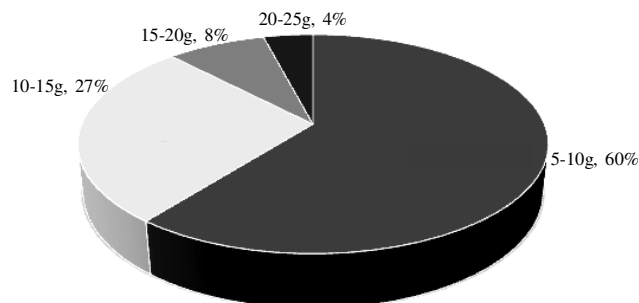


Fig. 3. Fat intake (RDA-25g/day)

intake of fat result in poor absorption of fat soluble vitamins (A, D, E, and K). This finally results in vitamin A, and D deficiency and related diseases, such as night blindness and rickets in children (Fig. 3).

**Minerals and vitamins intake:**

When the minerals and vitamin intake (Including iron, calcium, iodine vitamin A) data were calculated, analysed and compared to recommended daily minerals and vitamin intake it was found that approx only 22 per cent children were getting recommended minerals and vitamins, where as ¾ children were not getting sufficient amount of minerals and vitamins which shows that micronutrient malnutrition is also very high which is indicator of hidden hunger in India (Fig. 4).

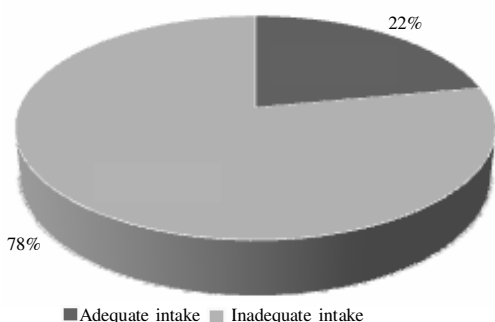


Fig. 4. Minerals and vitamin intake

**Water intake:**

When the water intake in preschool children was assessed it was found that not a single child was getting pure drinking water. Mostly hand pump and other water sources provide dirty water. In Anganwadi centers (AWCs), no proper facility of safe drinking water was perceived.

**Environmental and sanitation status:**

Environment and sanitation was poor in common. Neither home nor anganwadis maintained good environment and sanitation. AWCs were also running in dirty place, no facilities of toilet and safe drinking water and play ground were available. Personal hygiene of children was very poor, dirty face, dirty hair and cloth, enlarged nail were common.

**Nutritional status:**

When the nutritional status of preschool children was analysed according to WHO growth standards 2006, it was found that 52 per cent children were undernourished; in which 22 per cent children were severely undernourished; only 48 per cent children were normal. When it was bifurcated in underweight and stunted and wasted children, underweight status, severely 22 per cent, moderately 30 per cent, where as normal was 48 per cent. Study of stunted children shows that

64 per cent were stunted in which 44 per cent were severely stunted, only 36 per cent were normal. In wasting status 48 per cent children were wasted in which 12 per cent were severely wasted and 52 per cent were normal. The report of last NFHS survey indicates 44 per cent of Indian children under age of five were underweight and 48 per cent were stunted (Fig. 4A and 4B).

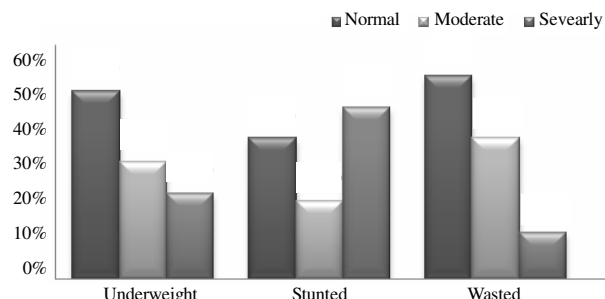


Fig. 4(A). Nutritional status

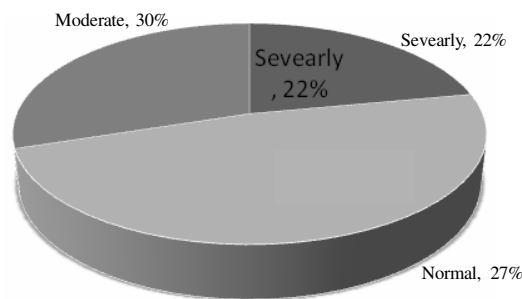


Fig. 4(B). Nutritional status

**Conclusions:**

The findings of the present study of food and nutritional security in preschool children show that more than ¾ children were not getting full diet compared to RDA. Protein and fat availability in diet was very low. Minerals and vitamins consumptions were also very rare compared to daily requirement. When nutritional status was analysed it was found that 52 per cent children were undernourished, in which 22 per cent were severely undernourished. Nutritional status is an important indicator for assessing the status of health of an individual as influenced by nutrient intake. It may be concluded that food and nutrition insecurity leads to undernutrition in children. For the food and nutrition security there has to be awareness and access at affordable cost to balance diet at household and individual level, knowledge of balance diet and proper intake practices, especially among women is must. The quality and quantity of supplementary nutrition services of ICDS has to be ensured for the food and nutrition security. Environment, safe drinking water and health

care education, particularly for women is important for optimum utilization of the available services and low cost meal planning at household level. Nutrition education should be an important part of the curriculum of school level. NHED services of ICDS should be properly maintained. For the food and nutritional security in children, all national nutritional programmes specially ICDS should be strictly monitored.

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**Received : 29.09.2011; Revised: 10.11.2011; Accepted : 07.01.2012**