

Food and nutrient intake pattern of 4-6 years children of Jorhat, Assam

Urmimala Baruah and Ruma Bhattacharyya

The present investigation was undertaken to study the food and nutrient intake pattern of 4-6 years children of Jorhat, Assam. **Methods:** 200 pre-school children in the age range of 4-6 years were selected randomly from four schools of Jorhat district of Assam. The food intake pattern of the respondents were assessed by using 24 hour recall method and food models by interviewing the mothers. **Results:** The results of the study revealed that 7.5 per cent of the target population belonged to low income group (<Rs.5000), followed by 78.5 per cent in middle income group with monthly income ranging between (Rs.5000-Rs.15000) and 14 per cent belonged to high income group (>Rs.15000). The mean daily intake of cereals, fats and oils, sugar and jaggery, pulses, roots and tubers and fruits by the 4-6 years children were (91.58-95.41%), (89-90.8%), (79.25-89.15%), (79.83-83.33%), (79.45-74.45%) and (61.75-62.20%) of the balanced diet recommended (BDR), respectively. The average daily consumption of food by the 4-6 years children in relation to monthly income revealed that the mean daily intake of pulses, milk and milk products, meat, fish, poultry and egg and fat increased with increased income of the family and were significantly related to income ($p < 0.05$). **Conclusion:** The findings of the present study showed inadequate consumption of the green leafy vegetables, other vegetables and dairy food group by the target children, which is a matter of concern because poor intake of these food groups leads to shortfalls in the consumption of key vitamins and minerals which in turn may affect the growth and development during this period. The study also revealed that the monthly income of the family of the respondents had an impact on the adequacy of the diet consumed by them

Key Words : Food, Nutrient, Pre-school, Intake, Children

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INTRODUCTION

In India, pre-school children constitute 13.1 per cent

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of the Indian population (Children in India, 2012). Nutrition of pre-school children is of paramount importance since the foundation of lifetime health; strength and intellectual vitality is laid during this period (Kaur *et al.*, 2007). Adequate dietary intake during this preschool age is of prime importance for their physical growth and development along with their social, mental and emotional well-being. At the same time, pre-school age is one of the most vulnerable periods in the life of children due to easy susceptibility to malnutrition and infection (George *et al.*, 2000). Adequate nutrition in terms of balanced diet, provided to the children from their early years of

their life will lead to proper growth and development and eventually help the pre-schoolers to overcome the maladies of malnutrition and develop potentials for future adulthood. Inadequate nutrition, on the other hand, leads to improper development of the body and mind, resulting into low level of efficiency and various deficiency disorders which leads to malnutrition (Ahmed, 2012). Malnutrition is globally the most important risk factor for illness and death, contributing to more than half of deaths in children worldwide (Vander, 2000 and Sharon *et al.*, 2008). According to the records of Children in India (2012), a statistical appraisal by the Union ministry of statistics and programme implementation, acute malnutrition, as evidenced by wasting, results in a child being too thin for his/her height. While 19.8 per cent of children, under five years of age, are wasted in the country, which indicates that one out of every five children in India is wasted, 43 per cent of children under five years of age are underweight for their age (Children in India, 2012). Raj *et al.* (2007) reported that the prevalence of obesity among the 5-16 years children of Ernakulam district of Kerala, South India, increased from 4.94 per cent of the total children in 2003 to 6.57 per cent in 2005. The under five mortality rate in Assam is 88 per 1000 live births. About 36.4 per cent children under five years of age are underweight [The situation of Children in India (UNICEF, 2011)]. Sikdar (2012) reported that the prevalence of overweight among 6 to 10 years missing children of Assam, Northeast India, was 6.66-7.81 per cent according to WHO criteria. A study conducted by Handa *et al.* (2008) among 7-9 years school going children of Allahabad, found that 25 per cent of the children were underweight which was due to the lower intake of food and nutrients than recommended. Kumar *et al.* (2008) assessed the prevalence of overweight and obesity among pre-school children in South India and found that 2.59 per cent of the children were overweight and 1.41 per cent were obese due to unhealthy eating habits. The cause of malnutrition is multifactorial but food plays the major role. Therefore, proper nutritional care in terms of balanced diet is of prime importance during the pre-school years for proper growth and development and to overcome the gravest threat of malnutrition during this period of the life cycle. Hence, an attempt has been made to study the food consumption pattern of 4-6 years children of

Jorhat, Assam.

METHODOLOGY

The proposed study was conducted in Jorhat town of Assam. The list of the schools in the Jorhat town was made and a total of 4 schools were purposively selected for the study. The permissions to carry out the study were obtained from the Head of the respective institutions. The study was conducted in the following institutions- Chari Nang Ward Primary School, Balya Bhawan, Dipankar Vidyapith and Hemlata Handique Memorial Institute. To select the ultimate unit for the study, a multistage random sampling technique was adopted. The list of the children along with the age were collected from the school records of the 4 respective schools. Then the children were categorized schoolwise into 4 years, 5 years and 6 years. Those children not falling in this age were excluded from the sample population. Thus, the sample population for the study consisted of 40 children under 4 years, 120 children under 5 years and 40 children under 6 years, which was expected to represent the total sample population of 200.

Information regarding food intake pattern of the respondents was collected by using 24 hour recall method and food models by interviewing the mothers. The dietary assessment for the present study was conducted on 15 per cent (15% of 200=30) of the total population. The 24 hour recall method was administered for three consecutive days. At the beginning the purpose of the study was explained clearly to the mothers or the respondents. Each meal was discussed chronologically from first to last. All raw and cooked foods were recorded meal by meal. The subject was asked to indicate the quantity of each raw ingredients which was used for particular dish as well as the final amount of cooked dish, using water for their own household measures. These were then converted to standard measures by transferring water to the standard measuring glass. Amount of each dish consumed by the target individual was recorded on a standard proforma developed by NIN, Hyderabad. From this, the amount of raw foods consumed by each individual was determined by using the following formula:

$$\frac{\text{Weight of raw ingredient (g)}}{\text{Total amount of the cooked item (g)}} \times \frac{\text{Amount consumed}}{\text{Head (g)}} = \text{Raw weight of consumed food item (Thimmayamma, 1987)}$$

Then average intake of each raw food was

calculated and, thereafter, the nutrient intake of the subject was determined from the 'Nutritive value of Indian foods' (ICMR, 2007).

OBSERVATIONS AND ASSESSMENT

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

Socio-economic profile:

The data pertaining to the socio-economic profile of the 4-6 years children are presented in the Table 1.

The target group consisted of 50 per cent boys and 50 per cent girls of age 4-6 years. Ninety seven per cent of the 4-6 years children were Hindu and remaining 3 per cent were muslims. Majority of the target children belonged to nuclear family type (86.5%) whereas 13.5

per cent of the children were from joint families. It is pertinent to assess the educational level of the mothers of the target children as the role played by the mothers in selection, preparation and serving of food to their children as well as nutritional care of their offspring plays an important role in childhood nutrition and development. It was evident from the table that majority of the mothers (42.5%) attended high school followed by 28 per cent who attended middle school and 9 per cent attended primary school. A substantial portion of mothers 19 per cent were graduate and 1.5 per cent were post graduate. Occupational status of the parents revealed that 36.5 per cent of the families occupation was government service followed by 26.5 per cent in private jobs, 23 per cent in business and remaining 14 per cent of the families had varied occupation such as agriculture and daily wage earning. Parental occupation and thereby the family income is an important determinant of the families' food purchasing pattern. Present study revealed that 7.5 per cent of the target population belonged to low income group (<Rs.5000), followed by 78.5 per cent in middle income group with monthly income ranging between (Rs.5000-Rs.15000) and 14 per cent belonged to high income group (>Rs.15000)

Particulars	Total no.	Percentage (%)
Sex		
Male	100	50
Female	100	50
Religion		
Hindu	194	97
Muslim	6	3
Christian	-	-
Type of family		
Nuclear	173	86.5
Joint	27	13.5
Mother's education		
Illiterate	-	-
Primary	18	9
Middle	56	28
High school	85	42.5
Graduate	38	19
Post graduate	3	1.5
Parental occupation		
Govt. service	73	36.5
Private	46	26.5
Business	53	23
Others	28	14
Family income		
Low (< Rs.5000)	15	7.5
Middle (Rs.5000-Rs.15000)	157	78.5
High (>Rs.15000)	28	14

Food intake of 4-6 years boys and girls:

The mean daily food intake of 4-6 years boys and girls are presented in Table 2.

From the Table 2, it has been observed that mean daily cereal intake of boys was 114.5g and girls was 109.9g. When the cereal consumption was compared with BDR, it was observed that the boys fulfilled 95.41 per cent and girls fulfilled 91.5 per cent of food adequacy. This may be due to the reason that the diet of the target population was pre-dominantly cereal-based which mainly included rice and rice products like rice flakes, puffed rice and wheat products like atta, maida, bread and extruded products like noodles. Similar studies had been reported by (Kaur *et al.*, 2007) where the per cent adequacy of cereal intake among 4-6 years pre-school boys and girls of Sonapat district of Haryana was 91.7 per cent and 92.1 per cent, respectively of the BDR, due to the reason that the diet was cereal-based. (Kumari and Jain, 2005) found that the per cent adequacy of cereal intake by 6-12 year boys and girls of rural Bihar was 76.4 per cent and 98.1 per cent, respectively of the BDR.

While evaluating the daily intake of pulses, it was

found that the mean intake was 25g and 23.95g, respectively and fulfilled an adequacy of 83.33 and 79.83 per cent of the BDR by boys and girls, respectively. This may be due to the reason that pulse was included in the daily diet of the target children in the form of dal (pulse curry), chole and peas curry. The mothers had reported consumption of texturized vegetable protein as soya chunks also in the diet of the studied population. (Singh and Grover, 2003) reported that the adequacy of pulse intake among pre-school children in the age group of 4-6 years children of Ludhiana district, Punjab, was 72 per cent and 78 per cent, respectively of the BDR.

The average daily consumption of milk and milk products by boys and girls was 237.55g and 220.25g, respectively which reflects that the intake was below the BDR. The per cent adequacy of milk and milk products intake among boys and girls was 47.51 per cent and 44 per cent of the BDR, respectively. Inadequate intake of milk and milk products among the boys and girls may be due to the reason that they did not like to eat milk and milk products. Another reason may be due to lack of good quality milk. Moreover, ignorance on the part of the mothers regarding the importance of milk and milk products in the daily diet of the children is another contributory factor. Similar results were reported by (Kaur *et al.*, 2007) that the per cent adequacy of milk and milk products intake among 4-6 years pre-school boys and girls of Sonapat district of Haryana was 49.2 per cent and 49.4 per cent, respectively of the BDR. (Khosla *et al.*, 2000) found that the per cent adequacy of milk and milk products intake among 1-3 years and 3-4 years

children of Ludhiana city was 24 per cent and 20 per cent of the BDR, respectively, which was perhaps due to poor purchasing power and the ignorance of the nutritional value of foods was widespread combined with different food fads and fallacies.

While evaluating the daily intake of meat, fish and poultry, it was found that the mean intake by both boys and girls was 40 g which was below the BDR. However, the boys and girls had fulfilled an adequacy of 80 per cent of the RDA, respectively. This may be due to the reason that the children had liking for non-vegetarian foods especially egg. Meat and fish were mostly consumed on weekends and holidays.

The mean daily intake of fruits was 62.60g and 61.75g, respectively and the adequacy of fruit intake was 62.60 and 61.75 per cent of the BDR by the boys and girls, respectively. This was due to lack of availability of fruits since it was not home-grown produce and price of the commodity as mostly the fruits were made available from the market. Another reason may be that some of the children did not like to eat fruits and had rigid preferences for certain type of fruits. The findings of the present study is in conformity with the results reported by (Verma *et al.*, 2010) that the per cent adequacy of fruit intake among 3-5 years pre-school boys and girls of Yamunanagar district of Haryana, was 65.27 per cent and 62.94 per cent, respectively of the BDR because of high price of fruits.

The average daily consumption of green leafy vegetables was 11.90g and 11.15g by boys and girls, respectively which was alarmingly below the BDR. The

Table 2 : Mean daily food intake of 4-6 years boys and girls

(n=200)

Food groups	Food stuffs (g)	BDR (g/day)	Mean food intake per day (g)			
			Boys (n=100)		Girls (n=100)	
			Mean ± S.D.	% adequacy of BDR	Mean ± S.D.	% adequacy of BDR
Group I	Cereals	120	114.5±5.45	95.41	109.65±6.09	91.58
Group II	Pulses	30	25±5.92	83.33	23.95±5.89	79.83
Group III	Milk and milk products	500	237.55±205.83	47.51	220.25±219.33	44
	Meat, fish, poultry	50	40±9.28	80	40±9.21	80
Group IV	Fruits	100	62.6±19.02	62.60	61.75±13.76	61.75
	Green leafy vegetables	50	11.9±16.36	23.80	11.15±12.92	22.30
	Other vegetables	50	20.75±10.87	43.50	20.1±13.72	42.60
	Roots and tubers	100	79.45±10.23	79.45	74.45±12.80	74.45
Group V	Fats and oils	25	22.7±7.14	90.80	22.25±5.20	89
	Sugar and jaggery	20	15.85±2.35	79.25	17.83±2.97	89.15

BDR = Balanced diet recommended (Dietary Guidelines for Indians, NIN, ICMR, 2010)

n = Number of samples

per cent adequacy of green leafy vegetables among boys and girls was 23.80 and 22.30 per cent of the BDR, respectively. Less consumption of green leafy vegetables might be due to the reason that children did not like the taste of the green leafy vegetables. Moreover, the mothers were not aware about the importance of green leafy vegetables in the daily diet. The results of the present study is in line with the results reported by (Kaur *et al.*, 2007) that the per cent adequacy of green leafy vegetable intake among 4-6 years pre-school boys and girls of Sonapat district of Haryana was 22.8 per cent and 24.8 per cent, respectively of the BDR, which was due to the reason that children did not like the taste of the green leafy vegetables.

While investigating the daily intake of other vegetables, it was observed that the mean intake was 20.75g and 20.10g per day, respectively by boys and girls, where the adequacy of BDR was only 43.50 per cent among boys and 42.60 per cent among girls. The per adequacy of other vegetables intake among boys and girls was less than 50 per cent of the BDR. Inadequate intake of other vegetables among the target children may be due to the reason that they do not prefer to eat other vegetables unless of their own choice. Similar results were reported by (Kaur *et al.*, 2007) where the intake of other vegetables among the 2-4 year boys and girls of Sonapat district of Haryana was 43.9 and 35.8 per cent of the BDR, respectively.

The mean daily intake of roots and tubers by boys and girls was 79.45 g and 74.45g and it was 79.45 and 74.45 per cent adequate of the BDR, respectively. This may be due to the reason that potato was mostly liked by almost all the target children. As a result, potato was consumed almost at every meals of the day. Similar results were reported by (Khosla *et al.*, 2000) that the per cent adequacy of root and tuber intake among 1-3 years and 3-4 years children of Ludhiana city was 80 per cent and 79 per cent of the BDR, respectively. (Kumari and Jain, 2005) found that the per cent adequacy of roots and tuber intake by both 6-12 year boys and girls of rural Bihar was 85 per cent of the BDR.

The average daily consumption of fats and oils by boys and girls was 22.70g and 22.25g, respectively with per cent adequacy of 90.8 per cent and 89 per cent of the BDR, respectively. This could be due to the consumption of deep-fat fried foods, butter, ghee and the consumption of snacks. Similarly, (Kaur *et al.*, 2007)

reported that the per cent adequacy of fat and oil intake among 2-4 years pre-school boys and girls of Sonapat district of Haryana was 89.6 per cent and 85.9 per cent, respectively of the RDA.

While investigating the daily intake of sugar and jaggery, it was observed that the mean intake was 15.85g and 17.83g per day, respectively by boys and girls, where the adequacy of BDR was only 79.25 per cent among boys and 89.15 per cent among girls. The most common ways of including sugar in the diet of the target children include milk, tea or health drinks with sugar, biscuits, sweets, jam and jelly, candies, chocolates. Similarly, (Singh and Grover, 2003) reported that the adequacy of sugar and jaggery intake among 4-6 years pre-school children of Ludhiana district, Punjab, was 82 per cent of the BDR.

It has been observed that the per cent adequacy of cereal, pulse, green leafy vegetables, roots and tubers, other vegetables, fruits, milk and milk products and fats and oils was more among the boys than the girls. While assessing the food consumption pattern of 3-5 years pre-school children of Yamunanagar district of Haryana, (Verma *et al.*, 2010) found that the per cent adequacy of cereal, pulses, green leafy vegetables, roots and tubers, other vegetables, fruits, milk and milk products and fats and oils was more among the boys than the girls.

The per cent adequacy of sugar and jaggery intake was more among the girls as compared to the boys. The findings of the present study are in conformity with the results reported by (Kaur *et al.*, 2007) where the per cent adequacy of sugar and jaggery intake was more among the 2-4 year girls than the boys of the same age.

Mean food intake of 4-6 years boys and girls according to family income:

From the Table 3, it has been observed that the daily intake of cereal was 87.50, 89.91 and 95 per cent of the BDR in low, medium and high income group, respectively. The intake of cereal increased from low to high income group. However, the intake was not significantly related to income. This may be due to the reason that the diet was mainly cereal- based. As a result cereals were consumed at almost every meal irrespective of any income group. Analysis of National Sample Survey Organization (2004-2005) data on cereal consumption by different income groups revealed that in urban areas there is not much difference in consumption of cereals in terms of quantity across the income levels.

The average daily consumption of pulses increased with increasing income and it was significantly related to income. Pulse intake was 66.66, 81.03 and 91.90 per cent of the BDR in case of low, medium and high income group, respectively. Low intake of pulses among the low income group might be due to poor purchasing power. According to Consumer Expenditure Surveys (2004-2005), the consumption of pulse intake was low among the low income group because of high prices of pulses. While studying the socio-economic factors affecting food consumption pattern in rural area of district Nowshera, Pakistan, (Begum *et al.*, 2010) reported that the consumption of pulses increased significantly with increase in income.

The intake of milk and milk products was 33.13, 46.07 and 59.64 per cent deficient of BDR in low, medium and high income group, respectively. The intake of milk and milk products was significantly related to income. Low intake of milk and milk products in the low income group families might be due to poor purchasing power. Vijayaraghavan and Rao (1998) reported that the consumption of milk and milk products was high in the household with occupation such as business and service and low in schedule caste communities. National Sample Survey Organisation (2004-2005) reported that the consumption of milk and animal products increases with increase in income. Bulletin of the Nutrition Foundation of India (2013) reported that affordability is one of the constraint that may come in the way of adequate milk/curd intake in poorer segments of population in India. Zhang *et al.* (2002) reported that as income increases

the consumption of milk and milk products and/or other protein rich foods increases. Melesse *et al.* (2009) in a study conducted among high, medium and low income group households in Central Ethiopia, reported that as income increases the consumption of milk and milk products increases.

The average daily consumption of meat, fish and poultry was 67.20, 80.82 and 94.92 per cent of the BDR by low, middle and high income group, respectively. The intake of meat, fish and poultry increased with increased income of the families and was significantly related to income. Being income elastic commodity, consumption of meat, fish and poultry is determined by money to be spent for them. Kulsum *et al.* (2008) in a study conducted among 4-14 years children of Mysore city in South India reported that plant sources contribute a larger proportion of proteins in the diet of non-vegeterians of low socio-economic group as the poor purchasing power limits their intake of animal foods.

The average daily consumption of fruit was 50.66 per cent of the BDR by low income group, 62.66 per cent by middle income group and 67.57 per cent by high income group. The intake of fruits increased from low to high income group and was significantly related to income. Low intake of fruits in the low income group might be due to poor purchasing power, lack of locally available seasonal fruits and ignorance on the part of the mothers about the importance of fruits in the daily diet. Begum *et al.* (2010) in a study conducted in rural area of district Nowshera, Pakistan reported that with increase in income, the consumption of fruits had a increasing trend.

Table 3: Mean food intake of 4-6 years boys and girls according to family income

Food groups	Food stuffs (g)	BDR (g/day)	Monthly income			'F' value
			Low (<Rs.5000)	Medium (Rs.5000-15000)	High (>Rs.15000)	
Group I	Cereals	120	105±5.66 (87.50)	107.90±10.69 (89.91)	114±6.28 (95)	2.34 ^{NS}
Group II	Pulses	30	20±2.87 (66.66)	24.31±4.48 (81.03)	27.57±7.88 (91.90)	6.98*
Group III	Milk and milk products	500	165.67±218.87 (33.13)	230.35±226.51 (46.07)	298.21±263.70 (59.64)	5.12*
	Meat, fish and poultry	50	33.6±7.98 (67.20)	40.41±7.53 (80.82)	47.46±6.56 (94.92)	14.94*
Group IV	Fruits	100	50.67±16.65 (50.67)	62.66±14.05 (62.66)	67.57±15.17 (67.57)	3.32*
	Green leafy vegetables	50	10.33±13.29 (20.66)	9.72±12.45 (19.44)	9.57±13.45 (19.14)	0.42 ^{NS}
	Other vegetables	50	15.39±14.08 (30.78)	18±11.40 (36)	20.87±11.14 (41.74)	1.10 ^{NS}
	Roots and tubers	100	70.73±5.89 (70.73)	75.57±15.63 (75.57)	79.46±17.60 (79.46)	2.86 ^{NS}
Group V	Fats and oils	25	17.70±2.43 (70.8)	22.32±6.18 (89.28)	23.75±6.36 (91)	3.31*
	Sugar and jaggary	20	15.33±3.99 (76.65)	17±4.61 (85)	17.75±3.10 (88.75)	2.74 ^{NS}

BDR = Balanced Diet Recommended (Dietary Guidelines for Indians, NIN, ICMR, 2010)

* indicate significance of value at P=0.05

NS = Non- significant

Values are mean + S.D

Number in parenthesis denotes per cent of BDR

Number of samples (n) = 200

According to the state of food insecurity in the World, 2012 the consumption of fruits increases significantly with increase in income.

The intake of green leafy vegetables was poor in all three income groups and met only 20.66, 19.44 and 19.14 per cent of the BDR in the low, medium and high income group, respectively. The intake of green leafy vegetables was not significant in relation to income. Consumer Expenditure Surveys (2004-2005) and data from National Nutrition Monitoring Bureau (2002) revealed that there has not been any significant increase in the intake of vegetables especially green leafy vegetables in any of the income group.

The mean intake of other vegetables was poor in all three income group and met only 30.78, 36.30 and 41.74 per cent of the BDR by low, medium and high income group, respectively. The intake of other vegetables was not significant in relation to income. Bhagawati (1993) while studying the nutritional status of primary school children of Jorhat, Assam, found that the intake of vegetables was low irrespective of any income group. Consumer Expenditure Surveys (2004-2005) reported that one of the major factors responsible for the low consumption of vegetables is the non-availability of vegetables through out the year at an affordable cost both in urban and rural areas.

The intake of roots and tubers was 70.73, 75.75 and 79.46 per cent of the BDR in low, medium and high income group, respectively. Although the intake of roots and tubers increased from low to high income group, however, the intake was not significantly related to income.

The fat intake of low, medium and high income group was 70.8, 89.28 and 91 per cent of the BDR, respectively. The intake of fat was significant in relation to income. The consumption of fat increased from low to high income group families. Low intake of fat in the low income group families might be because of their poor purchasing power. Khosla *et al.* (2000) in a study conducted among 1-4 years children of Ludhiana city reported that the intake of fat was grossly inadequate in the diet if the children due to poor purchasing power of the families. According to Consumer Expenditure Surveys (2004-2005), there was an increase in fat and oil intake with increase in income of the family.

The average daily consumption of sugar and jaggery was 76.65, 85 and 88.75 per cent of the BDR by low, middle and high income group families. The intake of

sugar and jaggery increased with increasing income of the families. However, the intake was not significant in relation to income. This might be due to the reason that sugar and sugar products are mostly liked by the children. As a result the consumption of sugar and jaggery follow a similar trend irrespective of any income group.

It has been observed that the consumption of all the food groups except green leafy vegetables increased with increased income of the families. The consumption of green leafy vegetables was low irrespective of any income group. The consumption of income elastic food such as milk and milk products, meat, fish and poultry and fats and oils increased significantly with increase income of the families. Thus, it can be concluded that as income improves, the choice of food is influenced resulting in a better intake of food and nutrients. National Nutrition Monitoring Bureau (1999) report revealed that households with better socio-economic status, dwelling and better demographic conditions were having better food intakes and nutritional status. Shivan *et al.* (2003) reported that availability and accessibility to the nutritive food items are very much dependent on economic condition and purchasing power of the family.

Summary and Conclusion:

The present study was conducted among 4-6 years children of Jorhat town, Assam, to assess their food consumption pattern. The food consumption pattern of the respondents when analyzed in terms of balanced diet, revealed that the mean daily intake of cereals, fats and oils, sugar and jaggery, pulses, roots and tubers and fruits by the 4-6 years children were (91.58-95.41%), (89-90.8%), (79.25-89.15 %), (79.83-83.33%), (79.45-74.45%) and (61.75-62.20 %) of the balanced diet recommended (BDR), respectively. As evidenced by the results of the present study, inadequate consumption of the green leafy vegetables, other vegetables and dairy food group is becoming a concern because poor intake leads to shortfalls in the consumption of key vitamins and minerals and may affect growth and development.

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