Asian Journal of Home Science, (December, 2010) Vol. 5 No. 2 : 310-313

Research Paper :

Calorie intake by 3 to 5 years old children in Varanasi district, India

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Received : *October, 2010;* **Accepted :** *November, 2010*

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ABSTRACT

The present study was carried out in order to find out effect of age, caste and income on the calorie intake in 3 to 5 years old children of Varanasi district. Three hundred children aged 3 to 5 years were purposely selected from the surrounding villages of a MCH sub-centre. The energy intake was assessed by "24 hours food recall method". The means energy consumptions were assessed 975.50 and 1208.68 Kcals, respectively for the children aged 3 and 4to 5 years. In comparison to recommended norms (ICMR, 2003), there was deficiency of 21.33 to 28.52 per cent energy in these children. The calorie intake was found significantly related with caste structure and income of the family. Due to non-availability of food products, the children belonging to scheduled castes received significantly lesser amount of energy than the general caste children. It was further established that the calorie intake in pre-school children was positively related with economic soundness.

Singh, Anita (2010). Calorie intake by 3 to 5 years old children in Varanasi district, *Asian J. Home Sci.,* **5** (2) : 310-313.

Key words : Energy, Calorie, Consumption, Food products

It has been reported by various authors that slow rate of physical and mental development in children is due to energy and other nutrients. Nutritional constraint is mostly responsible for prevalence of malnutrition in pre-school children of economically weaker section, resulting high fatality rate. Generally these pre-school children consume 30 per cent lesser energy than the recommended norms (Gopalan, 1989; Gopalan and Narasinga Rao, 1971 and Narasinga Rao *et al.*, 1983).

The energy is needed to a person for essential basal metabolism and accomplishment of physical activities. Physical activities include both types of non-professional activities, like sitting, standing, dressing, undressing and walking etc. and professional activities related to economic requirements. Some additional energy is also required for compensation of faecal loss (Park, 2005). Indian Council of Medical Research (2003) has recommended 1240 Kcal and 1690 Kcals energy for the children aged 3 and 4to 5 years, respectively. Present political, socio-economic disparity and unfavourable balance between food production and population are absolutely responsible for unequitable food intake resulting calorie deficiency in various sectors of the community in general and pre-school children in particular (Khader, 1999; Bhardwaj *et al.*, 1987; Kakkar *et al.*, 1987).

The present study was formulated in order to find out effect of age, caste and per capita income with energy intake of the pre-school children.

METHODOLOGY

Three hundred pre-school children aged 3 to 5 years were purposely selected from surrounding villages of Niyardeeh-Rajala MCH Sub-centre in Varanasi district. Only one child from a family was included in the study. In case of more than one child in a family senior child was considered as he/she was deprived in rearing and feeding practices in comparison to younger child. The information was collected with the help of "Questionnaire cum Interview Technique". Nutrients consumed by these children were assessed on the basis of "24 hours food recall method" (Park, 2005). The results were inferred with the help of suitable statistical tools. (Gupta and Srivastava, 1998).

Background information:

Majority of the children (88.33 %) belonged to Hindu religion, followed by Muslim (11.67 %). Among the Hindus, the contribution of scheduled caste's children was 25.33 per cent. More than three-fifth children (63.00 %) belonged to nuclear families and the mean family size was assessed 6.25 ± 2.48 members. The female's literacy was found to the tune of 69.33 per cent, still only 18.3 per cent families have maximum education up to graduate standard. More than half of the mothers (56.67%) were exclusively housewives. On the other hand, remaining mothers were engaged in some sorts of economic activities and the percapita income was assessed Rs.

433.83 ± 368.51 per month. Vegetarian and regular non-vegetarian children contributed 48.67 and 8.33 per cent, respectively. Due to economic constraints, 43.00 per cent children enjoyed non-vegetarian diet very rarely.

FINDINGS AND DISCUSSION

Nutrition of pre-school children is essential as foundation of health, strength and mental vitality is laid down during this period. Adequacy of energy and protein intake depends on feeding practices and availability of food products. Deficiency in protein and energy is responsible for malnutrition in children. It is evident that nearly two-fifth children (38.20 %) belonging to 3 years age used to consume 1051 to 1200 Kcals energy in a day, followed by 901 to 1050 Kcals (28.09 %) and 751 to 900 Kcals (15.73 %). In addition, 14.61 and 3.37 per cent of these children consumed 601 to 750 and 1201 to 1350 Kcals per day. On the other hand, more than one-fourth children (29.39 %) belonging to age group 4 to 5 years consumed 1201 to 1350 Kcals daily, followed by 1051 to 1200 Kcals (24.65 %) and 1351 to 1500 Kcals (22.28 %). Similarly, there were 21.80; 1.42 and 0.47 per cent children aged 4 to 5 years who consumed 901 to 1050 Kcals, 1501 to 1650 Kcals and 751 to 900 Kcals, respectively.

The mean energy consumptions were assessed 975.50 ± 169.33 Kcals and 1205.68 ± 167.58 Kcals, respectively for the children aged 3 years and 4 to 5 years (Fig. 1).

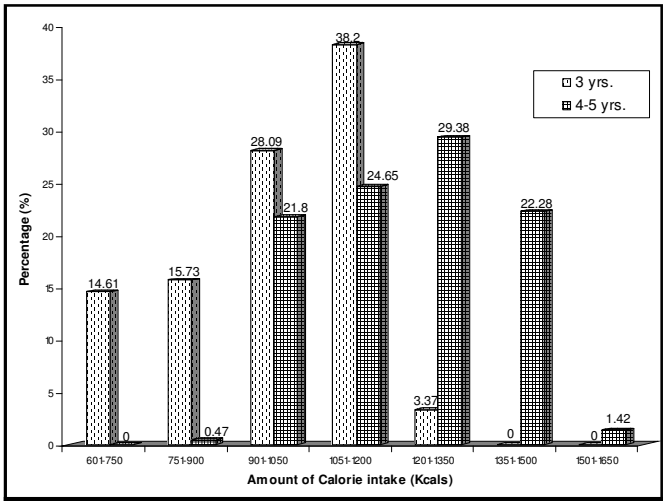

Fig. 1: Amount of calorie intake by the preschool children according to their present age

The recommended daily allowances for these children is documented 1240 Kcals and 1690 Kcals (ICMR, 2003). According to these norms, 3 and 4 to 5 years children were receiving 78.67 and 71.48 per cent energy demand. Though children aged 4 to 5 years were consuming significantly (t= 10.934, P<0.001) more energy than their counterparts children in 3 years age group, still their energy consumption was found deficient to the level of 28.52 per cent. In this way, there was deficiency of 21.33 to 28.52 per cent energy in these children. It is evident that the deficiency of energy is increasing with advancement of age of the children. The result shows that younger children age preferred in rearing and feeding practices in comparison to their senior siblings. This result has full agreement with the hypothesis that the young children are preferred in comparison to elderly children. This amount of deficiency is equivalent to the figures quoted by Gopalan and Narsinga Rao (1971). In a previous study conducted at Varanasi, Kashyap (1992) has reported intake of 1043; 1128 and 1274 Kcals by the children aged 3, 4 and 5 years, respectively. These amounts are equivalent to 84.11, 66.75 and 75.38 per cent of the recommended daily allowance (ICMR, 2003). Consequently these children lacked 15.89 per cent to 33.25 per cent energy in comparison to RDA.

The same data are displayed according to caste structure of the children (Fig. 2).

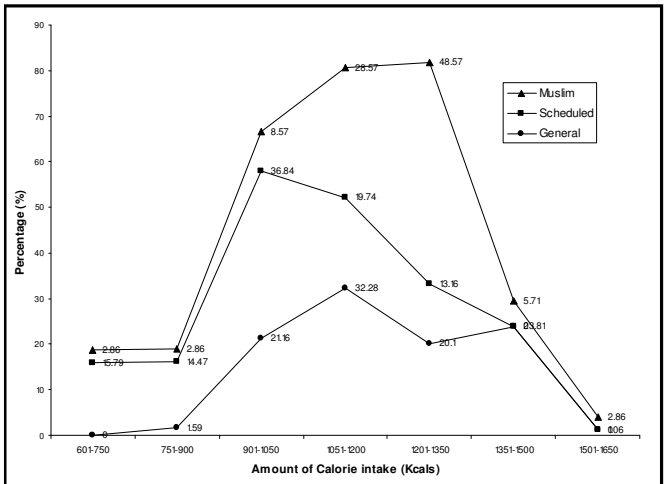

Fig. 2: Amount of calorie intake by the pre-school children according to their caste structure

Nearly half of the Muslim children (48.57 %) against 20.10 per cent general and 13.16 per cent Scheduled castes consumed 1201 to 1350 Kcals, which nearly one-third children belonging to general castes (32.28 %) against 28.57 per cent Muslim and 19.74 per cent scheduled castes were consuming 1051 to 122 Kcals. Similarly more than one-third children belonging to scheduled castes (36.84 %) against 21.16 per cent general and 8.57 per cent Muslim consumed 901 to 1050 Kcals. In addition, 23.81 per cent general against 5.71 per cent

Muslim; and 2.86 per cent Muslim against 1.06 per cent general children consumed 1351 to 1500 and 1501 to 1650 Kcals, respectively. The mean values of energy intakes were ascertained 975.50 + 171.94 Kcals for General castes children. The statistical analyses Signified that the children belonging to scheduled castes consumed significantly less energy in comparison to Muslim (t= 6.165, Þ<0.001) and general castes' children (t= 8.927, Þ<0.001), while Muslim and general castes children received equal amounts (t= 0.041, Þ0.05, NS) of energy. Low level of energy in scheduled castes is due to non-availability of adequate amounts of food products. On its contrary, Muslim children are mostly non-vegetarian and they receive rich diet. On account of high economic status, the children belonging to general castes use adequate amount of food products, and therefore receive high calorie. Jood *et al.* (2000) have also reported positive association between calorie intake and availability of food products.

The income has positive relation with amount of calorie intake. As the income increases, calorie intake also increases (Fig. 3).

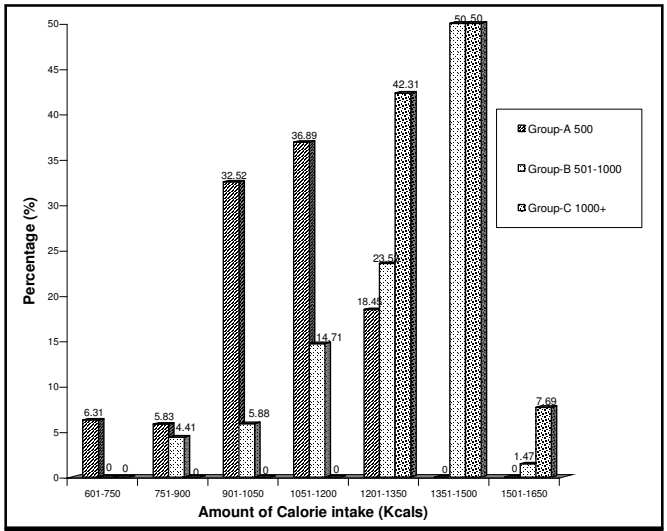

Fig. 3 : Amount of calorie intake by the pre-school children according to percapita monthly income

In the present study more than one-third children (36.89 %) belonging to income category A (per capita monthly income upto Rs. 500) consumed 1051 to 1200 Kcals, followed by 901 to 1050 Kcals (32.52 %) and 1201 to 1350 Kcals (18.45 %). On the otherhand, half (50.00 %) of the children belonging to Group-B (per capita monthly income from 501 to 1000 rupees) were consuming 1351-1500 Kcals; followed by 1201 to 1350 Kcals (23.53 %) and 1051 to 1200 Kcals (14.71 %) and 901 to 1050 Kcals (5.88 %). Similarly, half (50.00 %) of the children belonging to Group-C (per capita monthly income belong 1000 rupees) continued 1351 to 1500 Kcals, followed by 1201 to 1350 Kcals (42.31 %) and 1501 to 1650 Kcals (7.69 %). The mean calorie intakes of these children were accounted in increasing order with the advancement of income, *i.e.*, 1058.51 + 158.51 Kcals for Group-A, 1295.35 + 173.67 Kcals for Group-B and 1373.58 + 94.32 Kcals for Group-C. The statistical analysis witnessed that mean calorie intake in Group-B was significantly higher than Group-A (t=9.959, Þ<0.001), but it was significantly lower than Group-C (t= 2.791, Þ<0.01). This result shows that calorie intake in pre-school children positively related with economic soundness. Narsinga Rao *et al.* (1983) have also reported high calorie intake by well to do pre-school also reported high calorie intake by well to do pre-school children. The finding of the study shows full agreement with the results reported by Redy and Peramma (1977) Khader (1999) and Mini and Indira (2000). Reddy and Peramma (1977) mentioned positive correlation between income and expenditure pattern of food items, while Khader (1999). Mini and Indira (2000) have documented rise in calorie intake in children due to supplementary income of the mothers.

REFERENCES

Gopalan, C. and Narasinga Rao, B.S. (1971). Nutritional constraints on growth and development in Indian dietaries. *Indian J. Med. Res.*, **59**: 111.

Gopalan, C. (1989). Adaption to chronic energy deficiency wave sight (http://us f 524mail.yahoo.com).

Narasinga Rao, B.S., Susheela, T.P., Naidu, N. and Menon, K. (1983). Energy intake of well to do pre-school children in India. *Indian J. Med. Res.*, **77**(1): 62-72.

Park, K. (2005). *Text book of preventive and social medicine*, 18th Ed. M/s Banarasi Das Bhanot (Pub.), Jabalpur (Madhya Pradesh).

Indian Council of Medical Research (2003, Revised). Nutrient requirements and recommended dietary allowances for Indians: A report of the expert group of the ICMR.

Bhardwaj, A.K., Gupta, B.P., Swami, H.M., Ahluwalia, S.K. and Vaidya, N.K. (1987). Nutritional intervention among rural pre-school children: An Evaluatory Study. *Indian J. Pediatr.*, **49**: 695-699.

Kakker, S., Hooda, A., Jain, R., Kapoor, A.C. and Vidyasagar (1987). Nutritional status of pre-school children in rural Hisar. *Indian J. Nutr. & Dietet.*, **24**: 204-209.

Khader, V. (1999). Impact of women's supplementary income of family's nutritional status. *Indian J. Soc. Work*, **60**(3): 368-378.

Jood, S., Bishnoi, S. and Sehgal, S. (2000). Nutritional status of rural pre-school children of Haryana State. *Indian J. Pediatr.*, **67**(3): 189-196.

Gupta, J.N.P. and Srivastava, R.K. (1998). Profile of some statistical applications in the field of medical sciences: an analytical aspect. AIMLTA Chronicle, 21 (Special Issue), April, 1998.

Kashyap, P. (1992). *Varanasi Janpad Ke Kuchh grameen anchalan men purva kakshiya bachchon Ke ahar men calorie ki matra sambandhi adhyayan tathaes sambandh men kuchha sujhav.* Ph.D. Thesis (Home Science), Banaras Hindu University, Varanasi (U.P.).

Reddy, P.R. and Peramma, D. (1977). Food consumption pattern surveys among selected communities of Chittur district In: P.R. Reddy (ed.). Food Monograph Series, S.V. University, Tirupathp. 41-48.

Mini, P.J. and Indira, V. (2000). Maternal employment and Nutritional status of pre-school children. *IndianJ. Nutr. & Dietet.*, **37**: 110-115.

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