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Research Paper

Proximate principle adequacy of diet : A comparative study of children under ICDS in Patna block of Bihar

■ NIDHI SINHA, MAYA KUMARI, B.K. MEHTA **AND** KAUSHIK CHATTERJEE

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See end of the paper for authors' affiliations

MAYA KUMARI
Krishi Vigyan Kendra,
SAHIBGANJ (JHARKHAND)
INDIA

■ **ABSTRACT :** The study focused on dietary intake pattern in terms of protein intake and calorie intake as well as their relationship with socio economic characteristics. The subjects of the study were 73 ICDS child beneficiaries from urban slums and 36 from rural areas. Findings of the study indicated that children of rural areas were slightly better in terms of protein intake whereas the two groups differed significantly in terms of calorie intake. All the variables selected in the study showed significant correlation either positively or negatively except sex of the child.

■ **KEY WORDS :** ICDS, Adequacy of diet, Malnutrition, Beneficiaries

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Since independence the Government of India and other agencies are trying their best to tackle the problem of malnutrition among children but till now it has not been possible to combat it in totality. It is now well recognized that quantity and quality of diet directly affect the mental and physical performance of an individual. A good nutrition means a good health and sound man-power base, whereas the poor nutrition on the contrary hampers the health and the productivity of nation Jellite, 1996. According to a report of NNMB (1997) almost 91.5 per cent pre-school children suffer from some degree of under nourishment in India.

In Bihar, about 80 per cent of children between age group 0-5 years are victim of various diseases caused due to malnutrition. Only 20 per cent of children of this age group get their minimum daily requirement of nutrients as per the prescribed scale. Study also indicates that 86 per cent of children were found malnourished of which about 18 per cent did suffer from severe degree of malnutrition in the State. An improvement in the nutritional status can be attained either by increasing the supply of food nutrients in the diet or by making changes (kind and amount) in food consumption pattern. Balance intake of protein and calorie is very important for the growth and development of child's body. The present study analyses the dietary survey data to know :

–The consumption pattern of protein and calorie for 0-6 year child and to find-out the various socio-economic and other variables associated with the prevailing disparity in the food intake.

■ RESEARCH METHODS

The study was conducted by using random sampling procedure in four anganwadi centres *viz.*, Rehmanpur, Maharaj ki gadhi, Punaichawck, Shastrinagar of urban slums and two Anganwadi centres *viz.*,Digha-II, Mainpura functioning in rural area of Patna Block (Patna district) of Bihar. Sample was drawn by employing the technique of proportionate random sampling and in all 109 (73 urban slums and 36 rural) child beneficiaries representing 40 per cent of population of each selected Anganwadi centre, were chosen.

Data collection :

The food list method of diet survey was used for collection of informations regarding the quantities of food consumption during the period of one month. The protein and calorie intake per child per day was calculated and compared, respectively with the help of Adult Consumption

Unit Co-efficient given by FAO/WHO/UNO committee. The approach was also adopted by expert group of the ICAR. The "Recommended Food Value Table" and the "Recommended Dietary allowance" prescribed by the expert committee of FAO/WHO (1988) is given below :

Age	Calorie per kg body wt.	Protein per kg body wt. q
3 – 4 years	103	1.10 + 1.42
3 – 5 years	100	0.95 + 1.42
5 – 6 years	81	0.85 + 1.42

Thus, the nutritional intake data and their percentage distribution measured in terms of protein and calories intake gap estimates the extent of deficiency/excess of nutrients in diet. This gap of protein and calorie can be measured in terms of dietary intaken: above RDA, As per RDA (+5 RDA), Below RDA.

In order to study the variables affecting the dietary consumption pattern that is protein intake and calorie-intake per child per day, the data were subjected to multiple correlation analysis with set of variables.

■ RESEARCH FINDINGS AND DISCUSSION

Diet survey in terms of protein intake and calorie-intake served as an important criteria for judging the nutritional gap of the children's diet.

Protein intake :

The extent of protein consumption lesser or greater than recommended dietary allowance of the diet were calculated and the findings in this regard appeared in Table 1.

Table 1 : Distribution of children according to their dietary intake in terms of protein (g/kg bodyweight)

Protein intake	Urban (n=73)		Rural (n=36)		X^2-value
	Number	Per cent	Number	Per cent	
Below RDA	36	49.3	17	47.2	
As per RDA	7	9.6	3	8.3	0.02^{NS}
Above RDA	30	41.1	16	44.5	
Total	73	100.0	36	100.0	

NS= Non-significant

It is clear from Table 1 that 49.3 per cent of children among urban slums and 47.2 per cent of rural area were consuming less than the recommended diet. It means approximately 50 per cent of children are not getting adequate food to meet their protein requirement of body. The protein consumption pattern of rural children was slightly higher than that of urban slums children that is the consumption of protein above RDA was more (44.5%) among rural children against 41.1 per cent of urban slums. However, the difference was not significant as obvious from the value X^2 (0.02).

Calorie intake :

Calorie intake of children was calculated on the basis of the information collected at the time of interview. The finding in that regard is presented in Table 2.

Table 2 : Distribution of children according to their dietary intake (in Kcal)

Protein intake	Urban (n=73)		Rural (n=36)		X^2-value
	Number	Per cent	Number	Per cent	
Below RDA	18	24.6	15	41.6	
As per RDA	27	26.9	11	30.5	8.2^{*}
Above RDA	28	38.4	10	27.8	
Total	73	100.0	36	100.0	

Table 2 reveals that in urban slum areas about 38.4 per cent children had calorie intake more than that of the recommended daily allowance. Whereas 24.6 per cent were found to have consumption less than the remmended value. Again 41.6 per cent children of rural areas were consuming less than the recommended allowance and only 27.8 per cent children were taking more than the recommended allowance. The significant value of X^2 (8.2) suggests that the two groups differed significantly so far as calorie-intake was concerned.

It could be inferred that dietary intake pattern of rural children in terms of protein intake was slightly higher while the urban children were better in terms of calorie intake. This trend might be due to consumption of empty calorie food material such as toffee, ice-cream, junk food etc. which may not always be hygienic.

Relationship of variables :

The relationship of the selected variables could be examined in the light of values of correlation co-efficient that appears in Table 3.

It is evident from Table 3 that out of ten selected variables, only six independent variables namely, family

Table 3 : Correlation analysis of protein and calorie intake with other variables

Independent variables	'r' values with protein intake	'r' values with calorie intake
Age of child	-0.3844**	-0.4675**
Sex of child	-0.0190	-0.0033
Family size	-0.2041*	-0.3272**
Family education	0.2572**	0.2196*
Family income	0.4719**	0.3914**
Birth order	-02428**	-0.3322**
Mother's education	0.4070**	0.4063**
Immunization status	0.3232**	0.3299**
Nutritional knowledge of mother	0.3635**	0.3735**
Expenditure on food	0.3664**	0.2428**

* and ** Indicate significant of value at P=0.05 and 0.01, respectively

education, family income, mother's education, immunization status, nutritional knowledge of mother and expenditure on food were significantly and positively correlated at 0.01 level of probability whereas age, sex family size and birth order of child showed negatively high significant correlation and sex being non-significant. It could be concluded that family size and sex have no significant role in dietary intake.

Therefore, for improvement in the dietary intake pattern of family, it would be advisable to increase the intake capacity of child simply by enhancing the percentage of expenditure on food (in conformity with Berman and Deoldikar, 1990), family education and education of mother as well. Family size should to be restricted as small level to minimize the adverse effect on the food consumption and nutritional status of child.

Knowledge about nutrition has significant role in intake pattern, therefore there is need of educating the masses about the vital role of various food items. An intensive extension efforts are required to overcome the wide-spread ignorance about the importance of balance diet in our society. Then only the severe problem of malnutrition or under nutrition could be solved.

Authors' affiliations:
NIDHI SINHA, Krishi Vigyan Kendra, GAYA (BIHAR) INDIA

B.K. MEHTA AND KAUSHIK CHATTERJEE, Krishi Vigyan Kendra, SAHIBGANJ (JHARKHAND) INDIA

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