



Original Article

INTERRELATIONSHIP BETWEEN FOOD INTAKE & NUTRITIONAL ANAEMIA AMONG THE CHILDREN STUDIED IN A TERTIARY CARE HOSPITAL IN DHAKA CITY

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Abstract :

This study was carried out on 128 children of which 80 were male & 48 were female admitted in Paediatric department of DMCH. They were 1 to 12 yrs. 31, 27, 24 and 46 children were of 1-3 yrs, 4-6 yrs, 7-9 yrs & 10-12 yrs age group respectively. A cross sectional sample survey study was carried out. Main variables were age, family size, monthly family income, parents education & occupation Hb and PCV levels. 58% children were illiterate group which also includes less than 5 yrs children. 12% were at primary level & 30% were at high school level. The children of 1-3yrs, 4-6yrs, 7-9yrs & 10-12yrs age groups took an average of 290, 285, 505 & 555 gm foods/child/day. Cereals intake was highest (67.7%) in comparison to other foods. Consumption of meat, fruits, fats & milk was very low. Iron intake was found more than requirement & Vit-C intake was found lowest of the nutrients requirement.

The study revealed the children met protein, iron, folic acid, Vit-A, Vit-B₁₂, Vit-C, Vit-B₂, Vit-B₆, Zinc & Copper 70.79%, 122.2%, 92%, 72%, 68.5%, 55%, 83%, 57%, 89% & 82% respectively of the requirements. Less than 50% of the requirements of iron, protein, Vit-A, Vit-C, Vit-B₂ & folic acid

is met by 15%, 50.5%, 39%, 45%, 12% & 29% children respectively.

Mean Hb level is found (10.39±2.23)gm/dl of blood & ranges from 4.7gm/dl to 12.9gm/dl & mean PCV level is found (30.1±2.21) percent & ranges from 13.63% to 37.41%. According to Nutrition Survey of Rural Bangladesh 1981-82 & WHO, 1972^{28,29} Hb level <11gm/dl for <6yrs and <12gm/dl for 6-12 yrs age group are considered to be anaemic. In the present study I found 20(15.62%) children were severely anaemic, 32(25.26%) children were moderately anaemic & 17 (13.02%) children were mildly anaemic by this criterion.

Peripheral blood film showed 5.47% & 26.57% children with normocytic & microcytic hypochromic anaemic respectively & 14.85% children with malignancy of blood(ALL). Haemolytic anaemia with raised serum bilirubin level was found in 6.25% children. Eosinophilia was found in 18% children. Aplastic anaemia was found in 5.47% children. Aplastic anaemia & malignancy of blood were confirmed by bone marrow examination.

Introduction :

Anaemia affecting more than a billion people in the world. Nutritional anaemia is defined as a condition in which the Hb content of blood is less due to deficiency of one or more essential nutrients regardless of the cause of such deficiency¹. In public health terms iron deficiency anaemia is now considered to be the most common cause of anaemia, estimated to occur in 46-50% of the children in less developed countries and 7-12% in more developed countries³. Bangladesh has a young population of 1-12 years of age of about 50%, of which 17% of 1-4 years of age (19) According to

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Nutrition Survey carried out during the year of 1962—'63, 1975- '76 & 1981-'82 Iron intake has shown an over all rising trend which was 10.3 mg, 22.2 mg & 23.4 mg respectively and 27.5 mg in the present study.

Methodology :

This is a cross sectional sample survey study. Food intakes was assessed by 24 hours recall method. Usual pattern of food intake was examined by 7 days food frequency method. Food values were calculated according to food conversion table. Recorded cooked foods were converted to their raw equivalents & the nutrients of these foods were calculated by using local food composition table. Paired t-test was done and multiple regression analysis was done by using SPSS/PC.

Results and Discussion: According to clinical features 43.48%, 12.08%, 8.70%, 8.21%, 4.83%, 4.35%, 3.86%, 2.41%, 1.93%, 1.45% & 8.70% children were found anaemic due to iron, folic acid, malignancy, Vit-C, Zinc, Vit-A, Vit-B₁₂, Copper, Vit-B₆, Vit-B₂ & worm infestation respectively. It was found that 14.84%, 10.94%, 12.5% & 15.63% were anaemic of the 1-3, 4-6, 7-9 & 10-12 yrs age group respectively. Hb level was found lower than acceptable to be normal level in 54% children of which 15.62%, 25.26% & 13.02% were severely, moderately & mildly anaemic respectively.

According to nutrient containing drug supplements it was found that 23.44%, 6.51%, 2.08%, 2.34%, 4.42%, .78%, 1.04%, 3.60%, 1.30% & 4.69% children were taking iron, folic acid, Vit-B₁₂, Vit-A, Vit-C, Vit-B₂, Vit-B₆, Zinc & Copper containing drugs adequately & anthelmintic drugs respectively.

The children of 1-3yrs, 4-6yrs, 7-9yrs & 10-12yrs age groups took an average of 290, 285, 505 & 555 gm foods/child/day. Cereals intake was highest (67.7%) in comparison to other foods.

Consumption of meat, fruits, fats & milk was very low. Iron intake was found more than requirement & Vit-C intake was found lowest of the nutrients requirement.

During the 7 days study period, the pattern of food intake did not differ in terms of food contents or frequency of intake. The food was poor &

monotonous. Most of the respondents (67%) of the children brought food from suitable places. 15-30% of the patients were totally dependents on hospital diets.

Children of 1-1.5yrs and 1.5-2 yrs 82.1% & 63.7% were breast-fed respectively. Breast feeding often continued to the age of 3 yrs & occasionally beyond this. Milk supplementation was found in 93.1% and 95.1% among 1-1.5 & 1.5-2 yrs age group respectively. Supplementary foods were taken by 87.5% and 98.1% children of 1-1.5 & 1.5-2 yrs age group respectively.

The study revealed the children met protein, iron, folic acid, Vit-A, Vit-B₁₂, Vit-C, Vit-B₂, Vit-B₆, Zinc & Copper 70.79%, 122.2%, 92%, 72%, 68.5%, 55%, 83%, 57%, 89% & 82% respectively of the requirements. Less than 50% of the requirements of iron, protein, Vit-A, Vit-C, Vit-B₂ & folic acid is met by 15%, 50.5%, 39%, 45%, 12% & 29% children respectively.

In the present study a small fraction of the children took Vit-A capsules and anthelmintic drugs during the government's distribution program. Those who took their levels of Hb & PCV were higher. Food scoring data revealed that 35.16%, 56.25%, 27.86%, 6.51%, 14.32%, 23.96%, 14.84%, 41.14% & 39.32% used to take iron, folic acid, Vit-B₁₂, Vit-A, Vit-C, Vit-B₂, Vit-B₆, Zinc & Copper containing foods regularly & others mostly met less than 3 times a week.

Food scoring data showed that 43.21% children got weaning foods twice daily & 38% of the other children got normal diet twice weekly in adequate amount which was found highest.

Conclusion :

Illiteracy & ignorance about food preparation have been found to have effect on the development of anaemia & its consequences.

Recommendation :

To control high prevalence of anaemia improved counselling in nutrition, fortification of food with iron & folic acid, multivitamin supplementation, anthelmintic supply to the children are needed under consideration in planned national anaemia survey.

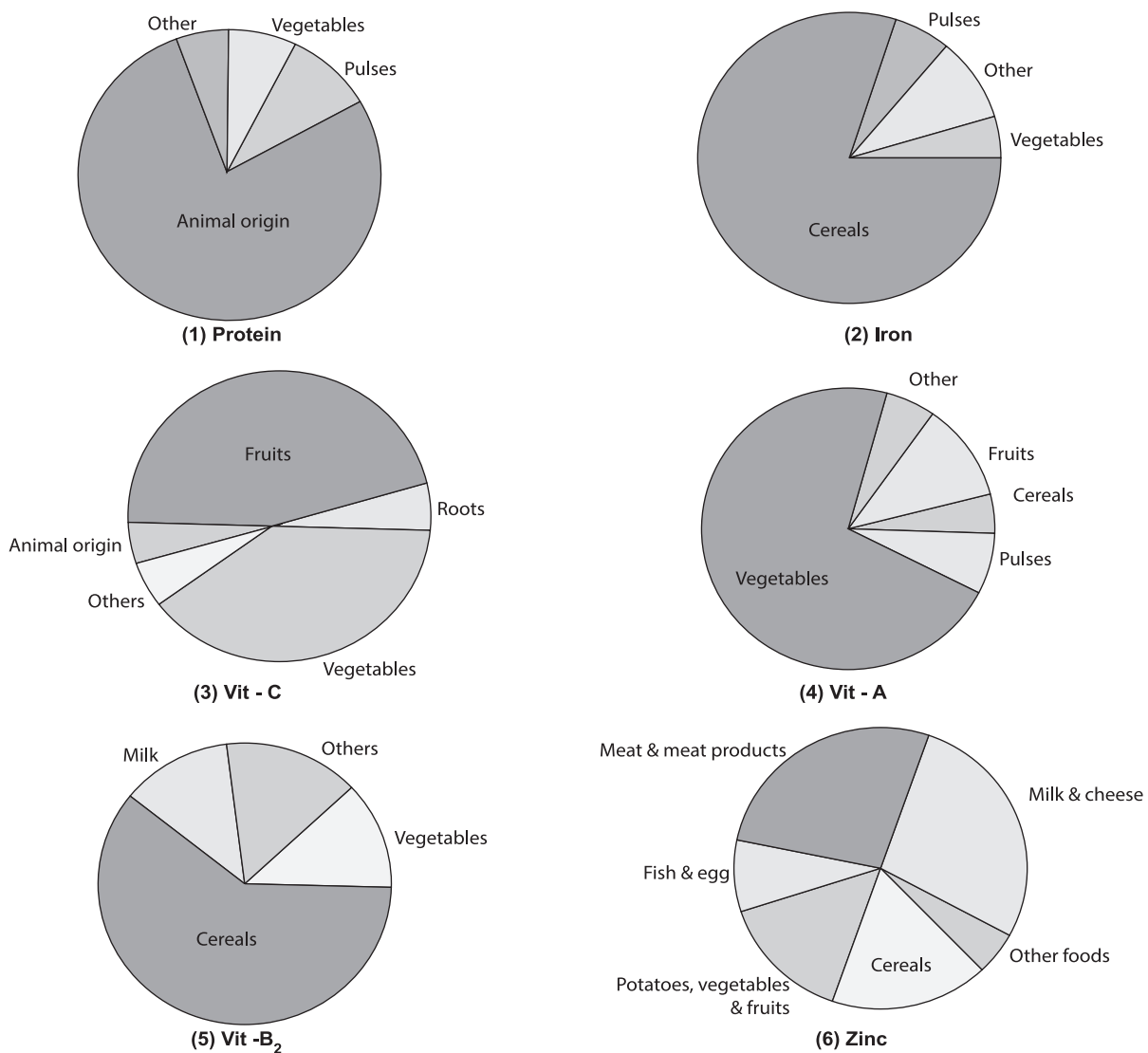


Fig.-1: contribution of different food groups to protein, Iron, Vit-A, Vit-C, Riboflavin & Zinc.

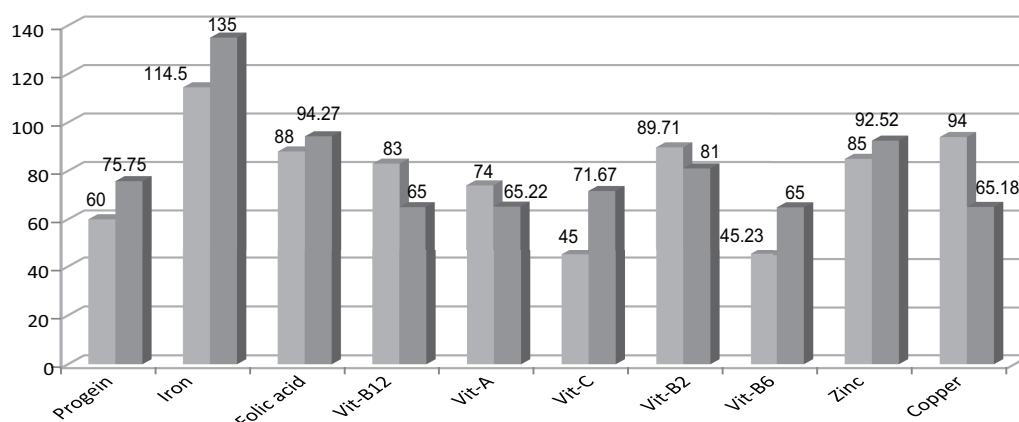


Fig.-2: Comparison of percent intake of nutrients by the children by sex. Foot Note: Fig.-2 shows percent intake of different nutrients by the male and female children. It indicates intake of Vit. -B₁₂, Vit-A, Vit B₂ and copper is comparatively higher by the female children. On the other hand Protein, Iron, Folic acid, Vit C, Vit B₆, Zinc intakes are higher by the male children. It also indicates that iron intake is more than the requirement.

Table-III
Nutrient Intake Per Child Per Day By Sources (Per 100 gm)

Nutrients	Sources				Total Intake	% of requirement
	Cereals	Vegetables	Animal origin(gm)	Others (gm)		
Protein (gm)	56.91	.2	1.63	7.8	66.54	(13.7% of total intake)
Iron (gm)	3.08	3.02	.29	23.73	27.50	122.2
Folic	12.0	60.0	19	0	91	91.92
Vit. B12 (ug)	0	0	11	01	1.1	71.9
Vit. A (ug)	4.37	263.25	23.37	168.70	268.70	68.51
Vit. C (mg)	0	19.27	1.63	1.1	22.00	55
Vit. B2(mg)	.92	0	.052	.36	.504	83.33
Vit.B6(mg)	.10	.17	.13	.05	.45	56.96
Zinc (mg)	0	0	0	0	5.75	89.70
Copper(mg).	.33	.51	0	.41	1.25	82.24

Table- II
Per Capita Food Intake Per day (mean \pm sd) by The children

Food Item	Gm/child/day
Cereals	328.95 \pm 175.94
Roots	10 \pm 5
Sugars	.50 \pm .20
Pulses	10 \pm 3
Leafy Vegetables	25 \pm 20
Non-leafy vegetables	50 \pm 45
Fruits	2.5 \pm 4.2
Meat	2.5\pm1.5
Egg	107.5
Fish	5.15 \pm 4.2
Milk	22 \pm 20
Fats and oils	2.5 \pm 1.0
Miscellaneous	9 \pm 2
Total	485.6 gm/child/day

Foot Note:-Table-IV shows daily average food intake by the children. Mean intake is 485.6 gm/child/day. The contribution from cereals is 328.95 -gm (67.7% of the total food intake) per day. Food intake from animal sources is only 23.65gm (4.9%)of total food intake. Protein also comes from cereals. Total protein intake is 13.7% of total food intake. Pulse intake is about 10 gm/child/day. The intake of cereal is more than the recommended value compared to the animal foods. The consumption of fruits, fats and (after weaning period) milk is very low.

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