

Mid day meal beneficiaries in primary schools of urban area of Kurukshetra (Haryana): A clinical profile

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ABSTRACT

The present study is about clinical profiling of mid-day meal beneficiaries of primary schools in the urban area of district Kurukshetra. 300 subjects were enrolled for current study. A qualified medical practitioner was engaged for the clinical observation of the students. Standard questionnaire having provision for vitamin A, B-complex, C, D and iron deficiency observation was designed for beneficiaries. Anemia was more prevalent in girls as compared to boys. In all other aspects studied population had average level of wellbeing. Mid-day meal program can help in alleviation of some of the deficiencies faced by the school going children.

Key Words : Clinical profiling, Deficiency, Mid-day meal

INTRODUCTION

Children in developing countries continue to be at greater risk of mortality and morbidity due to malnutrition. Nearly half of total global children deaths are due to malnutrition. Developing countries are home to the 150 million malnourished children and South East Asia Region (SEAR) houses more than half of underweight children. Malnutrition levels in India are still in tolerable not with standing the significant advancement in trade and industry. With 40 percent of world's malnourished children scenario in India is far from appealing (UNICEF, 2004).

Structured medical and social endeavors are dedicated to the school going children in common population because of latter's nutritional status. Clinical scrutiny is a convenient mean for the assessment of nutritional status and overall well being. Diet consumed by the children has an impact on their levels of health. Insufficient nutrition is correlated precisely with the clinical deficiency symptoms which are visible in the superficial epithelial tissues particularly in buccal mucosa, hair, eyes and skin (Jelliffe, 1966). In the light of above discussion, the present study was undertaken to probe the clinical profile of the mid-day meal beneficiaries of urban area of Kurukshetra district of Haryana.

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METHODOLOGY

Students of urban area primary schools from Kurukshetra district of Haryana were recruited for this study. Six hundred subjects with age in the range from 6 to 11 were enrolled for the study based on random sampling. Single phase observational cross sectional study was undertaken to assess nutritional deficiencies and the clinical profile of the children. Clinical profiling indicated bodily alterations due to malnutrition such as vitamin A, B, C and D deficiency diseases and mineral deficit ailments *e.g.* that of iron as described by Jelliffe (1966). Qualified medical practitioner was engaged to discriminate the indicators of clinical profile in regulated program. Age and gender wise data was gathered, documented and evaluated using SPSS 16.

RESULTS AND DISCUSSION

Age and gender wise distribution of data on children was compiled to evaluate the clinical profile of mid-day meal beneficiaries.

Out of 300 mid-day meal beneficiaries, 132 (44%) were boys and 168 (56%) were girls. Maximum number of students 43.66 per cent were in the age class of 8-9 years followed by 36.66 per cent children in 6-7 years age class while 19.66 per cent subjects were of 10-11 years age class correspondingly (Table 1).

Age (years)	Boys (%)	Girls (%)	Total (%)
6 – 7	40 (30.30)	70 (41.66)	110 (36.66)
8 – 9	60 (45.45)	71 (42.26)	131 (43.66)
10 -11	32 (24.24)	27 (16.07)	59 (19.66)
Total	132 (100)	168 (100)	300 (100)

General profile of the beneficiaries is depicted in the Table 2. Evaluation of general appearance showed that 12 per cent of the observed subjects were in good condition, 84 per cent were fair, 4 per cent were poor and there was an absence of very poor children in the studied population.

81 per cent of subjects were found to have normal hair. However, dull hair or hair without luster were there in 9.33 per cent of children. Discolored and dry hair and sparse hair were present in 5 and 4.66 per cent of studied students, respectively. This dismal state of hair in the studied population points out a substantial shortage of protein and Vitamin A in the diet. Harris *et al.* (1996) described that 41 per cent of Tibetan children who endured protein deficiency revealed to have hair depigmentation together with weakness due to thinning and blinding of the hair.

73.66 per cent of the children had normal skin, 11.66 per cent had lusterless and 14.66 per cent of subjects were having dry and rough. The causes attributive to skin complications might include poorer consumption of fats, β -Carotene and vitamin C.

Calcium deficiency which could be a cause of chalky white teeth in children was present in 10.66 per cent. Nearly one third of students exhibited discolored teeth evidently because of damage to enamel. Fluorosis represented by mottled teeth was prevalent in 15

Table 2 : General profile of the children (N=300)				
Clinical Sign	Category	Boys n (%)	Girls n (%)	Total n (%)
General appearance	Good	14 (10.60)	22 (13.09)	36 (12)
	Fair	110 (85.33)	142 (84.52)	252 (84)
	Poor	8 (6.06)	4 (2.38)	12 (4)
	Very Poor	-	-	-
Hair	Normal	102 (77.27)	141 (83.92)	243 (81)
	Loss of Luster	18 (13.63)	10 (5.95)	28 (9.33)
	Discolored and Dry	8 (6.06)	7 (4.16)	15 (5)
	Sparse and Brittle	4 (3.03)	10 (5.95)	14 (4.66)
Skin	Normal	98 (74.24)	123 (73.21)	221 (73.66)
	Lack of Luster	15 (11.36)	20 (11.90)	35 (11.66)
	Dry and Rough	19 (14.39)	25 (14.88)	44 (14.66)
Teeth	Normal	51 (38.63)	75 (44.64)	126 (42)
	Chalky White	18 (13.63)	14 (8.33)	32 (10.66)
	Discolored	51 (38.63)	46 (27.38)	97 (32.33)
	Mottled Enamel	12 (9.09)	33 (19.64)	45 (15)

(Ref: FAO/WHO Expert Committee on Medical Assessment of Nutritional status, WHO Tech., Rep., Ser. 258)
(Figures in parentheses indicate percentage)

percent of subjects. These results are validated by a study of Pant and Solanki (1989) among disadvantaged 8 to 12 years old school boys where dental caries were frequently detected in 24 per cent children.

Table 3 shows the degree of incidence of different deficiency symptoms amongst the primary school subjects. Among the well-known roles of Vitamin A are upkeep of visual process and strength of epithelial tissues. Due to inadequate Vitamin A consumption, the superficial coating of the eyeball loses its typical damp white form and turns into dry and wrinkled one, and tenderness of the eye can succeed. Transparency of cornea is lost leading to opaqueness and softness culminating in blindness. Inspection of eye clearly revealed dry conjunctiva in 4.33 per cent of students and follicular keratosis was not found in studied

Table 3 : Prevalence of deficiency symptoms in the beneficiaries (N=300)			
Deficiency indicators	Boys n (%)	Girls n (%)	Total n (%)
Dry Conjunctiva	7 (5.30)	6 (3.57)	13 (4.33)
Follicular Keratosis	-	-	-
Stomatitis	15 (11.36)	12 (7.14)	27 (9)
Cheilosis	9 (6.81)	6 (3.57)	15 (5)
Magenta Tongue	-	1 (0.59)	1 (0.33)
Spongy Gums	5 (3.78)	7 (5.30)	12 (4)
Bleeding Gums	18 (13.63)	12 (7.14)	30 (10)
Distal Wrist	-	1 (0.59)	1 (0.33)
Bowed Legs	1 (0.75)	-	1 (0.33)
Pigeon Chest	-	1 (0.59)	1 (0.33)

(Figures in parentheses indicate percentage)

individuals. The skin loses luster and acquires dryness, ultimately resulting into pigmentation and horny appearance. According to Chary (2000) the lower intake of Vitamin A rich foods consequently give rise to Vitamin A deficiency in the studied population.

Vitamin B deficiency symptoms include stomatitis, cheilosis and magenta tongue along with others. 9 percent individuals with pain in the mouth and trouble in deglutition were suffering from stomatitis. Cheilosis as excruciating inflammation and cracking at the corner of the mouth was prevalent in almost 5 per cent of subjects and 0.33 per cent of students showed magenta tongue respectively. Chandrasekhar and George (1991) and Rao *et al.* (2005) described manifestation of similar kind of deficiency of Vitamin B complex in their separate studies. Insufficient consumption of riboflavin in the diet is characterized by angular stomatitis, scaliness of the skin of the area between the nose and angles of the lips and scrotal dermatitis (ICMR, 2010, Recommended Daily Intakes for Indians, New Delhi).

4 percent of cases and 10 per cent of individuals were found to have spongy gums and bleeding gums, respectively. Vitamin C deficiency either due to total absence or inadequate consumption of vegetables and fruits may be a cause behind the ubiquitous deficiency symptoms.

Broadening of the distal wrist was found in negligibly small percent of the population under observation. Similarly, children were noticed to have bowed legs and pigeon chest, it indicated deficiency of Vitamin D.

The figures on incidence of iron deficiency symptoms in the cases are given in Table 4. Most of the studied individuals had pale skin (15%) and tiredness (16.33%). Frequency of breathlessness (5.95%) and tiredness (20.23%) was higher in girls as opposed to boys. 5 percent of subjects also reported giddiness. The occurrence of all of the above iron deficiency symptoms could be interrelated with anemia. Previous studies by Jain *et al.* (2000), Rao *et al.* (2005) and Joseph *et al.* (2010) showed that anemia is rampant among primary school going subjects. Several aspects like weaning at proper age and iron supplementation can be ascribed to lower the occurrence of anemia in children considerably as described by Jain *et al.* (2000).

The principal complications in 6-14 years age group were those of vitamin deficiencies, anemia, dental caries, and common infections of skin, scalp and eyes as reported by Rao *et al.* (1984). The key deficiency symptoms include angular stomatitis, xerosis and pale conjunctiva. Deficiencies of iron, iodine and Vitamin A are found to be universal community health problems according to Kamalingaswami (1992).

Table 4 : Distribution of iron deficiency symptoms in the studied population			
Clinical signs	Boys n (%)	Girls n (%)	Total n (%)
Pale Skin	20 (15.15)	25 (14.88)	45 (15)
Spoon Shaped Nails	-	-	-
Pale Nails	2 (1.51)	2 (1.19)	4 (1.33)
Tiredness	15 (11.36)	34 (20.23)	49 (16.33)
Breathlessness	4 (3.03)	10 (5.95)	14 (4.66)
Giddiness	6 (4.54)	9 (5.35)	15 (5)

(Ref: Gibson, 1990)

(Figures in parentheses indicate percentage)

Conclusion :

Clinical profiling of the subjects made it clear that out of total students studied (300), incidence of anemia was greater in girls than in boys amongst 6 – 11 years old mid-day-meal beneficiaries of Kurukshetra district. The cause of which could only be found in the inferiority of nutrition and attention being rendered to daughters in families. Both the genders had all other deficit symptoms equally present among them. All studied subjects had average level of general wellbeing.

Consequently, it can be said that mid-day-meal scheme is an enormous social welfare scheme targeted at drawing students in to the educational main stream and moreover giving them all of the much required additional nutrition so that they can grow into strong and earnest residents of the nation.

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