Dietary Intake and Assessment of Nutritional Status of 10-12 years school going children taking Mid-Day Meals

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Abstract-*Today the Mid Day Meal Scheme (MDMS) is the largest school lunch programme in the nation. It has been reported that MDMS has catered to the nutritional needs of school children in both rural and urban areas. The present study was, therefore, an attempt to evaluate the nutritional status and contribution of MDM to the actual daily dietary intake of children. For the purpose, school children in the age group 10-12 years were randomly selected. Anthropometric data on height and weight of boys were measured and Body mass index (BMI; kg/m2) was used to evaluate the nutritional status of the subjects. Nutrient intakes were calculated under dietary assessment. The anthropometric data indicated that the mean height, mean weight and BMI were lower than the ICMR standards. The nutrient intake of energy, protein and other nutrients was also lower compared to Recommended Dietary Allowances (RDA) of India, which may be reflected on their nutritional status.*

Keywords-Mid day Meals, BMI and Nutrient intakes

I. INTRODUCTION

Mid day meal is the world's largest feeding programme which caters to the nutritional needs of school children. Mid day meal was first started in Hyderabad in 1995 and cooked Mid day meals was first introduced in the year 2001. As per the latest norms the calorific value of a mid-day meal at lower primary stage is fixed at a minimum of 450 calories and 12 grams of protein by providing 100 grams of food grain (rice/ wheat) per child/ day and at the upper primary stage has been fixed at a minimum of 700 calories and 20 grams of protein by providing 150 grams of food grains (rice/wheat) per child/school day. The cooked mid day meals in Hyderabad is supplied through a centralized kitchen located at Uppal. Many studies have reported that Mid Day Meal Programme exerts a positive influence on the enrollment and attendance in schools but the impact on the nutritional status is still to be evaluated. Therefore, the present study has been undertaken to assess the nutritional status of school children taking mid day meal.

II. MATERIALS AND METHODS

Selection of schools

The study was conducted in different areas of Hyderabad. A convenient selection of ten schools was made to study the nutritional status of school children taking mid day meal. Subjects in the age group of 10 to 12 years were randomly selected from schools in Hyderabad.

Collection of data

The required data were collected through personal interview technique using the especially structured schedule.

Nutritional status of children was assessed by the help of anthropometric measurements that included height, weight and mid arm Circumference as per standard methods (Jelliffe 1966)

Evaluation of quantity and quality of mid day meal

The menu served during the week and the amount of ingredient used for preparation of meal/day was recorded. Thereafter, the amount of ingredient/child was calculated. Further, the energy and protein content of the meal/child/day was calculated using Nutritive value of Indian foods.

Dietary intake: The details on the food consumption by the girls was collected for three consecutive days by using 24 hours recall method. The different food items consumed was converted into their raw equivalents and average daily intake of food and nutrients was calculated by using ICMR nutritive value tables. The nutrient intake was compared with Recommended Dietary Allowances. The percent adequacy of nutrient intake was calculated. % contribution of mid day meal towards the nutrient intake and RDA was also calculated.

III. RESULTS AND DISCUSSION

In the present study, school going girls aged 10-12 years were examined. The results of the Anthropometric measurements were compared to the ICMR standards.

Table 1: Anthropometric Measurements of school going children

Age	Mean height (cm) +SD	ICMR STANDARD	Mean weight (kgs) +SD	ICMR STANDARD	BMI	ICMR STANDARD
10	131.8 ±6.5	140.0	25.3 ±3.9	31.2	14.7 ±1.1	15.9
11	136.5 ±8.5	145.3	29.2 ±6.0	34.8	15.5 ±1.3	16.5
12	141.8 ±9.0	150.2	33.4 ±7.7	39.0	16.6 ±1.1	17.3

Table 1 Shows the mean Height of the subjects were 131.8±6.5 cm, 136.5 ±8.5 and 141.8± 9.0 for 10 years, 11 years and 12 years girls respectively. The mean heights were compared to ICMR (Indian Counsel of Medical Research) standards. The Heights of the girls were slightly lower than the standards. The mean values of weight of the girls were 25.3± 3.9, 29.2 ± 6.0 and 33.4 ±7 kgs for 10, 11 and 12 years girls respectively which were lower than that of the standards. The mean BMI of girls were also found to be less than the standard. The anthropometric measurements were found to be below the standards indicating that prevalence of malnutrition was observed among girls of 10-12 years.

Mid Day Meal

A cyclic menu was provided to the school children through the centralized kitchen. The menu was a combination of rice, pulses and vegetables. Egg was given thrice a week which improved the protein content of the meals, for children who do not eat egg, banana was given.

Table 2: Cyclic Menu of the Mid Day Meal

Day	Menu	Mean Energy (K Cals)	Mean Protein (g)
Monday	Rice + Sambhar	617	15.6
Tuesday	Rice+ Aloo matter		
Wednesday	Rice+ Veg Kurma		
Thursday	Rice + dal kadi		
Friday	Rice + Palak dal		
Saturday	Veg Biryani + Dalcha		

*Egg was given thrice a week

From the above table it was concluded that the mean energy provided was 617 kcals and mean protein was 15.6 grams. The quantity of cereals provided was 150 grams of raw quantity as per the norms which was too high and children could not consume the entire amount. Latika and Rekhi (2016) also reported that the energy and protein content of the six day varied mid day meal was below the recommended norms.

The children reported that they liked the taste of the meal and the taste was different from home food. The meals provided were sufficient in the quantity and variety was given.

Table 3: Nutrient intake and contribution of nutrients from Mid Day Meals

Nutrient	*RDA*	*Mean daily Nutrient intake*	*Z value*	*Overall intake (% of RDA)*	*% of Nutrients from MDM to Mean Daily Nutrient Intake*
Energy (K Cal)	2010	1425 ± 172	4	56	49
Protein (g)	40.4	27 ± 6	2	67	50
Fat (g)	35	24 ±7	2	69	45
Iron (mg)	27	5 ±3	8	20	61
Calcium (mg)	800	194 ±98	6	24	42
β-Carotene (µg)	4800	1542 ±2227	1	32	52
Vitamin C	40	54 ±30	0	136	65

Table 4 shows the mean Nutrient intake of girls. The mean calories intakes among girls were (1425.8±172 kcal). The mean protein intakes among boys were (27 ± 6gms). The mean intake of calories and protein were lower when compared to Recommended Dietary Allowances (RDA) of India. Calcium and iron were lower than the standards. β-Carotene was below the standards but vitamin C was reported to be higher than the standards. Nutan and Preja (2014) in their study reported similar pattern of inadequate nutrient intake which will lead to nutritional deficiencies.

IV. CONCLUSION

The present study showed that, the anthropometric and dietary intake of school going children of Hyderabad are below the recommended standards. Education on importance of balanced diet and portion sizes of food groups may help to increase the nutrient intake and improve the nutritional status.

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