



NUTRITIONAL QUALITY OF SCHOOL LUNCH: STUDY AMONG GIRLS FROM GOVERNMENT SCHOOLS (10-12 YEARS)

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ABSTRACT

It has been observed from last few years the vital role of school lunch provision. Therefore, the present study was an attempt to focus on nutritional quality of school lunch from government schools. Total 150 girls (50 from each age group of 10 yrs, 11 yrs and 12 yrs) having school lunch were randomly selected from purposively chosen government schools. The energy value for the mid day meal provided to girls ranged from 150 to 419 kcal, whereas carbohydrate, protein & fat content was found to be ranged between 28.3 to 62.5 g, 5.0 to 13.75 g & 0.75 to 12.77 g, respectively. The actual mean consumption of carbohydrates through school lunch was on lower side (41.96 to 48.33 g). Mean protein intake of girls through school lunch was ranged between 8.96±1.30 to 12.02±1.79 g/day. Mean fat intake by girls aged 10+, 11+ & 12+ yrs from school lunch was found as 10.20±1.72, 9.76±1.76 & 6.34±1.96 g, respectively. Mean height of girls aged 10 yrs, 11 yrs and 12 yrs was found out to be 127.88±7.42, 133.64±7.33 and 142.86±5.58 cm, respectively whereas men body weight was recorded as 23.87±4.83, 26.30±4.63 and 31.88±4.44, respectively for 10+, 11+ and 12+ yrs girls. The findings of this study suggest that school lunch meal should be nutritionally complete by bringing variety in meals & providing high quality food. If the gap between the school meal and actual consumption is bridged it will not only change the picture of today's girls but also future mothers.

Keywords: School lunch, government school, energy, protein, carbohydrates.

INTRODUCTION

The child continues to grow during the school years. An adequate nutritional requirement for young children especially girls will not only bring them in healthy

physical condition but also serve them with vital growing benefits. Food choices, awareness, socioeconomic status, availability of food stuffs, eating habits etc. majorly contribute towards results



in terms of growth and health are concerned.

Today the mid day meal scheme (MDMS) is the largest school lunch programme in the nation. It offers an excellent opportunity to provide nutritious supplementary food needed by the school child. It has been reported that MDMS has catered to the nutritional needs of school children in both rural and urban areas (Mehta, 2012). In spite of the provision of mid day meal or making homemade food compulsory, the quantity and quality are two major things of concern. Availability of school food attracts the children at the same time brings monotony to certain extent. The menu offered is invariant and monotonous and does not interest the child (Anupama, 2004). Taking into consideration the school timings, the lunch provided at school contributes the major meal portion of low economic status school going girls.

The school lunch programmes were started keeping

in mind the social and economical advancement of the country. Increase in the number of working mothers frequently brought about longer school days. This means, that children often did not receive proper meals at home and therefore, needed to have a meal at school. Free compulsory primary education became more common and pressures were brought to bear on governmental authorities to provide school lunch.

Untrained cooks, faulty cooking practices, lack of knowledge, unhygienic conditions as well as other area contributes to insufficient nutrients in one major meal. One of the important effects of cooking is on the nutritive value of the preparation. It is therefore essential that the cook is conversant with various methods of cooking and their effect on nutritional qualities of foods.

Many researchers opined that physical appearance was not found appealing when it was observed personally. Frequency of illness was not more or in other ways it can be said that under



nutrition among girls was less (Ramchandra, 2012). A field study done by the National Institute of Nutrition showed that in some places where school lunch programmes were in operation, the quantities of food eaten by the child at home had been cut down. This defeats the purpose of the school lunch programme. Parents, must, therefore, be educated that the school meal is in reality a supplement to and not a substitute for the home diet (Srikantia, 2005).

For individuals at high risk due to family history or unknowingly practice of defective health related habits hampers their school performance academically. Health behaviour research gives an idea to work on several areas and to know the gap formed between nutrition science and its actual implication.

A meal provided in the school eliminates hunger so the girl child becomes attentive to some extent, this was the feedback given by teachers and this further adds to one important benefit of school meal. If condition arrives

when the child has to sleep without food mid day meal acts as boon to that girl child (Sayeed, 2016). School meal should ideally provide one third of the recommended dietary allowances (RDAs) for that specific age group. Fortification is good option to improve the nutritional level of end cooked meal. The school lunch in its present form is designed prevents severe malnutrition, but fails as a 'catch-up' device to ensure optimum growth (Anupama, 2004).

Researchers found out that availability of seasonal and cheap vegetables is included. Rice was almost consumed daily by all the school girls. Kadhi chawal was accepted the most among all the school preparations. Few schools take advantage of inclusion of wheat chapatti for the benefit of school children, since it is possible if the no. of students or their total no. of students in the class is less also availability of ration (Mehta, 2012).

Malnutrition which refers to an impairment of health either



from a deficiency or excess or imbalance of nutrients is public health significance among children all over the world. Adequate food and nutrition are essential for proper growth and physical development to ensure optimal work capacity, adequate immune reactions and resistance to infections. Inadequate diet may produce severe forms of malnutrition in children.

The present study was undertaken to know the nutritional quality of school lunches provided to girls from age groups 10-12 yrs from government schools.

METHODOLOGY

The present study was conducted to know the quality of government school lunch and its effects on girls.

Study Area: The study was carried out in Nagpur city, Maharashtra, India.

Subjects and Sample Size: Subjects of this study were 50 girls each from 10, 11 and 12 yrs age groups from government schools. Hence, 150 girls attending regular full time schools were selected

randomly from different government schools which were chosen purposively. Table 1 presents data on age wise classification of subjects.

Data Collection: A questionnaire-cum-interview schedule was constructed to collect data. Examination of intake of lunch of students attending regular full time school for three days was done. Quantity consumed by students was carefully noted. Levels of macronutrients (carbohydrates, protein & fat) & energy provided from school lunch were calculated using food composition tables (Gopalan et al., 2012). Anthropometric measurements like height & weight of subjects were recorded.

RESULTS AND DISCUSSION

Table 2 shows data on height & weight of subjects

From Table 2, it is observed that mean height of girls aged 10 yrs, 11 yrs and 12 yrs was found to be 127.88 ± 7.42 , 133.64 ± 7.33 and 142.86 ± 5.58 cm, respectively. Mean weight of girls aged 10 yrs, 11 yrs and 12 yrs was found to be



23.87±4.83, 26.30±4.63 and 31.88±4.44 kg, respectively for 10+, 11+ and 12+ yrs girls.

Greater individual variations for height & weight of subjects were noted. Difference of 29, 40 & 24 cm & 24.8, 21.5 & 18.5 kg were noted between maximum & minimum height & weight of girls from age groups 10+, 11+ and 12+ yrs, respectively. It was noted that many girls were relying on school lunch their one major meal of a day.

The menus served in school did not involve elaborate processing and cooking and were based mostly on ingredients available and provided/supplied by government.

Table 3 shows cyclic menu for school lunch programme with their energy & energy yielding nutrient content.

From Table 3, it can be seen that the energy value for the mid day meal provided to girls ranged from 150 to 419 kcal, whereas carbohydrate, protein & fat content was found to be ranged between

28.3 to 62.5 g, 5.0 to 13.75 g & 0.75 to 12.77 g, respectively.

Table 4 demonstrates the quantity of energy & three major nutrients of school meals consumed by subjects.

Energy: Body requirements of calories remain almost same for girls from 7-12 years. It is observed from the mean values from Table 4 that as the age is increased calorie consumption from school lunch reduced. There occurred very less variation for the calorie consumption through school lunch for girls aged 10+ & 11+ yrs. The RDA for 10-12 years age group is 1970 kcal. If one looks the RDA figure, it can be easily observed that the observed values fall on lower side and does not fulfil even one third consumption of calories according to specific age.

Carbohydrates: The vital function of carbohydrates that, it alone can work as a source of energy for the central nervous system. Food consumption not only eliminates hunger but also makes them attentive in class to certain extent. It is observed from Table 4 that the



actual consumption of carbohydrates through school lunch was also on lower side (41.96 to 48.33 g). There should be enough provision of carbohydrates, both simple & complex, to fulfil the energy demands of young children.

Protein: Girls require more protein between 10-12 yrs than boys for approaching menarche (Srilakshmi, 2009). The RDA for protein for 10-12 years girls is 57 g and figures in Table 4 are less which is not beneficial for the overall growth and development and to meet the changes taking place in body. Generally protein foods are expensive & hence, were not provided largely by the schools. It was noted that mean protein intake of girls through school lunch was ranged between 8.96 ± 1.30 to 12.02 ± 1.79 g/day. Red gram dal, peas & bengal gram flour were the only sources of protein from the school lunch. No high biological sources of protein were provided in mid day meals.

Fat: Fats are richest source of energy but mean fat intake by girls was found to be highly insufficient

(Table 4). The RDA for visible fat for 10-12 yrs old girls is 22 g. The only source of fat in the lunch provided by schools was cooking oil. Mean fat intake by girls aged 10+, 11+ & 12+ yrs from school lunch was found as 10.20 ± 1.72 , 9.76 ± 1.76 & 6.34 ± 1.96 g, respectively. Low fat intake resulted in lower energy intake. Too little fat in the diet may lead to being underweight, having insufficient padding for the vital organs, and lowered energy (Sen, 2007).

The energy requirements of children are determined by their individual basal metabolic rates, rates of growth, and activity patterns. Therefore, appropriate intake for children of the same age, sex and size may vary. Children need proteins for the maintenance of body tissues, changes in body composition, and synthesis of new muscles. Inadequate intake of energy & macronutrients may be reflected in slow growth rates, weight loss, easy illnesses & many deficiencies.



Cooking, however, results in loss of some nutrients depending upon the amount of water used and whether this water is discarded or not, the length of the cooking, temperature of cooking and the surface area exposed. (Pasricha, 2004). Sprouting, fermenting, garnishing etc. were totally absent from the recipes of school lunches. A mild deficiency of carbohydrates in the diet may result in utilization of proteins for energy purpose. Shortage of proteins leads to retardation of growth and in extreme cases failure of growth. Deficiency of fat in the diet causes the deficiency of essential fatty acids and further growth too. This program of mid day meal served, and continues to serve, not only as nutrition programs, but perhaps more as social welfare programs that provide a substantial economic benefit to the family since the child

will not eat at mid-day from the family pot. Every guideline might not be appropriate or feasible for every school to implement; individual schools should determine which guidelines have the highest priority based on the needs of the school and available resources. (Bauer 2012).

This study reveals that the meal provided in lunch through school does not meet even one third actual consumption of macronutrients for that age. Study further supports similar results observed by Mehta (2012). Parents continue to be the main influence on the food intake of school- aged children, although a limited proportion of the diet is consumed in schools. This further emphasizes the need for parents and schools to provide appropriate meals and snacks and guidance in food choices.

Table 1: Age wise classification of sample

Sr. No.	Age Groups (years)	No. of Sample (n=150)
1.	10+	50
2.	11+	50
3.	12+	50

**Table 2: Data on height & weight subjects**

Sr. No.	Nutrients	Age Groups (Yrs)		
		10+	11+	12+
1.	Height (cm)			
i	M±SD	127.88±7.42	133.64±7.33	142.86±5.58
ii	Range	119-148	114-154	130-154
iii	Standard	140.0	145.3	150.2
iv	% Deficit	-8.65	-8.03	-4.89
2.	Weight (kg)			
i	M±SD	23.87±4.83	26.30±4.83	26.30±4.63
ii	Range	14.6-39.4	18-39.5	26-44.5
iii	Standard	31.2	34.8	39.0
iv	% Deficit	-23.49	-24.43	-32.56

Table 3: Energy & macronutrient content of school meals

Sr. No.	Meal	Energy (kcal)	Carbohydrates (g)	Protein (g)	Fat (g)
1.	Khichdi	150	29.3	6.5	0.75
2.	Tomato Khichdi	162.5	31.3	7.0	0.85
3.	Peas Khichdi	175	33.57	8.44	0.78
4.	Rice, Dal Palak	269	41.5	10.75	6.63
5.	Rice, Brinjal Sabji	244	28.75	5.0	11.78
6.	Rice, Kadhi	283	31.7	10.43	12.77
7.	Chapati, Rice, Dal Palak	419	62.5	13.75	12.63

Table 4: Data on daily energy & macronutrient content of school meals consumed by subjects

Sr. No.	Nutrients	Age Groups (Yrs)		
		10+	11+	12+
1.	Energy (kcal)	332.92±51.60	311.67±51.83	259.24±47.99
2.	Carbohydrates (g)	48.33±7.59	46.45±7.68	41.96±6.21
3.	Protein (g)	12.02±1.79	11.78±1.70	8.96±1.30
4.	Fat (g)	10.20±1.72	9.76±1.76	6.34±1.96

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