The impact of Mid Day Meal in government elementary schools of Surendranagar city

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Abstract

Mid Day Meal (MDM) has been an important part of education from decades as Government of India (GOI) gradually put efforts to improve quality and quantity of food. The present study focuses on the physical growth of students in terms of their age, height and weight along with the number of days the students had MDM intake in schools. The data were analyzed by calculating frequency and percentage. The data collected through information schedule of students to collect data of height, weight and number of days the students had MDM in school. The findings of the study reveal that majority of students have age appropriate height and weight with majority of students had MDM intake for more than 220 days. It indicates that MDM had been one of the important aspects of physical growth of students.

Key words: Mid day meal (MDM), health, physical growth, elementary school students

Introduction

Health at an early age of childhood is critical aspect which has direct relation with the food taken in daily life. Proper food and nutrition support gives assistance to physical as well as mental health which has been taken into consideration long back by Government of India (GOI). Education is one of the areas where initiative in terms of providing food has been taken by GOI. GOI has long history in providing food to school going disadvantaged section of children for proper nutrition intake for combating hunger and improving health which is currently known as Mid Day Meal (MDM). Its beneficiaries are children belonging to age group of 6 to 14 years.

History of Mid Day Meal in India

Mid day meal has history from 1925 when it was first started in Madras Corporation by British administration in pre independence era which was introduced later by Government of India in 1995 as National Programme of Nutritional Support to Primary Education (NP-NSPE). With the inception of Sarva Shiksha Abhiyan (SSA), Mid Day Meal (MDM) was emphasized gradually as MDM merged under SSA to improve quality education in elementary school to achieve the goal of Universalization of Elementary Education (UEE). In 2001, cooked mid day meal scheme under which students were provided food with minimum 300 calories and 8 to 12 gram protein per day for minimum 200 days in government and government aided schools. In 2002, it was made available for students studying in Education Guarantee Scheme (EGS) and Alternative & Innovative Education (AIE) centers also. Mid day meal had been revised in the year 2004, 2006, 2007 and 2008 finally when it was made available for all students in elementary education up to 14 years of age, including recognized Madarasa also, supported under SSA. MDM from 1925 to 2008 establishes the fact of its effectiveness in terms of providing nutritious food to children for improving enrolment, attendance and retention along with improving nutrition status among children. There was provision of providing capacity building for MDM in terms of infrastructure facility and manpower. Under the norms of SSA for MDM, separate kitchen was built providing one supervisor and two cooks for cooking food as per the menu provided. Initiatives for implementation of MDM was taken at state, district and block level by providing man power and funds. As the scheme of MDM was revised, guidelines also were revised over period of time after SSA for allocation of funds and food grains.

Significance of the MDM

Objective of MDM was to provide nutritious food to students so that their attentiveness in the classroom increases and also to improve school enrolment and attendance along with decrease in dropout rates. “After the introduction of mid-day meals the percentage of enrolment has increased and parents are more interested to send their children”[1]. MDM also had been seen as potential incentive to attract students to school providing them some kind of food regularly in the school. “Mid-day meal scheme is successfully serving the purpose for which it was started. It has brought an increase in attendance rate of children”[2]**.** It

is evident that MDM is helpful in bringing students to classroom but the question is whether it has impact on nutrition level of students. An improvement in the nutrition level of the students was found along with attendance and scholastic performance as stated "...after the introduction of the MDM program it was found that nutritional status of children improved"[3]. At the same time it was found, "The contribution of micronutrients through mid day meal programme was negligible..."[4]. It becomes important to see the impact of MDM on students in terms of physical growth as MDM is meant to provide nutrition food to students which ultimately should have positive effect on the health of students. Physical growth is prerequisite to health of students as "The precondition for all development is healthy physical growth of all children" and further stated, "It is proposed that the midday meal programme and medical check-ups be made a part of the curriculum and education about health be provided that address the age specific concerns at different stages of development"[5].As observed earlier, government had a long history of MDM in different ways with great financial efforts too; it necessitates glancing at grass root level how the MDM has affected the students especially in terms of health. The present research has aimed to study the impact of MDM in terms of physical growth on students who had MDM on regular basis as MDM is provided in school for minimum 200 days. Physical growth of students was particularly studied in terms of height and weight of students separately for girls and boys as per the Body Mass Index (BMI) released by World Health Organization (WHO). BMI gives an idea about weight as per height by some measurements. BMI is a standard calculation to analyze health status by categorizing the students in a particular weight group. BMI categories as per calculations of height and weight are presented in following Table 1.

BMI	**Nutritional status**
Less than the 5th percentile	Underweight
5th percentile to less than the 85th percentile	Normal weight
85th to less than the 95th percentile	Overweight
Equal to or greater than the 95th percentile	Obesity

(Source: *WHO, BMI - 2019*)

Table 1: BMI categories as per calculations

Significance of MDM in Surendranagar

The literacy rate of Gujarat as per census 2011 is 79.31%. Among the regions of Gujarat state the literacy rate varies from 85.53% in Surat to 58.82% in Dahod. Surendranagar has literacy rate of 72.13%. Surendranagar is one district having low literacy rate. The Surendranagar is part of Saurashtra region of Gujarat. Surendranagar had enrolment rate of 88.10% in lower primary and 82.81 % in upper primary. Surendranagar had lowest enrolment rate among the municipalities of Saurashtra in spite of several efforts of government to improve education by different initiatives. Hence, Surendranagar becomes important site to examine that how the government initiatives have an impact on the students of Surendranagar with special reference to MDM. The students who have almost completed their elementary school from government schools are the ones who have been in school for at least seven years. These students have had MDM in school for at least seven years as one time meal. It is significant to find out impact of MDM on physical growth (Height and Weight) of students who have taken MDM as one time meal. It is also one of the objectives of MDM.

Methodology

Method adopted for the present study is survey. There were 490 students of class VIII of academic year 2017-18 from 22 government elementary schools of Surendranagar city of Gujarat, who had studied from class I to class VIII without dropping out in same school were taken as sample. The objective was to study the days of MDM intake by students and to find the impact of MDM on the health of students especially in terms of physical growth (Height and Weight as per age). The information regarding age and gender has been collected from general register maintained by school. The number of students attended the school has been recorded in general register of school which shows number of days the students had MDM in school. So, the information regarding number of days students having MDM in school has been collected from general register of attendance maintained by class teacher. The information regarding height and weight of students has been measured personally by researcher and recorded. The height of students has been recorded in measurement of centimetre and weight has been recorded in kilogram. Data regarding the number of days the students had MDM were collected only of one academic year of 2017-18 in which students

were in class VIII. The data collected from the information schedule were numeric. Observing the highest and lowest numbers in each item, equal class intervals were made and frequencies were distributed across each category of variables. Height and weight of the students were calculated as per BMI calculations and presented. The data were analyzed using calculating frequency and percentage.

Data analysis

The data received from 22 government elementary school is analyzed in terms of numbers of days the students had MDM in school and growth of students in terms of height and weight are presented in tabular form. The number of students had MDM during academic year 2017-18 are presented and described below:

Gender	**Percent of days the students had MDM (2017-18)**			**N**
	≤ 200	**201-220**	**≥221**	
Boys	11.69 %	32.66 %	55.65 %	100 %
Girls	8.68 %	23.97 %	67.35 %	100 %
Total	10.20 %	28.37 %	63.27 %	100 %

Table 2: MDM intake of students in percent (%)

Out of total number of students, 248 are boys and 242 are girls. It is observed from Table 2 that majority of boys had MDM for more than 200 days. Among these students, 32.66% of boys had MDM for between 201 and 220 days whereas 55.65% of boys had MDM for more than 220 days. Few boys (11.69%) have had MDM for up to200 days or less. Majority of girls (67.35%) had MDM for more than 221 days and 23.97% of girls had MDM for 201 days to 220 days. Few girls (8.68%) had MDM for less than 200 days. Out of total number of students irrespective of their gender, majority of students (63.27%) have had MDM for more than 220 days and the least number of students (10.20%) had MDM up to 200 days. Remaining students (28.37%) had MDM for more than 200 days to 220 days in school. The high intake of MDM among girls and boys is observed due to their regularity in school. The regularity of boys and girls might have influenced by availability of MDM in school.

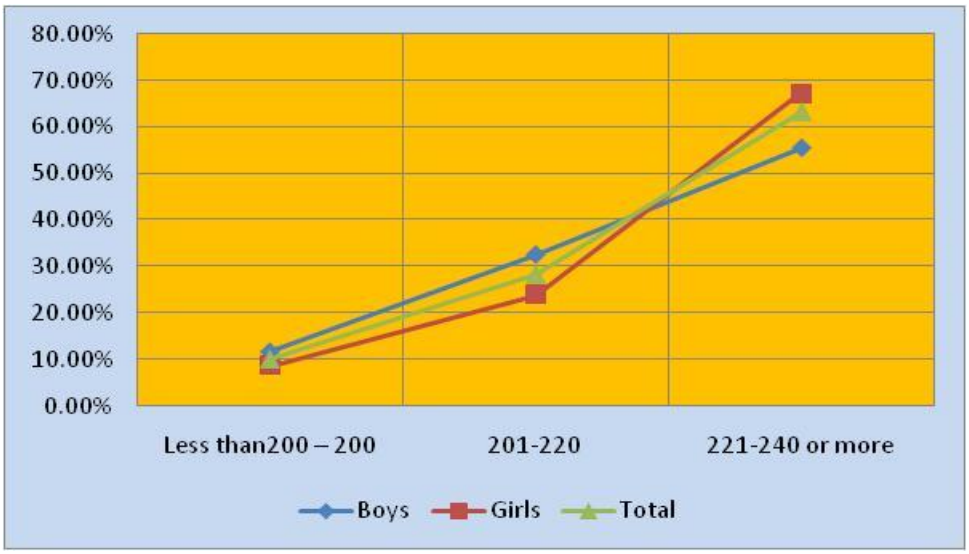

Figure 1: Percent of days the students had MDM

It is seen from the Graph 1 that girls had MDM for more numbers of days than boys as more girls had MDM for more than 220 days. Number of girls who had MDM for less than 220 days is less than boys. It indicates that girls had benefit of MDM in school more than boys. Girls seem to be more regular in school than boys which influenced their MDM intake in school.

Physical development		**Boys**	**Girls**
Age	***< 13 years***	7.26 %	13.64 %
	13 years	59.27 %	68.60 %
	> 13 years	33.47%	17.77 %
Height in Cm	***< 130 to 130***	8.06 %	6.61 %
	131 – 140	33.47 %	33.06 %
	141 – 150	41.13 %	48.35 %
	> 150	17.34 %	11.98 %
Weight in kg	***< 30 to 30***	30.65 %	28.51 %
	31-40	50 %	57.44 %
	41-50	14.11 %	13.22 %
	> 50	5.24 %	0.83 %

Table 3: Physical development of students in terms of age, height and weight

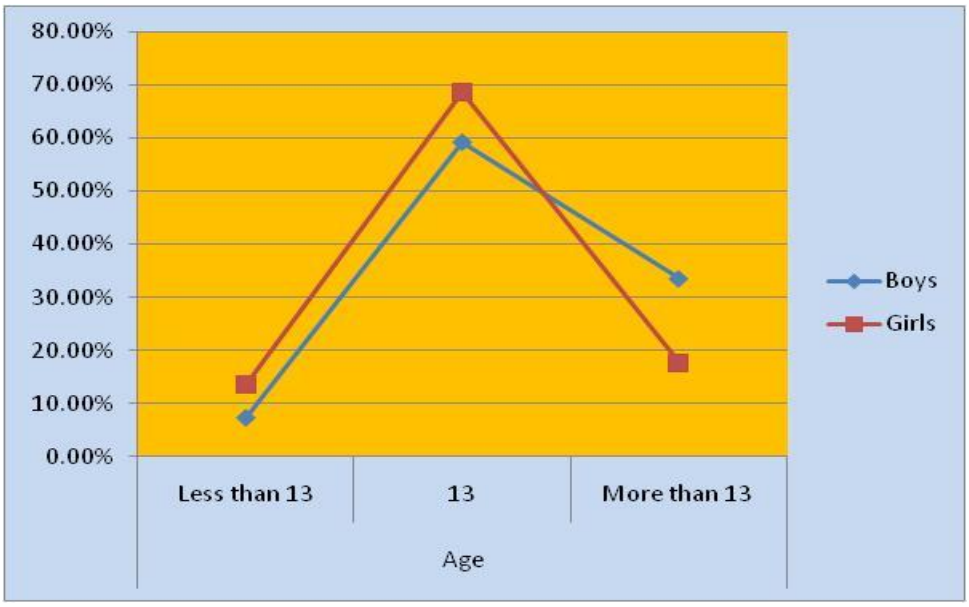

Figure 2: Age of students in years

It is seen from Graph 2 presented above that out of total number of students, there are more number of girls (68.60 %) who are 13 years old than boys (59.27 %). There are more boys whose age is 12 years and more than 13 years as compared to girls. More number of students belongs to age category of 13 years. It is interpreted that majority of students irrespective of any gender, have 13 years of age which is appropriate to be in class VIII. These students had age appropriate admission. The boys and girls who are not 13 years old have taken either early admission or late admissions in schools. Development of height and weight is dependent on age and gender of students so, age is important factor to analyze.

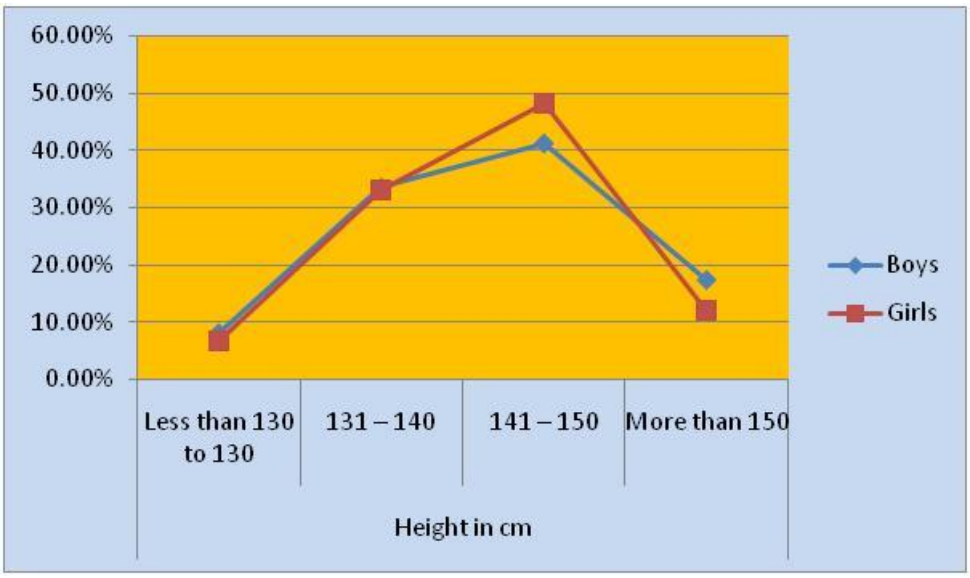

Figure 3: Height of students in cm

It is observed from Table 3 and Graph 3 that majority of students irrespective of their gender (41.13 % are boys and 48.35 % are girls) have height between 141 and 150 cm whereas the least number of students (8.06 % are boys and 6.61 % are girls) have height up to 130 cm. The boys (33.47%) and girls (33.06%) having height between 131 and 150 cm are almost equal. There are few students (17.34% are boys and 11.98% are girls) who have height above 150 cm. It can be interpreted that development of girl's height is better than that of boys.

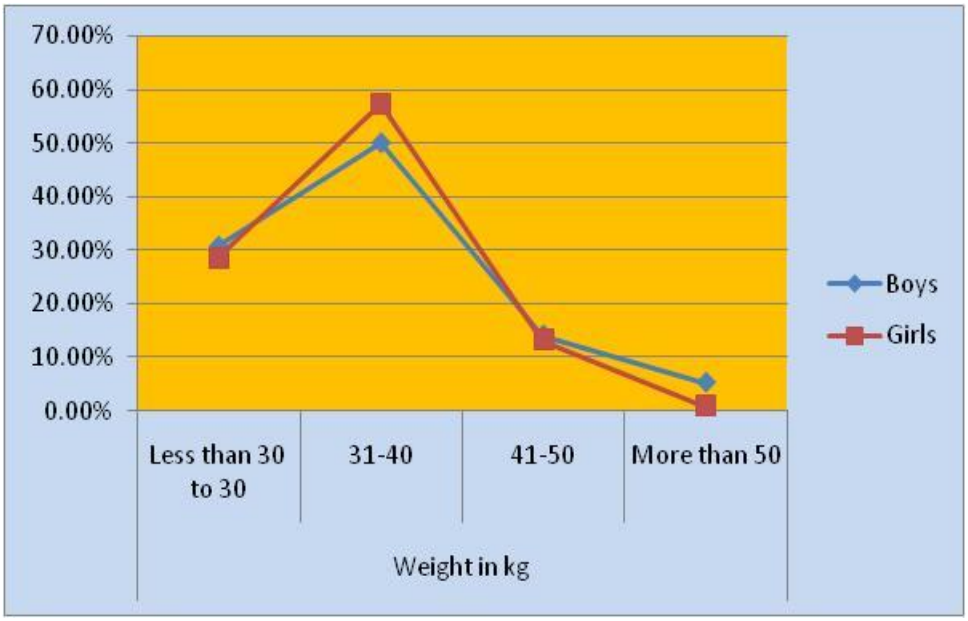

Figure 4: Weight of students in kg

It is seen from the Table 3 and Graph 4 that majority of students irrespective of their gender (50% are boys and 57.44% are girls) have weight between 31 and 50 kg whereas the least number of students (5.24% are boys and 0.83% are girls) have weight measuring more than 50 kg. The difference of weight between boys (14.11%) and girls (13.22%) is less for those who have weight of 41 kg to 50 kg. Remaining boys (30.65%) and girls (28.51%) have weight up to 30 kg. The growth of weight among boys is better than girls as more boys have weight above 40 kg than girls. But significant improvement in weight is observed among girls who have weight between 31 to 40 kg.

Thus, as per above analysis for physical development of students in terms of age, height and weight indicates that majority of students have age appropriate admission in school. Status of girls in terms of growth of height is better than boys whereas boys show improvement in terms of weight. The age appropriate ratio of weight and height shows the

health status of students which is presented in Graph 5. It indicates that the students have required amount of nutritious food as they have normal health.

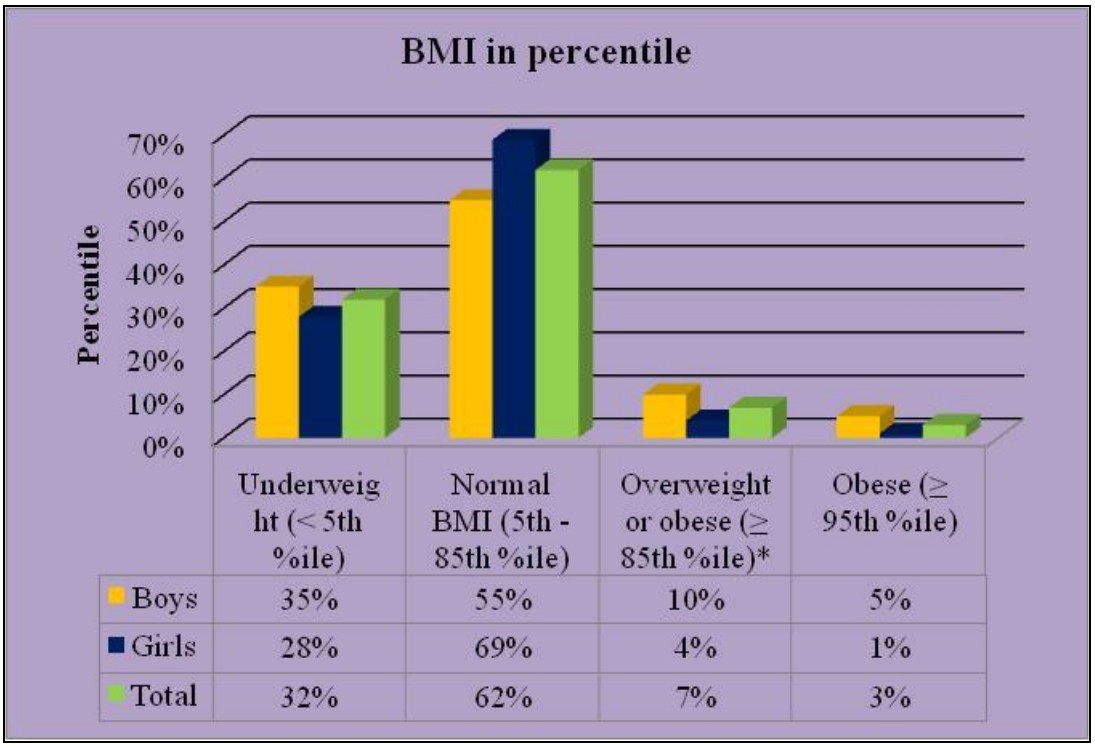

Figure 5: BMI of boys and girls in percentile

After observing age, height and weight of boys and girls separately in Table 4, BMI calculation presented in Graph 5 shows the status of health among boys and girls. As per the data presented in Graph 1, majority of girls and boys have normal weight while the least numbers of boys and girls are overweight or obese. Remaining number of boys and girls are underweight. Number of girls in terms of normal weight is more than boys whereas number of boys in terms of underweight and overweight are more than girls. Thus, more boys are underweight, overweight and extreme obese than girls. Overall BMI of boys and girls indicates that health status in terms of age appropriate weight as per height of girls is better than boys as more girls have normal in terms of health status than boys.

Further, in term of the health status, underweight boys and girls indicate malnutrition due to lack of proper nutrition or lack of food. Overweight boys and girls indicate the slightly higher chances of being affected with several health issues which can be reduced by slight changes in diet and activities. Obese boys and girls have increased the risk of having several diseases and need to reduce weight by healthy eating. Though majority of boys and girls are

observed to be healthy, some boys and girls are observed to be either underweight or overweight which indicates the imbalance in diet of the students. Despite the fact that boys and girls had MDM in school as one time meal, the food habits of boys and girls and other meals at home also play a major role in health status of boys and girls.

Other important observations

Majority of students irrespective of any gender had MDM intake for more than 220 days which is found to be appropriate as per guidelines that MDM has to be served in school for minimum 200 days in a year. Majority of students irrespective of any gender were 13 years of age as they had age appropriate admissions. Age appropriate height and weight as per guidelines provided by Indian Academy of Pediatrician (IAP) were found among majority of students. In terms of calculation of BMI of boys and girls majority of them have normal health status whereas girls have better health status than boys.

It indicates that the physical growth of students of class VIII was found to be appropriate according to age for which MDM would be one of the important aspects as majority of students had been served MDM in school for more than 200 days. These students had MDM as one time full meal for more than 200 days in school. Hence, MDM found to have positive impact on physical growth of students irrespective of any gender.

Discussion

The intake of MDM among students who had MDM in school continuously during their elementary education in Surendranagar, Gujarat, is found to have fulfilled requirement of minimum intake guidelines given by government under the scheme of Mid day meal[2].It confirms that MDM had been part of their one time meal on regular basis which might have facilitated the amount of required nutrition in food. Hence, one of the findings also shows the appropriate level of physical growth in terms of height and weight according to age among students, boys and girls[1, 3]. Overall, height and weight is appropriate and health status of boys and girls is normal. Though MDM intake is observed as per required number of days, the other meal at home also plays a major role. Heredity also plays a major role in physical growth of students which might have influenced the result of nutrition intake of students by MDM and other meal at home. The quality of other meal at home is dependent on the kind of food available at home as per their habit, requirements and also affordability of parents. The

overall result of the study shows that MDM as one time meal in school is one of the aspects for good health status of students.

The present study is limited to parameters in terms of number of days the students had MDM in school and growth of height and weight as per the age of students. Further, this study can be conducted by considering MDM and the other meal taken by students at home.

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