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A CROSS SECTIONAL STUDY ON PRACTICES AND PERCEPTIONS REGARDING MID DAY MEAL PROGRAMME, SANITATION AND HYGIENE AMONG UNDERNOURISHED PRIMARY SCHOOL CHILDREN OF RURAL VADODARA

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ABSTRACT

Undernutrition among school children is a challenge for developing countries like India. Mid Day Meal Programme of India aims at improvement of nutritional status of school going children by providing hot cooked meals on all the working days to children studying in Government primary schools. It also provides an opportunity to inculcate good hygiene practices among children. This study was carried out to assess the magnitude of undernutrition in rural upper primary school children and practices and perceptions of thin (BAZ< -2SD) upper primary school children of rural Vadodara regarding Mid Day Meal and sanitation and hygiene practices. Six government primary schools from rural industrial areas of Vadodara block were selected and children from 5^{th} to 8^{th} standard were screened for undernutrition using anthropometry (WHO 2007 growth reference standards). Practices and perceptions regarding MDM, sanitation and hygiene among thin children were studied. Prevalence of underweight, stunting and thinness was 43.7%, 30.7% and 31.8% respectively. Majority of the children (93.8%) were consuming MDM, but only 68.1% were consuming it 5-6 times a week. Although, handwashing, nail hygiene and bathing were perceived to be important practices, there was a gap in awareness regarding importance of these practices. Usage of soap for handwashing in school and cleanliness of nails were not found to be adequately practiced by the children. Incorporating behaviour change communication in MDM as a regular feature can help in improving the compliance as well as to ensure proper hygiene practices among children, and achieve better outcome of the programme.

Keywords: Mid Day Meal, Undernutrition, Sanitation and Hygiene

INTRODUCTION

National Programme of Nutritional Support to Primary Education (NP-NSPE) of India, widely

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known as Mid Day Meal Programme (MDMP) is the largest school feeding programme in the World (WFP, 2013). It was implemented as a nationwide programme in the year 1997-98. The programme aims at providing hot cooked meals to each and every student of Government and Government aided schools, Education Guarantee Scheme and Alternative and Innovative Education as well as National Child Labour Project (NCLP) Schools (MHRD 2006). Thus, it mainly caters to school age children as well as adolescents enrolled into these primary schools and education centres. As per Supreme Court of India's interim order dated 28th November 2001, Mid Day Meal has become a legal entitlement of every child studying in aforementioned education setups. Students of 1st to 5th standards of primary schools are entitled to get a MDM providing 450 Kcal energy with 12 gm protein and upper primary school students (6th to 8th standard) should get 700 Kcal energy with 20 gm protein from MDM along with adequate quantity of micronutrients such as iron, folic acid, Vitamin A, etc. (MHRD, 2016). Thus, this programme is working towards fulfilling its objectives of improving nutritional status of eligible school going children, encouraging poor children, belonging to disadvantaged sections, to attend school more regularly and help them concentrate on classroom activities as well as providing nutritional support to children of primary stage in drought-affected areas during summer vacation. Various studies have reported that Mid Day Meal programme is effective in improving school enrolment rate and attendance (Jayaraman and Simroth, 2015; Singh and Gupta, 2015; Nath and Nath, 2015) in Government primary schools. Studies have also reported that the programme has helped in reducing dropout rates and classroom hunger (Sharma and Saini, 2015) along with promoting social equity (Sahai, 2014) among children. However, a high prevalence of undernutrition among children, especially school going adolescents have been a matter of concern in India.

Adolescence is a very important phase of life mainly as it's a transitional phase during which many physiological as well as psychological changes take place. It is considered to be a window of opportunity for catch up growth. Providing adequate nutrition and good health care to adolescents can ensure their healthy adulthood. India is home to nearly 253 million adolescents. (CENSUS 2011) National Family Health Survey 4 (IIPS and ICF, 2017) reports suggest that prevalence of undernutrition has remained high in rural areas compared to urban areas in India over the years. As per NFHS 3 (IIPS and Macro International, 2007) data 46.8% girls and 58.1% boys in 15-19 years age group had BMI less than 18.5. The prevalence has decreased to 41.9% for girls and 44.8% for boys as reported in NFHS 4. (IIPS and ICF, 2017) However, the prevalence of undernutrition in this age group remains to be higher among rural adolescents compared to their urban counterparts. It is 7.2% higher among girls in rural areas than that in urban areas (46.3% v/s 39.1%) and 7.7% higher among rural boys compared to that in urban area (50.1% v/s 42.4%). (Parasuraman, Kishor, Singh, & Vaidehi, 2009) According to NNMB data (2012), prevalence of thinness among rural adolescents in nine states ranges from 24.4% to

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47.9% with Kerala having the lowest prevalence while Tamilnadu having the highest prevalence. Prevalence of thinness in rural areas of Gujarat is as high as 42.6%. The data shows that the prevalence is lower among 5-9 years old children (school age) compared to 10-17 years old children (adolescents). (NNMB, 2012)

Thus, high prevalence of undernutrition among adolescents despite programmes like MDMP into existence focuses the need to understand practices and perception of beneficiaries regarding the programme. It can serve as the basis for formulation and implementation of additional strategies for better outcome of the ongoing programme. In view of this, current study was planned with the objectives of: 1. To assess the magnitude of under nutrition in rural upper primary school children with regards to anthropometric measurements as per WHO 2007 standards. 2. To study the practices and perceptions of thin (BAZ< -2SD) upper primary school children of rural Vadodara regarding Mid Day Meal and sanitation and hygiene practices.

METHODS

This study was conducted in the rural petrochemicals area of Vadodara block. There were total 47 Government primary schools in this area. Six co-ed schools having 1^{st}-8^{th} standard were selected purposively from these 47 schools for the study. All the children studying in 5^{th} to 8^{th} standard were enrolled in the screening. Their age was calculated from the date of birth recorded in school's registers. Their weight and height were measured and their nutritional status was analysed using WHO AnthroPlus software by WHO 2007 growth reference standards. Prevalence of underweight (low weight for age) for children under 10 years as well as prevalence of stunting (low height for age) and thinness (low BMI for age) for all the children was calculated. Children having BMI for age <-2SD i.e. thin children were enrolled further for the study after obtaining written consent from their parents. Children who could not be contacted in three consecutive visits were excluded from the study. Data on perceptions and practices was collected from them using a semi structured interview questionnaire. Anthroplus, and Microsoft Excel softwares were used for analysing the data.

Ethical consideration: This study was approved as a part of doctoral research by the departmental Ethics Committee (Ethical Number: IECHR/2014/9)

RESULTS

As mentioned earlier, this study was conducted in Government primary schools of rural industrial areas of Vadodara. Mid day meal is prepared at a centralised kitchen run by an NGO and distributed to the schools in this area. Six Government Primary schools from were included in the study. Total 932 children were screened in these schools out of which 441 (47.3%) were

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males and 491 (52.7%) were females. Age of the screened subjects ranged from 9 years to 19 years. As shown in Figure 1, prevalence of stunting and thinness was found to be 30.7% (31.3% among males v/s. 30.1% among females) and 31.8% (33.8% among males v/s. 30.1% among females) respectively. Prevalence of underweight among children below 10 years of age was found to be 43.7% with a higher prevalence among females (46.9%) than males (40%).

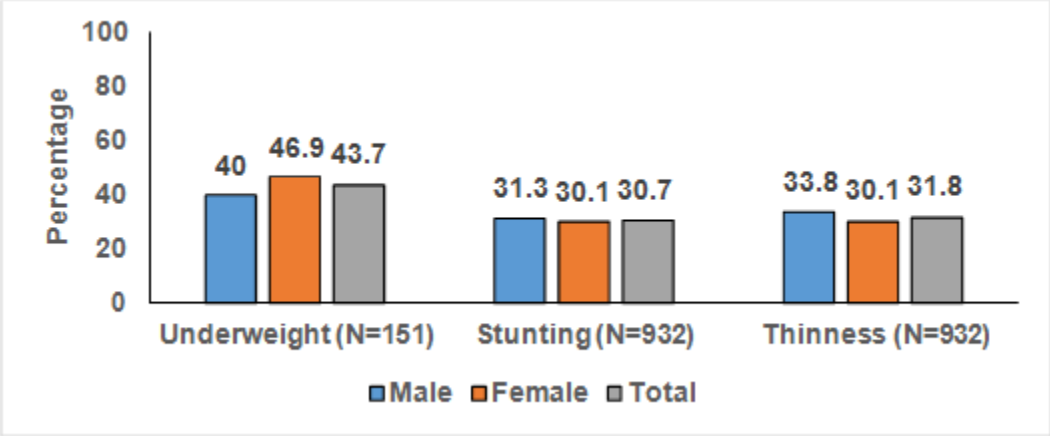

Figure 1: Prevalence of Undernutrition among Children

A total of 273 thin children (141 boys and 132 girls) were included for further study. Age of the children ranged from 9-18 years. Majority of the subjects were in the age group of 9 to 14 years. There were very few children whose age was between 15-18 years. Weight of the subjects ranged from 16 Kg to 46 Kg with mean weight of 25.4±4.9 Kg. Mean height of the subjects was 137.1±9.8 cm (ranging from 115.3 cm to 174.2 cm). There was no significant difference in weight and height between boys and girls. However, boys showed a significantly higher BMI (13.6±0.9) than girls (13.2±1.0) ($p<0.01$).

Table 1: Mean anthropometric measurements of thin children (Mean±SD)

	Male	Female	Total
Weight (Kg)	25.9±5.0	24.9±4.8	25.4±4.9
Height (cm)	137.4±10.0	136.8±9.6	137.1±9.8
BMI (Kg/m^2)	13.6±0.9	13.2±1.0**	13.4±0.9

**p<0.01

Practices and Perceptions Regarding MDM:

The data revealed that majority of the children (93.8%) were consuming MDM. There was no

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difference between the proportion of boys (93.6%) and girls (93.9%) who reported to be consuming MDM. As shown in Table 2, 68.1% of the total children reported to be consuming MDM 5-6 times a week with slightly higher number for boys than girls (69.5% v/s 66.6%). Thus, majority of the children reported to be consuming MDM 5-6 times a week. Nearly one fourth of the children reported their MDM consumption frequency to be four times a week or less than that.

Table 2: Frequency of Consumption of MDM among Thin Children (N=273)

Frequency	Boys (N=141)	Girls (N=132)	Total (N=273)
1-2 Days	18 (12.8)	18 (13.6)	36 (13.2)
3-4 Days	14 (9.9)	18 (13.7)	32 (11.8)
5-6 Days	98 (69.5)	88 (66.6)	186 (68.1)
Sometimes	2 (1.4)	0 (0)	2 (0.7)
Never	9 (6.4)	8 (6.1)	17 (6.2)

Table 3 shows that out of those who reported to be consuming MDM, almost all the children (96.9%) said that they like the food served under MDM with higher number of girls (98.4%) than boys (95.5%). Tuver dal (32.4%) and Khichdi (31.6%) were reported to be the most liked items by children who consumed MDM. Aloo Subji (24.6%) and Dudhi Subji (12.1%) were reported to be amongst the most disliked items. Differential response was seen for Dal dhokali with 27% of children liking it and 17.6% not liking it.

Table 3: Preference for MDM among Thin Children Consuming MDM (N=256)

	Boys (N=132)	Girls (N=124)	Total (N=256)
Like MDM	126 (95.5)	122 (98.4)	248 (96.9)
Dislike MDM	5 (3.8)	2 (1.6)	7 (2.7)
Not able to answer	1 (0.8)	0 (0)	1 (0.4)

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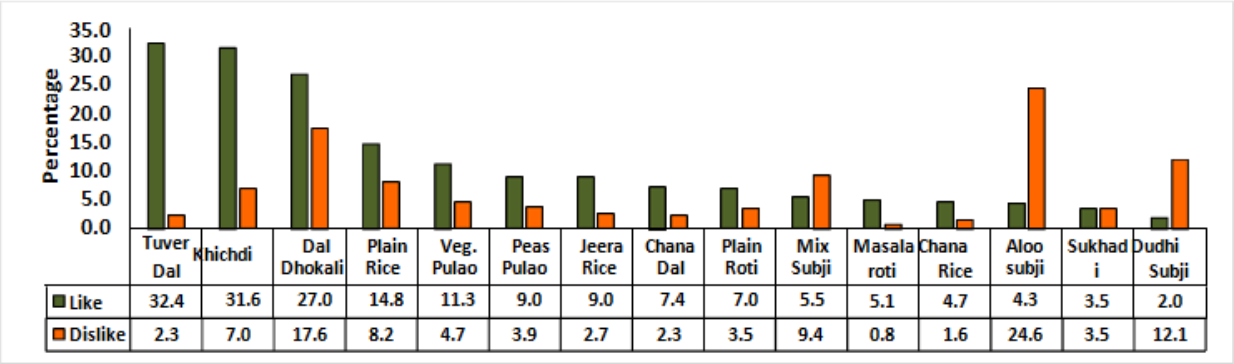

Figure 2: Preference for Items Served under MDM among Thin Children Consuming MDM (N=256)

Data on perceived benefits revealed that 81.3% (79.5% boys and 83.1% girls) of the children perceived MDM to be beneficial. Improvement in health and growth (36%) and adequate nutrition (16.8%) were the main perceived benefits of MDM among children. A few (6.3%) children identified MDM as a program providing good and hygienic food.

Table 4: Perceptions Regarding Benefits of MDM among Thin Children Consuming MDM n (%)

Is MDM beneficial?			
	Boys (N=132)	**Girls (N=124)**	**Total (N=256)**
Yes	105 (79.5)	103 (83.1)	208 (81.3)
No	10 (7.6)	9 (7.3)	19 (7.4)
Don't Know	17 (12.9)	12 (9.7)	29 (11.3)
Perceived Benefits of MDM			
	Boys (N=105)	**Girls (N=103)**	**Total (N=208)**
Improvement in health and growth	41 (39)	34 (33)	75 (36)
Provides nutrition	22 (21)	13 (12.6)	35 (16.8)
Food Safety Net- (Food availability and hygienic food)	8 (7.6)	5 (4.9)	13 (6.3)
General good feeling	6 (5.7)	6 (5.8)	12 (5.8)
Food Availability- Replacement to home food	4 (3.8)	1 (0.9)	5 (2.4)
Better educational outcomes	2 (1.9)	3 (2.9)	5 (2.4)

Perceptions and Practices related to Hygiene and Sanitation: Sanitation and hygiene among the school going population is of utmost importance for maintaining good health. Children in this

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study were asked questions related to basic sanitation and hygiene. Almost all the children (99.3%) stated that hand washing is an important practice. However, 10% of them could not state any reason for that. Nearly half (48.4%) of the children said that handwashing helps in removal of dirt and maintaining cleanliness, 34.1% said handwashing helps in preventing illnesses and maintaining their health, whereas almost one fourth (26.4%) children said that handwashing is important as it helps in removing germs from their hands.

Data on handwashing practices revealed that 99.6% children reported to be washing hands after using toilet. Most of the children (98.2%) also reported to be washing hands after eating but lesser number of children reported to be washing hands before eating (94.5%); which is a critical point to prevent illnesses. Other responses on handwashing practices showed that 15.4% (20.6% boys and 9.8% girls) reported handwashing after playing or doing household chores (8.4%). Only 7.3% said that they washed hands after returning home from school or any other place. Number of children reported to be washing hands after touching potential carriers of pathogens such as dirty things, animals on street and ill people was also very less (3%). Information on usage of soap for handwashing (Figure 3) showed that 93% of children were using soap for handwashing at home with higher number of boys (95%) than girls (90.9%). Only 16.8% children reported to be washing hands with soap at schools. More girls (18.2%) than boys (15.5%) were using soap at school for handwashing. Using soap for handwashing in school, especially before and after consuming MDM and using toilet is very important. Addressing this gap can help in achieving positive shift in the outcomes of MDM programme.

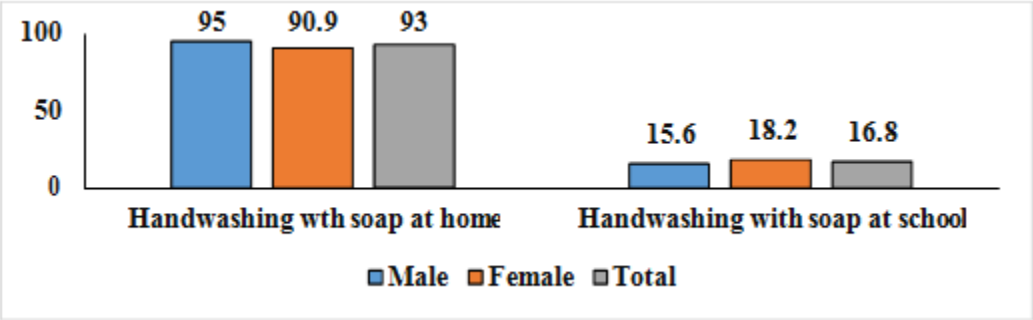

Figure 3: Usage of soap for handwashing

Majority (97.8%) of the children opined that it is important to keep the nails trimmed and clean. Common perceived reasons for keeping the nails trimmed and clean were, cleanliness and hygiene (41.9%) as well as maintaining good health (31.8%). There was a considerable number of children (23.6%) who reported growth of the nails as one of the reasons for trimming the nails.

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Majority (94.1%) of the children reported that they keep their nails clean and trimmed. However, it was observed that only around one third (33.1%) children had clean and trimmed nails. Almost half of the children (52%) reported to be cutting their nails once a week or more frequently. More than one fifth (22.5%) of the children said that they cut their nails when the nails become big. Almost one fifth of the children were cutting their nails fortnightly (9.9%) or monthly (11.4%).

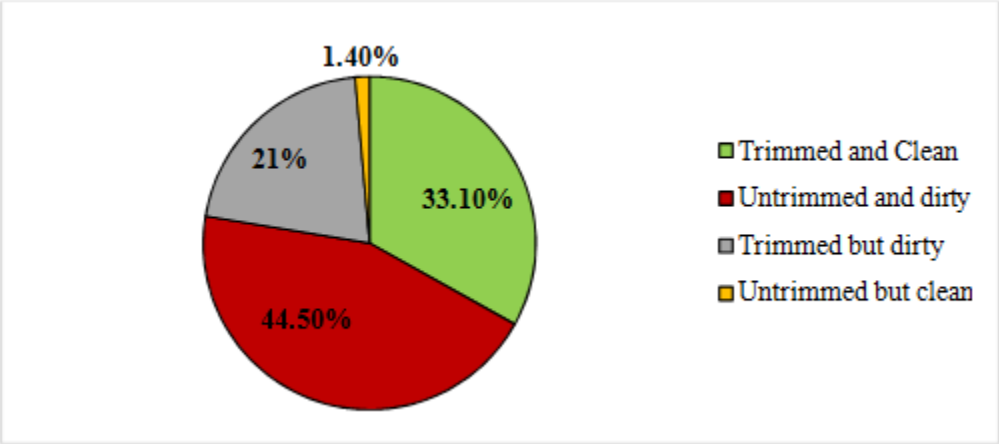

Figure 4: Observations of Cleanliness of Nails (N=273)

All the children opined that it is important to take bath. Commonly reported reasons for taking bath were to maintain cleanliness (41.9%) and maintaining good health (32.2%). However, 21.7% children (16.8% boys and 26.9% girls) could not state any importance of bathing. Most of the children (95%) reported to be bathing everyday. However, a few children reported to be bathing only on school days (2.6%).

DISCUSSION

Prevalence of undernutrition among rural primary school children was reported to be 43.7%, 30.7% and 31.8% for underweight, stunting and thinness respectively. Many studies have reported high prevalence of undernutrition among MDM beneficiaries. A study in Aligarh, reported the prevalence of stunting and thinness among rural primary school children to be 40.3% and 49.7% respectively. Jayalakshmi and Jissa (2017) have reported prevalence of undernutrition among Mid-Day Meal programme beneficiaries in Kottayam district of Kerala, India to be 13.4%, 38.8% and 30.7% for stunting, underweight, and wasting respectively.

Present study showed that majority (81.3%) the children considered MDMP to be beneficial for them. Singh and Badigar (2016) have also reported in their study conducted in rural areas of

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two districts- Dharwad (Karnataka) and Jhansi (Uttar Pradesh); that children have a favourable opinion about MDMP. The main perceived benefit of MDM in the present study was improvement in their growth and health (36%). Nambiar and Desai (2013) have also shown improvement in health to be one of the positive perception about MDM (reported by 21.4% students).

Data on sanitation and hygiene related practices and perceptions of this study showed that almost all the children identified handwashing, cleanliness of nails and bathing to be important aspects of personal hygiene. However, there was a need for improving their awareness regarding possible benefits of these practices to address the gap in the hygiene practices among children. Similar results on sanitation and hygiene have been reported in studies conducted in various parts of India. Meher and Nimonkar (2018) have reported that 69% children always wash their hands after eating and 84.1% always wash their hands after using toilet. Only 55.4% of the children in that study reported to be using soap always for washing hands. Sarkar (2013) also reported that knowledge about hygiene practices such as handwashing before eating and after visiting toilet as well as trimming nails was good, but there was a wide gap between practice and knowledge. A study carried out on school children in Chennai by Seenivasan (2016) showed that most of the students (96.4%) washed their hands before eating. All the students washed their hands after eating and after visiting toilet. However, only 91.6% used soap to wash hands after using the toilet. The study reported bathing frequency to be once a day or twice a day in most of the children. A very small proportion (11.2%) of children reported to be cutting their nails once a week and majority of the children in the study reported to be cutting nails when it grow long (69.2%). Present study showed that more than half of the children cut their nails once a week (52%) and only 22.5% children were cutting nails when they grow long.

CONCLUSION

The results of this study showed that prevalence of undernutrition is high among MDM beneficiaries of rural Vadodara. There is a need to improve their knowledge regarding MDM programme as well as sanitation and hygiene practices. Formulating strategies and weaving them into the existing programme focusing on translation of their knowledge pertaining to sanitation and hygiene into practices can improve the outcomes of the programme.

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