

Mid day meal programme

Nidhee Sachan and Purnima Shah

The midday meal scheme is the largest school lunch programme in the nation. The concept of mid day meal has long history in India. In 1925, a mid day meal programme was introduced for children belonging to poor socio-economic status in Madras corporation area. This was a cross-sectional study conducted at three government primary schools Mid day meal (MDM) in urban areas and three primary schools in rural areas in Kanpur district. Simple random sampling was used for selection of children. Study variables taken were height, weight and general physical examination. Results of the study indicated that the nutritional status of MDM children. The reason for poor result for schools providing mid day meals could be irregular attendance of children in school, less amount of mid day meal, poor quality of food items in mid day meals, combined teaching of different standard, lack of class room etc. All these parameters need to be further studied and evaluated for these impacts on academic achievement. Results of the survey conducted in 6 primary schools of Kanpur revealed that cyclic menu for six days was being followed by the schools undertaken in the study. It was found that *Tahari* and milk was the most liked (59%) meal, followed by *Dal chawal* (45%), *Dal roti* (35%), *Roti sabji* (31%) and least preferred meal was *Sabjichawal* (30%). The energy content of six days menu varied from 350-442 Kcal which is below the recommended norms of 450 Kcal.

Key Words : Malnutrition, Nutritional status, Health, Midday meal, Nutrition

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INTRODUCTION

The national programme of nutritional support to primary education was launched as a centrally sponsored scheme on 15 August 1995. Mid day meal scheme was initiated on the basis of the philosophy that when children have to sit in the class with empty stomach, they cannot focus on learning (Verma, 2015). The midday meal scheme is the largest school lunch programme in the nation. It has been reported that mid-day meal has catered to the nutritional needs of school children in both rural

and urban areas (Mehta *et al.*, 2013). India's mid day meal scheme is the largest school nutrition programme in the world. In 2006, it provided lunch to 120 million children in government primary schools every school day. Primary education in rural and urban areas in India shows that mid day meal enhance school participation, especially among girls. There was considerable increase in the enrolment of the children in schools after the introduction of mid day meal scheme and the quantity of food served to the children was sufficient (Kumari *et al.*, 2009). Children contribute to the vital human potential and impart strength to the national economy and development. Nutrition is the most important basic need, being a major determinant of health, labour productivity and mental development. Better the nutritional status of the children, higher will be the nation's growth, (Yadav and Kumar, 2014). Health and nutritional status of 6 to 12 yrs children

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are very important because development in any country, 6-12 years age is a period of learning, maturation and physical developments (Kulshrestha and Sharma, 2011). Primary school age is a dynamic period of physical growth and mental development of the child. Research strongly suggests that health problem due to malnutrition among primary school (Cynthia, 2015). The main nutritional problems facing the school children include growth retardation, stunting, underweight, anemia and vitamin A deficiency. Apart for mid day meal programme which is being run by the government of India in government run schools, there are no other efforts for children in age group 5-14 years (Alim *et al.*, 2012). Children are considered to be the most important natural resource and biggest human investment for development in every community. Quality of life of school children, continues to be poor in India, the condition is still worse in rural areas. Primary school plays an important role in physical, mental and emotional development of children (Kaushik *et al.*, 2012). Nutrition plays an important role in promotion of health and prevention of disease, food is the chief source of essential materials, which the body needs for its well-being. Good nutrition is a basic component of health. Nutritional support to primary education is considered as a means to achieve the objective of providing free and compulsory universal primary education of satisfactory quality to all the children below the age of 14 years by giving a boost to universalization of primary education through increased enrolment, improved school attendance and retention and promoting nutritional status of primary school children (Afridi and Farzana, 2007). Samson *et al.* (2003) reported that although the objective of mid day meal to boost primary education and nutritional status of children yet the scheme is not much successful in all over India like the initiative state Tamil Nadu. (Afridi and Farzana, 2007) nutritional support to primary education is considered as a means to achieve the objective of providing free and compulsory universal primary education of satisfactory quality to all the children below the age of 14 years by giving a boost to universalization of primary education through increased enrolment, improved school attendance and retention and promoting nutritional status of primary school children. (Baru, 2008) reported that mid day meal scheme has made significant contribution to reducing classroom hunger and increasing school attendance especially for girl children. It also advanced social equity by providing

an opportunity for children from different castes and religion to eat together and by creating employment opportunity for poor and lower caste women in states. Kumai *et al.* (2009) reported that there was considerable increase in the enrolment of the children in schools after the introduction of mid day meal scheme and the quantity of food served to the children was sufficient. Bhargav and Bhargav (2011) reported that equality of opportunity could be provide at the primary stage to fulfill the target of universalization of primary education through free schooling the mid-day meal, supply of books, provision of scholarship and medical aid. The present study investigated mainly the implementation of mid-day meal scheme in support of universalization of primary education. Paul and Mondal (2012) reported that to determine the extent of relationship between mid-day meal programme and academic achievement of students. A multiple regression model has been used to determine the extent of relationship between mid-day meal programme (via the factors- attendance, enrolment, retention and drop out) and academic achievement of students. Hamid and Hamid (2012) reported that regarding the impact of the scheme, 100 students, 50 parents, 20 teachers and 20 government officials were randomly interviewed through structured questionnaire schedule. In order to know the impact of the scheme data have been divided in two period's pre-mid day meals period (1999-00 to 2003-04) and post-mid-day meals period (2005-06 to 2008-09) and growth rate of both periods has been calculated through log-linear model. The results of the study shows that impact of MDMs is impressive in terms of enrolment, attendance and drop-out rates, but the scheme suffers from a number of bottlenecks in the course of its implementation. Mishra (2013) reported that the mid day meal scheme has been implemented in the State of Sikkim by providing uncooked rice to primary school children @3kg per child per month. As per directive of the supreme court vide its order dated 28th November 2001 all the State Governments including the Government of Sikkim were directed to implement the mid day meal Scheme by providing every child in Government and Government aided lower primary schools with a cooked mid day meal. The objectives of the study were to know the status of the mid day meal programme in Sikkim, its monitoring and evaluation. The data were collected from both the primary and secondary sources. mid day meal programme is one of the most important programmes of the Government to encourage

children to come to schools and participate in the learning process without worrying for their meal, especially that of day time. The programme in the holistic manner helps in bringing back all school going age children back to schools, improve retention ratio of school children and arrest dropout rate besides providing nutritious meals to growing children. Verma (2013) reported that with different aspects of this scheme, Firstly this paper highlights the role of MDM in the economy of India, secondly this paper brings out the facts that how's MDM less effective for promoting school participation and facilitating healthy growth of children, Thirdly the paper deals with the quality standard of MDM related to its main two objectives, Fourthly the paper includes all the scams and issues related to MDM and the last but not least the paper come up with some suggestions which can help MDM to be a sufficient and significant programme of second populated country of the world. Chhabra and Rao (2014) reported that mid day meal scheme has been providing cooked food to about hundred million children. It reiterated the fact that mid day meal is first and major meal for most rural children. Focus has now shifted to delivery of nutrition since the national food security act specifies statutory quantities of protein and calories. Delivery of nutrition requires comprehensive overall to include interventions in areas of storage, preparation and practices, stoves, human resource development and community participation. Gera and Kaur (2014) reported that in the state of Punjab various scheme like Parrho Punjab, mid day meal schemes etc. have been emphasized to bring improvement in elementary education. Cooked mid day meal has become very successful in government schools of Punjab as it is highly useful for lower middle students get proper nutrition so a scheme like mid day meal is the need of the hour. As the scholars pointed out in their studies that the scheme has a good impact on child nutrition, school attendance and social equity. Shrivastava *et al.* (2014) reported that the nutritional status of under-five children is still bad and needs concerted efforts from the policy makers and the health care professionals in the country. In response to the poor nutrition indicators in the children, the Ministry of Human Resource Development, India, launched the mid day meal scheme in the year 1995. Currently, it is the world's largest school feeding program that caters to about 120 million children in over 1.2 million schools and other centers. Although progress is being observed in the

country's commitment to successfully achieve the Millennium Development Goals -1 and 4, the overall achievement is far from the expected. To conclude, the mid day meal scheme is one of the country's national flagships feeding scheme initiated to improve the nutritional and educational status of the vulnerable children. However, the sustainability of the scheme depends on the political will, community participation and continuous monitoring of the programme. Malnutrition continues to be a primary cause of ill health and mortality among children in developing countries. It is a major public health problem and accounts for about half of all child deaths worldwide. About 150 million children in developing countries are still malnourished and more than half of underweight children live in South East Asia Region (SEAR). India has made remarkable growth in economic sector and substantial progress in human development but still the manifestations of malnutrition are at unacceptable levels. In spite of the fact that 20 per cent of world's child population lives in India, our country is home to 40 per cent of world's malnourished children (UNICEF, 2004). Survey conducted by 'National Nutrition Monitoring Bureau' has revealed that protein energy malnutrition and other deficiency diseases are prevalent in large proportion in Indian population. More than 75 per cent of the children are suffering from one or the other nutritional deficiency disorders like vitamin deficiency disorder, iron deficiency disorder, iodine deficiency disorder and other non-nutritional diseases. Children suffer from malnutrition, poor health, growth retardation and destitution due to inadequate nutrition, poverty and ignorance of the parents and other environmental factors (Sachdeva and Davar, 2014). Since its establishment mid day meal has been providing meals to thousands of schools in almost every state of India and around 8.41 crore of children are covered under this scheme. In spite of its success there has also been some cases where the mid day meals become fatal for many children because of either human carelessness or purchasing of low cost infected commodities. Thus, it is the need of the hours to monitor and investigate the ongoing process to ensure a more successful result.

Nutritional status of children in India:

Kanami and Gopaldas (1998) reported that the nutritional status of underprivileged mid-day meal programme beneficiaries and the contribution of mid-day meal to their home level nutrition intake were investigated.

Laxmaiah *et al.* (1999) reported that the percentage of stunted children was lower in mid day meal school (50.8%) as compared to non mid day meal school (54.1%). Zalilah *et al.* (2000) reported that nutritional studies on primary school in Malaysia show that under nutrition and over nutrition continue to be major health problem both in rural and urban areas for example 6-12 years old from five rural communities found the prevalence of underweight among boys and girls. Jood *et al.* (2000) studies on nutritional status of rural pre-school children of Haryana state on the basis of weight for age and height for age criteria as well as clinical examination. Edith (2003) studies on the intervening effect of nutritional status on school attendance rated among Kenyan middle school pupils were assessed. The study also examined the effect of nutritional status on primary school achievement scores for the eight- grade class of 1977. Jaswal *et al.* (2003) reported that health planning is the most important component of children's well-being and forms an integral part of national socio-economic planning. Rural children require considerable attention since substantial number of them is raised in families which due to their socio-economic conditions are unable to provide the required standards of health care to children to help them realize physical and mental potentials to the fullest.

Khalil and Khan (2004) reported that the prevalence of wasting of boys and girls were 32.76 per cent and 28.12, respectively, Stunting was observed as 79.73 per cent of boys and 81.80 per cent for girls. Statistical significance of wasting and stunting associated with different age group was studied by Chi-square test. It was concluded that age has play no significance role in stunting of both boys and girls and wasting for girls, but age was significantly associated with wasting of boys only. Kaur (2004) reported that height, weight, chest and head circumference of the sample were higher than ICMR standard for all age groups, while mid arm circumference was lower. Height and weight are marginally lower than 50 percentile of NCHS std. weight for age and mid arm circumference for age appeared normal. Semwal *et al.* (2006) reported that wasting and stunting in these children was high (52.6% wasted and 26.3% stunted). 10-14 years old was affected most. 28.4 per cent had anemia with girls suffering more 30.2 per cent than the boys 26.0 per cent. Bose *et al.* (2007) reported that the prevalence of underweight, stunting and

thinness among rural school children of Bankura district, India. A total of 454 (201 boys and 253 girls) Bengali Hindu children aged 6-14 years were included in this cross-sectional study. Height and weight were measured and the body mass index (BMI) was calculated. Three indicators of nutritional status namely underweight, stunting and thinness, were used based on the National Centre of Health Statistics (NCHS) < -2 Z score values. Mean Z scores for weight-for-age (WHZ), height-for-age (HAZ) and BMI-for-age (BMIZ) were less than those of NCHS in both boys as well as girls. Ayatollahi and Shayan (2008) reported that middle upper arm circumferences measurement centiles of girls lied above that of boys in all age group, which is generally significant ($p < 0.006$). Amuta *et al.* (2009) reported that assessed the nutritional stages of school aged children (6-12) years in makrudi, capital of Benue state-Nigeria compared to NCHS/WHO standard, mean BMI (body mass index) of school children in makrudi was inferior at all ages. Grover *et al.* (2009) reported that the anthropometric measurements of 150 rural preschool children (1-3 years) belonging to different agro-climatic regions of Punjab *i.e.* sub-mountain (RI), central plains (RII) and southern western (RIII) were analyzed. The inter-regional analysis showed that boys and girls of RII in the age group of 1.0-1.5 years were significantly ($p \leq 0.01$) shorter and lighter than their counterparts of RI and RII. The mean heights of rural pre-school children belonging to different regions of Punjab were comparable with international ($\geq 95\%$ of NCHS) and national ($\geq 98\%$ of ICMR) standards. The analysis further revealed that height and weight of rural pre-school children belonging to different regions of Punjab were more than 100 per cent of average Indian and Punjabi children. Osci *et al.* (2010) reported that prevalence of stunting of boys and girls was 75-35 per cent and 74-68 per cent, respectively and wasting was observed as 86-95 per cent for boys and 76-35 per cent for girls. The association of stunting and wasting with that of age group was studies by chi-square test further it was concluded that age has not played any significant role in stunting of both boys and girls and wasting for boys only. Singh *et al.* (2010) reported that mean height and weight of boys and girls were higher than ICMR standards in both type of school. The mean mid arm circumference of all girls and boys from both types of schools had higher value than the ICMR standards but did not come upto WOLANSKI standard. Gupta *et al.*

(2010) reported that sample size had been chosen $n=150$ a range of data was collected from male and female analyze their impact of mid day meal on health status of male and female students of govt. school. Anthropometric measurement has been used to analyze the impact of mid day meal on health status of male and female students of government school. Bhoite and Iyer (2011) reported that mid day meal (MDM) programme has been launched by the government of India with objective to improve nutritional status of school children. Proper monitoring of the programme should be done to improve the nutritional status of school children.

Renuka *et al.* (2011) reported that prevalence of underweight, stunting and wasting was 38.6 per cent, 36.8 per cent and 18.6 per cent, respectively which was statistically significant with respect to age and not significant with respect to sex, literacy status of mother, family type, SLI and Immunization status. Kulshrestha and Sharma (2011) reported that health and nutritional status of 6 to 11 yrs children are very vital because they are the nature's biggest assets for development and harmony. This segment of population in very prime group as for as health and nutritional status is concern because this is the period of their learning and maturation and all other developments, the present study is related to know the mean intake if various nutrients the children according to class. Alim *et al.* (2012) reported that the prevalence of stunting of boys and girls was 75.35 per cent and 74.68 per cent, respectively and wasting as observed as 86.95 per cent for boys and 76.53 per cent for girls. The study revealed poor nutritional status of school children receiving mid day meal every day. Kaushik *et al.* (2012) reported that literacy status of parents have been revealed to be strongly associated with nutritional status of children, there is an increasing need to focus the efforts towards the parents to improve the nutritional status of primary school children. Ekhtor *et al.* (2012) reported that prevalence of stunting and under-weight were 14.90 per cent and 19.60 per cent, respectively. Stunting and under-weight were observed to be prevalent among males (16.2% and 20.8%) and age 9–12 years (23.2% and 32.5%). Children living with both parents and those living with mothers only, were most stunted growth and under-weight. Although Nigerians referred to as the giant of Africa, her nutritional status remains a major public health challenge especially amongst children. Das *et al.* (2012) reported that the upper class students showed significantly poorer

hygiene than that of lower class students. Anemia rate was 22.3 per cent in these children and class II and III students showed significantly more anemia. Dental caries were found among 29.9 per cent children and class II and III students showed significantly higher rate. About 10.4 per cent children were found with enlarged tonsils and class I and III students showed higher prevalence. A major group of children (39.4%) gave the history of worm expulsion and the infestations of worms were observed significantly higher among lower class students. Vitamin B-complex deficit was observed among 20.7 per cent and the deficiency was markedly observed among class II and IV students. Under-weight children were found in one-third of study population. There was no significant difference in nutrition among the participants from the various classes. There was no case of severe under-nutrition or stunting and wasting found in this study population. Patel and Gandhi (2014) reported that the prevalence of moderate stunting and moderate wasting was 52.8 per cent and 47.2 per cent, severe stunting and wasting was in 15.2 per cent and 19.6 per cent children, respectively. There was no significant age wise or sex wise difference statistically in prevalence of under nutrition. Shivaprakash and Joseph (2014) reported that prevalence of underweight was 30.3 per cent (147) and stunting was 27.9 per cent (135). Pallor was noted in 123 (25.4%). Hair changes were seen in 19 (3.9%). Eye changes noted in the form of conjunctiva xerosis in 100 (20.7%) and bitot's spots in 10 (2.1%). Teeth changes were noted in the form of dental caries in 137 (28.3%) and enamel mottling in 19 (3.9%). Skeletal changes were noted in 7 (1.4%) children. Flat nails or koilonychias were noted in 57 (11.8%). Minj *et al.* (2014) reported that Children enrolled in 4 Government Lower Primary Schools in Sarjapura PHC area were studied. Children belonged to the age group of 6 to 12 years. The CDC (Center for Disease Control, Atlanta, USA) growth charts were used to calculate the weight for age percentile and height for age percentiles. Comparison of nutritional status of boys before and after the introduction of the MDM programme revealed improved nutritional status. Percentage of stunting and grade 3 malnutrition had reduced in all age groups except among 6 years. The inter gender comparison of the heights before and after the MDM programme showed, a greater proportion of girls were stunted before the MDM programme. Post MDM there was reduction in the proportion of stunting

and in addition was a reduction in the proportion of children with under nutrition (grade 2 and grade 3). The improvement in the nutritional status post MDM in girls was more. Shalini *et al.* (2014) reported that a higher proportion of rural students were below the third percentile for both weight and height compared with urban students (weight: 16.3% and 11.5%; height: 17.0% and 10.0%; $P < 0.05$ for both weight and height). Only 2.4 per cent and 3.1 per cent were above 97th percentile for weight and height. The rate of growth of height for weight showed a declining trend with increasing age in all the groups. (Cynthia, 2015) reported that assessment of nutritional status of the primary school age children provides reassurance about the child's health. It paves the way to identify children at risk of morbidity and target them for appropriate action. It further helps in evaluating the national programmes for improving child health and nutrition and can form the basis for policy making. Feedback about the nutritional status of the study subjects was given to the school authorities so that they would inform the parents and local health personnel for suitable and prompt action. Promoting healthy dietary habits through effective nutrition education is an effective preventive method. (Verma, 2015) reported that the prevalence of underweight children in India is highest in the world. There was a need to relook at the nutritional scenario of children with regard to the prevalence of major nutritional deficiencies. The MDM scheme is the largest school lunch programme in the world covering millions of children with the major objective of improving the nutritional status of children. In order to improve the nutritional status of children, the MDM is being strengthened from time to time. Therefore, there is the need to see the acceptance and impact of ongoing MDM programme. Kabra and Azeem (2018) reported that the results of the anthropometric data revealed that the height and weight of primary school children were lower than the ICMR standards for that age group. The data on dietary intake revealed that the intake of children was lower when compared to the RDA but mid day meal did have a significant contribution to the day's intake of the children. Chethana and Prabhat (2018) The study showed that the mean height and weight of school children were considerably lower than the ICMR standards but mid-upper circumference value found to be similar to that of standards irrespective of consuming regularly the mid-day meal provided at their institutions. From the diet recall

method, it was understood that mean micronutrient intake was unsoundly lower than the standard recommendations.

Nutrient intake of children:

Puri *et al.* (1984) reported that the mid-day meal prepared in the schools provided each child with 150 Kcal meals consists of protein 7.5 g, retinol 20 µg and iron 1.7 mg per day. Kelly (2001) studied on assessment of dietary intakes of pre-school children living in homeless shelter. This study was undertaken by nursing students and faculty to learn more about what homeless pre-school children were fed and what they ate at one family shelter in the southwest. This research reveals the important role; nurses can play in documenting and teaching both shelter staff and homeless mothers more about children's dietary needs and the long term health outcomes of a proper diet. Dreze and Goyal (2003) reported that mid day meal have a major impact on child nutrition, school attendances and social equity however, the quality issues need urgent attention if mid day meal programme realize their full potential then mid day meal would be significant step towards the realization of the right to food. Afridi (2005) studied the institutional and financial organization of the mid day meal Scheme in Karnataka and Madhya Pradesh. In the context of Madhya Pradesh, the report argued that the implementation of the programme is improving, but there is a lot that needs to be done, especially regarding quality of food. The new initiative of "Suruchi Bhojan Programme" is more attractive and nutritious as it provides higher calories in comparison to the earlier Daliya Programme. Eanne *et al.* (2005) reported that many of these diseases and the deleterious dietary choices are through to begin in early childhood. This project, therefore, aimed to assess the nutritional health status of children in Towns ville. Related issue considered important in improving the over health status of their community. Baru (2008) reported that mid day meal scheme has made significant contribution to reducing classroom hunger and increasing school attendance especially for girl children. It also advanced social equity by providing an opportunity for children from different castes and religion to eat together and by creating employment opportunity for poor and lower caste women in states. Sharma *et al.* (2010) reported that mid day meal provided by the NGO has no better impact on growth of the primary school children, however, it reduced prevalence of vitamin deficiency significantly in comparison to the mid day meal run by village

Panchayats.

Evans *et al.* (2010) reported that the primary school children in the UK have the choice of a school meal provided by the school or a packed lunch provided from home. This studied to identify seven studies from 1990 to 2007 measuring lunch time nutrient intake in children aged 5-11 years having a school meal and children having a packed lunch. Sonkar and Pandey (2011) reported that the children's nutritional status was not good because of lower consumption of energy, protein, fat, iron, calcium and vitamins. The consumption of food nutrients was lower than recommended dietary allowances. Mehta *et al.* (2013) reported that mid-day meal programme has been found to be a substitute rather than a supplement for the home meal. It provides nearly one-fourth of energy and fat and half of protein towards daily nutrient intake of children but only meets the one-fifth of energy and one-third of protein towards the recommended dietary allowances. Yadav and Kumar (2014) reported that the recommendation of experts that one third RDA of nutrients must be provided by the mid-day meal was met in the case of protein of 5-9 years age group but not in the 10-12 years age group. Energy and iron were below one third RDA in case of all the children surveyed. In general micronutrients were low in the mid-day meal. Sachdeva and Davar (2014) reported to clinical signs reveal the anatomical changes due to malnutrition like deficiency disorders for iron, Vitamin A, B-complex, C and D. Symptoms of anemia were observed at a higher rate in girls than boys. Spongy (9.2%) and bleeding (5.3%) gums indicating Vitamin C deficiency was recorded in few subjects. Bones were found normal except few children who were diagnosed with distal wrist/ bowed legs/pigeon chest. However, the prevalence of these nutritional deficiency disorders may be attributed to their poor nutritional status. Nutrition intervention in the form of supplementation and education in primary schools along with families, teachers and communities has to be strengthened to effectively address malnutrition.

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