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### **Evaluation of the Functioning of Mid-Day Meal Programme in Selected Rural Areas of Uttarakhand**

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#### **ABSTRACT**

Present study was undertaken to evaluate the functioning of Mid Day Meal (MDM) Programme in selected villages of Ramghar block, district Nainital, in the sub Himalayan hilly state Uttarakhand, India. The response and opinion of 200 adolescent children, 11 Bhojan Matas and 6 teachers in charge of MDM was collected through Questionnaire cum interview method. Results of the study showed that MDM was regularly cooked and served hot in selected schools and majority of the selected adolescent respondents liked it. Thirty five per cent of the adolescent respondents opined that the served MDM lacked variety. Majority of the adolescent respondents reported that MDM was not served according to the schools Pre-decided menu. Maximum adolescent respondents washed their hands before eating. Wood was used as fuel for cooking and LPG was not being used for cooking even in a single school. Hygiene and sanitation parameters were lower with respect to serving MDM and food storage. Only two locally available foods could find place in the MDM. Irregular and scanty water supply was a problem reported by majority of the Bhojan Matas. Insufficient monitoring of MDM Programme by concerned officials is reported. Majority of the teachers reported lack of resources and that the programme adversely affected teaching. Lack of variety, insufficient water supply, lack of proper cooking utensils, lack of hygiene in food storage and serving, non availability of LPG as fuel, and poor monitoring are some of the problems which need immediate attention for effective functioning of the programme in the region.

**KEY WORDS-** Mid Day Meal, adolescent respondents, Bhojan Matas, Hygiene, monitoring

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## **INTRODUCTION**

The Mid Day Meal Scheme of government of India is a unique free of cost school feeding program. After Independence in 1962 the scheme was initiated in primary schools in the Indian state of Tamil Nadu. The National Programme of Nutritional Support to Primary Education (NP-NSPE) was launched as a centrally sponsored scheme on 15<sup>th</sup> August 1995. Today it is popularly known as the Mid Day Meal Programme. In 2001 it was directed under the scheme that cooked Mid Day Meal be served to children at government and government aided primary school. The major objectives of the scheme are enhancing enrollment retention and attendance in schools and simultaneously improving the nutritional status of the beneficiaries, that is of the school children. The scheme addresses the issue of food security, lack of nutrition and access to education on a pan nation scale<sup>1</sup>. Improved socialization among children belonging to all caste was also one of the objectives of the MDM scheme. This ambitious scheme of the government of India with its wide coverage functions on a massive scale and provides freshly cooked hot meal to the children.

The Mid Day Meal scheme has undergone several revisions and changes over time. Under this scheme cooking cost, transportation subsidy and nutritional norms have been revised in the past. Central assistance was also provided under the scheme to each unit (school) for the establishment of a kitchen. As per the present nutritional norms under this scheme 450 calorie and 12g of protein is to be provided per day to primary school children and 700 calorie and 20g of protein are to be provided to children belonging to upper primary classes, that is to the adolescent children<sup>2</sup>.

Children and adolescents are the future citizens of a nation. Their health and wellbeing should be the utmost priority of any nation. If nutrients are not supplied in adequate amounts a sound state of health children and adolescents cannot be achieved. The problem of malnutrition among children and adolescents is wide spread and of a huge scale in India. Malnutrition is a major public health problem in South East Asia and sub Saharan Africa. It is one of the most common causes of morbidity and mortality among children and adolescents throughout the world<sup>3,4</sup>. Adolescence is an important transitional phase between puberty and adulthood. It is the period of growth spurt and is an intensely anabolic phase where in alterations in height, weight and body composition take place. The growth spurt during this period is experienced by every organ system in the body with the exception of the central nervous system and the lymphoid system. Nutrient needs are greatest during the pubescent growth spurt and gradually decrease as the individual achieves physical maturity<sup>5</sup>. Owing to the process of speeded up growth and development in an adolescent the nutrient requirements of calories, proteins, vitamins and minerals are increased. The requirements of minerals such as iron and calcium are increased to keep pace with the requirements of the developing body. Iron is required to support menstruation in girls and to develop lean body mass in boys. It is a highly

important phase for bone development in terms of mineralization of bones which would be in function for a lifetime and therefore calcium requirements are highest during this period. As it is crucial to meet the nutrient needs in adolescence, malnutrition during this phase can have detrimental effect with serious permanent damage to health of an adolescent. The health consequences of prolonged state of malnutrition among children and adolescents include delayed physical growth and impaired motor and cognitive development, diminished cognitive performance, lower intellectual quotient (IQ), poor social skills, greater behavioral problems and vulnerability to contracting diseases<sup>6,7</sup>.

From October 2007 the scheme was extended to cover children of upper primary classes (i.e. class 6 to 8) in 3479 educationally backward blocks and was later extended in April 2008 to cover the entire country<sup>2</sup> (MHRD, 2018). The visionary Mid Day Meal scheme of the Indian government is an initiative towards improving the nutritional as well as educational level of its children and adolescents. Despite governmental will, efforts and existing programmes many children and adolescents in India continue to suffer from malnutrition. Further there is also the need to study the functioning of Mid Day Meal Scheme at grass root level to gain an insight of the problem and conditions existing at school level where the programme is actually implemented. The effectiveness in the implementation of the Mid Day Meal Scheme needs to be evaluated on regional basis. Few studies were available which attempted to evaluate the functioning of Mid day meal Programme in the Sub Himalayan hilly Indian state of Uttarakhand. Studies pertaining to research problem in the undertaken study region could not be sighted. It is important to bring out the problems confronted by the stakeholders and care providers belonging to this region in order to make corrective changes and revisions for the betterment of the Mid Day Meal programme. This is of particular concern since this study region has its own unique geographical conditions not shared by other parts of the country, which have a direct impact on the lives and problems faced by the inhabitants of this region. Therefore the present study was undertaken to evaluate the functioning of Mid Day Meal programme in the selected government schools located in rural areas of Ramghar block of Nainital District, Uttarakhand and to understand the problems and constraints in the functioning of the programme in the study region and also to observe and seek the opinions of the beneficiaries care providers and the teachers.

## **MATERIAL AND METHODS**

The study was conducted in rural hilly villages of Ramghar block of district Nainital, which lies in the Indian State of Uttarakhand. This is a region is located in the sub Himalayan region. Ramghar block consists of seventy villages. For study purpose five villages (*Gahena, Pokhri,*

*Simayal, Mukteshwar and lweshal*) were randomly selected. To evaluate the functioning of Mid day Meal programme six Government schools existing in the selected villages were surveyed.

In order to get a clear picture of the persisting situation 200 adolescent children, 11 *Bhojanmatas* and 6 teachers in charge of Mid day Meal programme in the selected schools were included in the study. The interviewed 200 adolescent children included 100 boys and 100 girls in the age group of 13 to 15 years. *Bhojanmata* is a female attendant in the government schools who is responsible for preparing and serving food as well as making other required arrangements. The number of *Bhojanmatas* working in a school depends on the number of children to be catered in the school. There were two *Bhojanmatas* each working in the village government schools of Gahena, Pokhri and Semayal. Three *Bhojanmatas* worked at the government school in Lweshal since the more number of children were attending this school. One *Bhojanmata* worked in each school of the two schools of village Mukteshwar. Therefore total eleven *Bhojanmatas* were included in the study. Apart from this the opinion of six teachers who were in charge of the functioning of the Mid Day Meal Programme in the schools was also collected.

Questionnaire cum interview method was used for data collection, Separate survey schedules were formulated to get the opinion of the care providers i.e. the *Bhojanmatas*, the teachers in charge for the functioning of the programme and the beneficiaries i.e. the adolescent children.

## **RESULTS AND DISCUSSION**

In the present study the selected 200 adolescent girls and boys (13-15 years) from rural areas of Ramghar Block, Nainital District, Uttarakhand, who were the beneficiaries of the Mid Day Meal programme were interviewed. Information was collected from them on questions regarding quality and quantity of Mid Day Meals received by them. Information was also collected on regularity, variety and hygiene aspects of received Mid Day Meals. Results of the information provided by selected adolescent girls and boys on quality, quantity and hygiene aspects of MDM has been presented in **table 1**. All the selected adolescent respondents (100%) of the Mid Day Meal programme reported that MDM was regularly cooked and served at school. Majority of adolescent respondents (65%) reported that there was variety in the served MDM however, 35 per cent of the adolescent respondents stated that served MDM had no variety. Majority of adolescent respondents (85.5%) liked the food served in mid day meals however, 14.5 per cent adolescent respondents reported that they did not like the food served in mid day meal. All the selected adolescent respondents reported that hot mid day meal was provided to them at school. Results of the study showed that majority of adolescent respondents (78%) were satisfied with the quantity of the mid day meal served at school. Twenty two per cent respondents reported that the quantity of served mid

day meal was insufficient. In the present study majority (62%) of the respondents reported that served MDM varied from the school's pre-decided MDM menu however, 38 per cent of the respondents agreed that MDM was served according to pre-decided menu.

During the study it was also observed that almost all children brought their own plates from home for consuming the served MDM. The adolescent respondents cleaned their plates themselves with plain water after consuming MDM. Forty per cent of the adolescent respondents reported that they sat on the school verandah floor for consuming the served MDM and 60 per cent reported that they consumed MDM sitting either in school verandah or in open ground. Thus in the present study it was observed that hygiene aspect was lacking in the serving of MDM. In one of the studies conducted in Bihar in maximum schools plates were not available in sufficient number<sup>8</sup>. Majority (93.5%) per cent of the adolescent respondents washed their hands in school before consuming MDM and 6.50 per cent adolescent respondents reported that they did not wash their hands before consuming MDM. Sixty per cent of the adolescent respondents reported that soap for washing hand was provided by school however, 40 per cent reported that soap for washing hand was not provided by school and therefore many respondents washed hands only with plain water. In one study conducted in Raipur, Chhasttigarh all children in the surveyed schools wash their hands before and after meals only with water<sup>9</sup> (Kumar et al, 2014). Though majority (91%) of the adolescent respondents reported that the served MDM did not contain any kind of admixture or contaminant 9.0 per cent of the adolescent respondents reported that served MDM did contain some admixture or contaminant like small stones, small brick pieces and pieces of straw. After consuming MDM majority (83.0%) of the children washed their plates themselves. In the study 29.0 per cent of the adolescent respondents reported that they did help in the preparation or serving of MDM. They assisted in cleaning the serving area, carrying the ration to school, making arrangements for cooking water and in arranging the seating mats.

Information on the functioning of the Mid Day Meal programme was also collected from the *Bhojanmatas*. Total eleven *Bhojanmatas* were included in the study. Questionnaire cum interview method was used for collection information on the functioning of MDM (Table 2). The *Bhojanmatas* included in the study worked in the same schools from which the adolescent respondents were selected. In the survey personal information of the *Bhojanmatas* was collected. Majority (54.54 %) of the *Bhojanmatas* had received education only up to primary and 27.27 were illiterate however, 18.18 per cent *Bhojanmatas* had received education up to middle school. Results of the study show that the selected *Bhojanmatas* had received very little or no education. All the *Bhojanmatas* included in the study were experienced and majority (54.54%) had a work experience of 6 to 10 years. It was

also noted that the children of most (63.63%) of the *Bhojanmatas* did not study in the same school in which she worked.

**Table 1 Information provided by selected adolescent boys and girls on quality, quantity and hygiene aspects of MDM**

S.No	Parameter		Adolescent girls	Adolescent boys	Total	Percentage
1	Whether MDM is cooked and served in school everyday	Yes	100	100	200	100
		No				
2	Is there variety in the Served MDM	Yes	69	61	130	65
		No	31	39	70	35
3	Do you like the food served in MDM	Yes	84	87	171	85.5
		No	16	13	29	14.5
4	Is the quantity received sufficient	Yes	80	76	156	78
		No	20	24	44	22
5	Food served is according to school's MDM menu	Yes	40	36	76	38
		No	60	64	124	62
6	Place where MDM is served	School Varandah	40	40	80	40
		Open ground and Varandah	60	60	120	60
7	Do you wash your hands before consuming MDM	Yes	97	90	187	93.5
		No	03	10	13	6.5
8	Is soap for washing hands provided by school	Yes	60	60	120	60
		No	40	40	80	40
9	Whether MDM contains any admixture/contaminants	Yes	09	09	18	9
		No	91	91	182	91
10	Do you wash your plates after consuming MDM	Yes	82	84	166	83.0
		No	18	16	34	17.0
11	Do you assist in MDM preparation/serving	Yes	22	36	58	29.0
		No	78	64	142	71.0

Personal information of *Bhojanmatas* included in the study

**Table 2- Personal information of *Bhojanmatas* included in the study**

S no	Parameter		Number	Percentage
1	Educational level of <i>Bhojanmatas</i>	Illiterate	3	27.27
		Primary	6	54.54
		Middle School	2	18.18
2	Years of work experience	4-6 years	6	54.54
		6-10 years	5	45.45
3	Do your children study in same school	Yes	4	36.36
		No	7	63.63

### **Information obtained from *Bhojanmatas* on arrangements and functioning of MDM**

Information was obtained from *Bhojanmatas* regarding the arrangements and functioning of MDM (Table 3). In the study it was found that in all the selected village schools of Ramghar block wood was used as fuel for cooking the MDM. The *Bhojanmatas* themselves made arrangements for fuel wood from the forest. It was reported by the *Bhojanmatas* that she was paid by the school for arranging the fuel wood. Majority (63.63%) received 300 to 400 rupees and 27.27 per cent *Bhojanmatas* received 100 to 200 rupees. At one school located in village Mukteshwar the



*Bhojanmatas* was not responsible for making arrangement of fuel wood. Mostly the fuel wood was collected from the village local forest. The *Bhojanmatas* reported that it was a labourious and time consuming task. Most *Bhojanmatas* participating in the study rated the quality of ration used in MDM as moderate.

In the present study it was also observed that each school selected in the study had an additional store room adjoining the kitchen for the storage of ration and other supplies, however store room in all the schools included in the study was not used. The reason for this practice was that since the kitchen and store were separately located not adjoining the main school building therefore for safety reasons the ration was stored in a room within the main school building. A study conducted in Raipur, Chhattisgarh also reported that food grains were stored in separate room within the school premises<sup>9</sup>. It was also found that in majority (54.54%) of the schools the spices were not stored in proper containers and they remained open in the same package in which they were purchased. In 45.45 per cent school kitchen's the spices were stored in separate containers. The problem of rodents and mice was found in 45.45 per cent school kitchen and store rooms. Majority (54.54%) of the *Bhojanmatas* participating in the study did not report any problem of any problem of mice in school kitchen or store room. Thus in the present study it was found that proper hygiene parameters in storage of rations and other edibles was not being maintained in almost 45 per cent of the schools. With reference to cooking utensils used in MDM it was found that in majority (54.54%) of the schools there was proper arrangement of cooking utensils. However in 45.45 per cent schools either the utensils were too big in relation to the number of children enrolled or too small. In majority of the schools locally available food products were used in MDM. However, in 27.27 per cent schools locally available food products were not used in MDM. The commonly used locally available food products were black soyabean (*Bhatt*) and potatoes

In all the schools selected in the study there was the arrangement of tap water supply through pipelines. However the problem of insufficient and irregular water supply was reported in 72.72 percent schools. Therefore on many occasions there was no water available for cooking the MDM. In such instances the *Bhojanmatas* had to fetch water from elsewhere such as local natural sources, community hand pumps and from nearby houses. In 18.18 per cent of the schools ash was being used by the *BhojanMatas* to clean utensils. Further in the study it was found that some quantity of food remained as left over in majority (63.63%) of the schools. On such instances the leftover food was served to children of senior classes and also by the *Bhojanmatas*. Majority (81.81%) of the *Bhojanmatas* reported that they were not provided any kitchen aprons by the schools.

Table 3- Information obtained from *Bhojanmatason* arrangements and functioning of MDM

S no	Parameter		Number	Percentage
1	Fuel source used in cooking MDM	Wood	11	100
		LPG cylinder	0	-
2	Expense incurred per month by school on fuel	Rs 100-200	3	27.27
		Rs 300-400	7	63.63
		NA	1	9.00
3	How will you rate the quality of rations used in MDM	Good	-	-
		Moderate	11	100
		Low	-	-
4	Are spices stored in containers	Yes	5	45.45
		No	6	54.54
5	Is there a problem of rodents/mice in the food storage area	Yes	5	45.45
		No	6	54.54
6	Is there proper arrangement of cooking utensils	Yes	6	54.54
		No	5	45.45
7	Are locally available food products utilized in MDM	Yes	8	72.72
		No	3	27.27
8	Are water supply arrangements available in school	Yes	11	100
		No	-	-
9	Is there a problem of irregular and insufficient water supply in school	Yes	8	72.72
		No	3	27.27
10	Who washes the used dishes	Children	9	81.81
		Bhojanmata	2	18.18
11	The utensils used in MDM are cleaned using	Ash	2	18.18
		Soap	2	18.18
		Both ash and soap	7	63.63

In the present study information was also collected from the *Bhojanmatas* regarding the monitoring of the functioning of MDM programme (Table 4). Majority (63.63%) of the *Bhojanmatas* reported that the teacher incharge was not present when MDM was served. However, 36.36 per cent *Bhojanmatas* reported that the teacher incharge remained present during MDM service. Majority (81.81%) of the *Bhojanmatas* reported that the teacher incharge were satisfied with their working. In the present study 63.63 per cent of the *Bhojanmatas* reported that their schools were not physically inspected by concerned higher officials with regarding the functioning of MDM and 36.36 per cent *Bhojanmatas* reported that their schools were inspected with regard to the functioning of MDM. In the opinion *Bhojanmatas* (who's schools were not inspected) since the schools were distantly located and were far from the main road, there was no inspection by higher officials regarding the functioning of MDM



Table 4- Opinion of Bhojanmatas on the monitoring of MDM

S no	Parameter		Number	Percentage
1	Teacher incharge is present when MDM is served	Yes	4	36.36
		No	7	63.63
2	Strict observation of MDM is kept by the incharge teacher	Yes	6	54.54
		No	5	45.45
3	Is the teacher incharge satisfied with your working	Yes	9	81.81
		No	2	18.18
4	Is the school inspected for MDM functioning by concerned officers	Yes	4	36.36
		No	7	63.63

In the present study the opinion six teachers incharge of MDM programme from the selected village schools was also collected with respect to the various aspects of the programme (Table 5). Majority (66.66%) of the teachers reported that their school did not have sufficient resources for the functioning of MDM programme, 33.33 per cent teachers reported that they had sufficient resources. In the opinion of majority (66.66%) of the teachers thenumber of children in their school did not increased as an impact of MDM. In one of the studies across schools of Chandigarh and Panchkula it was reported that the scheme did improve the attendance of students in school but it still could not make up increased enrollment and retention of students<sup>10</sup>. MDM Programme records are maintained in all the schools surveyed. A large majority (83.33%) of the teachers also reported that local shops were not surveyed before purchasing MDM ration or other supplies. In one of the studies conducted in rural Vadodara results revealed that the MDMP in  $\leq 50$  of the schools adhered to NSPE 2006 guidelines with reference to infrastructure and nutritional quality<sup>11</sup>. In the opinion of majority (66.66%) of the teachers there was more responsibility of MDM than teaching, however, 33.33 percent teachers disagreed from this opinion. Majority (83.33%) of the incharge teachers also held the opinion that teaching was affected as a result of MDM Programme and the attention of the students was diverted from studies.

Table 5 Opinion of Incharge Teachers on the functioning of MDM

S no	Parameter		Number	Percentage
1	Does the school have sufficient resources for the functioning of MDM	Yes	2	33.33
		No	4	66.66
2	Has the number of children in your school increased as an impact of MDM	Yes	2	33.33
		No	4	66.66
3	MDM records are maintained in school	Yes	6	100
		No	-	-
4	Local shops are surveyed before purchasing MDM ration and other supplies	Yes	1	16.33
		No	5	83.33
5	There is more responsibility of MDM than teaching	Yes	4	66.66
		No	2	33.33
6	Teaching is affected because of MDM	Yes	5	83.33
		No	1	16.33

## CONCLUSION

In the present study the responses and opinion of 200 adolescent children, eleven *BhojanMatas* and six teachers (incharge of MDM) was collected. Results of the study showed that MDM was regularly cooked and served hot in the selected rural schools of Ramghar block. Majority (85.5%) of the selected adolescent respondents liked the food served in MDM and most (78%) of them were also satisfied with its quantity. Thirty five per cent of the adolescent respondents were of the opinion that the served MDM lacked variety. According to majority (62%) of the adolescent respondents MDM was not served according to the schools Pre-decided menu. It is also note worthy that majority of the adolescent respondents consumed MDM sitting on school verandah floors or in open grounds in all the selected schools and brought their own plates for consuming MDM.

As a good hygiene practice 93.5 per cent of the adolescent respondents washed their hands before eating the served MDM and sixty per cent of the adolescent respondents reported that soap for washing hands was provided by school. However 40 per cent of the adolescent respondents washed their hands with plain water as soap was not available in school. As reported by majority of the adolescent respondents the served MDM did not contain any admixture. Another 29 per cent of the adolescent respondents reported that they assisted in various chores related to the preparation of MDM.

With regard to the functioning and arrangements of MDM it was reported by all the *BhojanMatas* that wood was used as a primary fuel for cooking and a large majority reported that it was their responsibility to arrange it, which was quite a tedious task. LPG was not being used for cooking even in a single school. Since the kitchen and store were separately located not adjoining the main school building therefore for safety reasons the ration was stored in a room within the main school building. Hygiene and sanitation parameters were lower with respect to storage of food items and the problem of rodents and mice was reported by 45.45 per cent of the *BhojanMatas*. It was also

seen in the study that the only two locally available foods could find place in the MDM. However, since the region has rich vegetation and a variety of vegetables and fruits grow in the region, it is suggested vegetables (especially seasonal green leafy vegetables) and fruits be included in the MDM. This would also help enhance variety in MDM. A problem of irregular and scanty water supply was reported by majority of the *BhojanMatas*. On the monitoring of MDM majority of the *BhojanMatas* reported that the teacher incharge was not present when MDM was served. However, in the opinion of 54.54 per cent *BhojanMatas* strict observation of MDM was kept by 54.54 per cent of the incharge teachers. Majority ((63.63%) of the *BhojanMatas* reported that since their school was distantly located it was not inspected for the functioning of MDM by higher concerned officers. Most of the teachers included in the study reported that their school did not have sufficient resources for the functioning of MDM programme and in their opinion the programme had no impact in increasing the number of children in school. Majority of the teachers included considered MDM as a bigger responsibility than teaching and also that it adversely affected teaching. The study concludes that in most of the schools included in the study there was regularity in the served MDM and it did not contain any admixture. Records were well maintained. Lack of variety, insufficient water supply, lack of proper cooking utensils, lack of hygiene in food storage, non availability of LPG as fuel, and poor monitoring are some of the problems which need immediate attention. The study suggests a lot more effort is needed to improve the functioning of the programme in the region.

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