



**Government of India  
Department of School Education & Literacy  
Ministry of Human Resource Development**



मध्याह्न भोजन योजना  
Mid Day Meal Scheme



**Report of 10<sup>th</sup> Joint Review Mission  
Mid-Day Meal Scheme**

**GUJARAT**

**(5<sup>th</sup>-12<sup>th</sup> MARCH, 2018)**

For official use only



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Report of 10<sup>th</sup> Joint Review Mission on  
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(5<sup>th</sup> to 12<sup>th</sup> March 2018)

## **Acknowledgments**

Our team comprising of experts from the field of nutrition, Senior Consultants of TSG MDM; is grateful to the ministry of HRD, Government of India for constituting this Joint Review Mission and giving us the opportunity to undertake this task in the state of Gujarat. We thank the Department of Education (Government of Gujarat) for hosting the Joint Review Mission (JRM) in Gujarat.

We are thankful to the officials of the Department of Education (Government of Gujarat) for co-operation during the entire period of JRM. A special word of thanks to the principals, teachers, particularly the MDM in-charges and the non-teaching staff of various schools visited by the mission for their co-operative interaction and providing the relevant information regarding the status of MDM in their respective schools.

Since nutrition is important component of the current JRM, we thank the school children for the patient co-operation in the entire process of data collection particularly the data on anthropometry.

Despite the various field level constraints, the team's constant, tireless dedication brought out an insight of the present on-going MDM scheme at various schools. Jointly, it tried to cover various aspects relating to MDM which included infrastructure, fund allocation, monitoring, evaluation, Rashtriya Bal Swasthya Karyakram, meal service and delivery as well as anthropometric measurements of the school children which were indicated in the Terms of Reference of the JRM.

We hope that through our observations and data collection, we have been able to capture the entire array of discussions with the officials/stake holders at various levels and that the concerned recommendations put forth by the mission in this report will prove helpful to the Government of Madhya Pradesh in implementing the Mid-Day Meal Scheme in a more systematic and effective manner which will go a long way in promoting health and nutritional status of the children of this state.

**JRM TEAM,**

**Gujarat: March 2018**

# MID DAY MEAL SCHEME JOINT REVIEW MISSION

Gujarat

## CONTENTS

Chapter	Topic
1.	Composition and Terms of Reference (TOR)
2.	Methodology for Sample Data Collection and Analysis
3.	Review of performance: Physical and financial
4.	Observations from the Field as per the ToRs
5.	Nutritional and Anthropometric Assessment
6.	Recommendations and Suggestions
	Annexures

## CHAPTER 1

### COMPOSITION AND TERMS OF REFERENCE (TOR)

Nutrition is directly linked to human resource development, productivity and ultimately to the nation's growth. Malnutrition on the other hand refers to insufficient, excessive, or imbalanced consumption of nutrients by an organism. In developed countries, the diseases of malnutrition are most often associated with nutritional imbalances or excessive consumption. In developing countries, malnutrition is more likely to be caused by poor access to a range of nutritious foods or inadequate knowledge. It is inextricably linked with illiteracy, especially female illiteracy, lack of safe drinking water, sanitation, ignorance, lack of awareness and ill health. It creates its own cycle within the large cycle of poverty.

Malnutrition adversely affects Universalization of Elementary Education (UEE). Even if a malnourished child does attend school, he/she finds it difficult to concentrate on and participate in the learning activities in school. Unable to cope, the child would very often drop out of school.

Various studies suggest that absence of an adequate breakfast over extended period can affect both behavior and nutritional status; such children exhibit irritability, decreased attentiveness and low concentration span, all of which affect their active learning capacity. Malnutrition is therefore not just an issue for the nutritionist; the planners and economists also need to recognize that the cost of malnutrition is much greater than the investments required to end hunger/malnutrition.

The Mid- Day Meal (MDM) Scheme is a flagship programme of the Government of India. Having the distinction of being the largest school feeding programme in the world reaching out to about 9.78 crore children in 11.43 lakh primary and upper primary schools (Government, Government Aided and Local bodies), Education Guarantee Scheme (EGS) / Alternative Innovative Education (AIE) centres and Madarsa and Maqtabas supported under SarvaShikshaAbhiyan (SSA) as well as

National Child Labour Project (NCLP) schools. In drought-affected areas MDM is served during summer vacation also. Cooked mid-day meal consists of 100 grams of wheat/rice, 20 grams of pulses, 50 grams of vegetables and 5 grams of oil/fat and provides 450 calories of energy and 12 grams of protein at primary stage. For upper primary stage children, it consists of 150 grams of wheat/rice, 30 grams of pulses, 75 grams of vegetables and 7.5 grams of oil/fat and to provide 700 calories of energy and 20 grams of proteins.

A programme of scale and magnitude of Mid Day Meal requires close monitoring and evaluation at all levels. In 2010, the Ministry of Human Resource Development, Govt. of India, decided to review implementation of the programme in all its aspects through the Review Missions, which are also to provide suggestions for improvement.

### **Joint Review Mission – Team Members**

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- i. Prof. Uma Iyer, Dean, Department of Food & Nutrition and Family & Community Sciences, M S University, Baroda.
- ii. Dr. Swati Dhruv, Assistant Professor, Department of Food & Nutrition and Family & Community Sciences, M S University, Baroda
- iii. Dr. Anindita Shukla, Senior Consultant (Food & Nutrition) TSG-MDM.
- iv. Shri Bhupendra Kumar Senior Consultant (Plan Monitoring) TSG-MDM.
- v. Ms Sabera Malek, Asst. Commissioner (MDM), Government of Gujarat.

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Ms Shweta Patel, Ms Divya Patel, Ms Fatema Rathwala and Ms Komal Panchasara were the research assistants for the Mission.

The Mission comprising of the above mentioned members visited 13 schools in Banaskantha & 15 schools in Vadodara.

#### **1.2 The Terms of Reference for the Review Mission were as under:**

- i. Review the fund flow from State to Schools/implementing agencies.
- ii. Review the coverage of the Scheme
- iii. Review the availability of Management Structure at State, District, Block level
- iv. Review the delivery mechanism of food grains from State to Schools
- v. Review the smooth implementation of the Scheme with particular reference to Interruptions.
- vi. Review the Creation of Capital Assets
- vii. Construction of Kitchen-cum-stores
- viii. Procurement/Replacement of Kitchen Devices
- ix. Review the involvement of NGO's/Trust/Centralized kitchens in the Scheme
- x. Review the payment of Cost of Food grains to Food Corporation of India
- xi. Review the convening the meetings of District Level Committee under Chairpersonship of senior most Member of Parliament.(LokSabha)

- xii. Review the Management Information System (MIS)
- xiii. Review the implementation of Automated Monitoring System
- xiv. Convergence with Rastriya Bal Swasthya Karyakram for health check-up, supplementation of micronutrients under WIFS & deworming medicine under National deworming day and health checkups and supply of spectacles to children suffering from refractive errors.
- xv. Review the following**
  - a. Operationalization of Mid-Day Meal Rules, 2015
  - b. Dissemination of Food Safety Guidelines up to District, Block and School
  - c. Enrolment of children and Cook-cum-Helpers under Aadhaar
  - d. Payment of Honorarium to Cook-cum-Helpers
  - e. System of Storage food grains and other ingredients
  - f. Role of Teachers in Mid-Day Meal Scheme.
  - g. Tasting of MDM by Teacher, Parents and Community.
  - h. Testing of meals
  - i. Involvement of Community
  - j. Bank Account of Cook-cum-helpers
  - k. Awareness of the Scheme
  - l. Contingency Plan



### **Terms of Reference for Nutritional aspects:**

- a. To assess the anthropometric measurements of a sample of children availing MDM
- b. Height ii. Weight iii. Mid arm Circumference
- c. To Calculate the Body Mass Index (BMI) on the basis of measurement of height and weight.
- d. To identify the children who are undernourished and over nourished.
- e. To review the quality and quantity of the served MDM.
- f. To review the satisfaction of the children parents and community on the served meal under MDM in respect of quality and quantity.
- g. To suggest some nutritionally balanced region specific recipes.

### **1.3 Food and Nutrition norms through the years under MDM:**

Initially the MDM Scheme envisaged the provision of free of cost 100g of wheat /rice for children studying in classes' I-V in all Government, local body and Government aided primary schools. The central government provided wheat /rice to the States/UTs; 3 kg of cereals were to be distributed free of cost to children who had over 80% attendance in the previous month. Most of the states distributed food grains to children but some states who were earlier providing cooked mid day meal or ready to eat food to school children, continued to do so.

In 2001 Hon'ble Supreme Court of India ruled that MDM is a legal entitlement for all children and that the government should provide a hot cooked mid day meal containing 300 kcal energy and 12 g of protein/day for 200 days to all children studying in classes I-V in all government, local body and government aided primary schools .

In 2006, Department of Primary Education constituted an Expert Committee to review the content and quantity of ingredients to be provided through the MDM. The expert

committee recommended that MDM should provide hot cooked meal containing 100g of cereals, 20g of pulses.

**Table 1: Revision of food norm w.e.f. 1.12.2009**

<b>Nutritional content</b>	<b>Norm as per NP-NSPE,2004</b>	<b>Revised norm as per NP- NSPE,2006</b>
<b>Calories</b>	300	450
<b>Protein</b>	8-12 g	120
<b>Micro – nutrients</b>	Not prescribed	Adequate quantities of Micro nutrients like Iron, folic Acid and Vitamin A

Food norms have been revised to ensure balanced and nutritious diet to children of upper primary group by increasing the quantity of pulses from 25 to 30 grams, vegetables from 65 to 75 grams and by decreasing the quantity of oil and fat from 10 grams to 7.5 grams.

#### **1.4 Nutrition Content under MDMS: Presently**

- a) 450 kcal and 12g of protein which is derived from 100 g of food grains (rice/wheat), 20g of pulses , 50g of vegetables and 5g of oil for children studying in primary classes and
- b) 700 kcal and 20g of protein, which is derived from 150g of food grains (rice/wheat), 30g of pulses , 75g of vegetables and 7.5g of oil in upper primary classes.

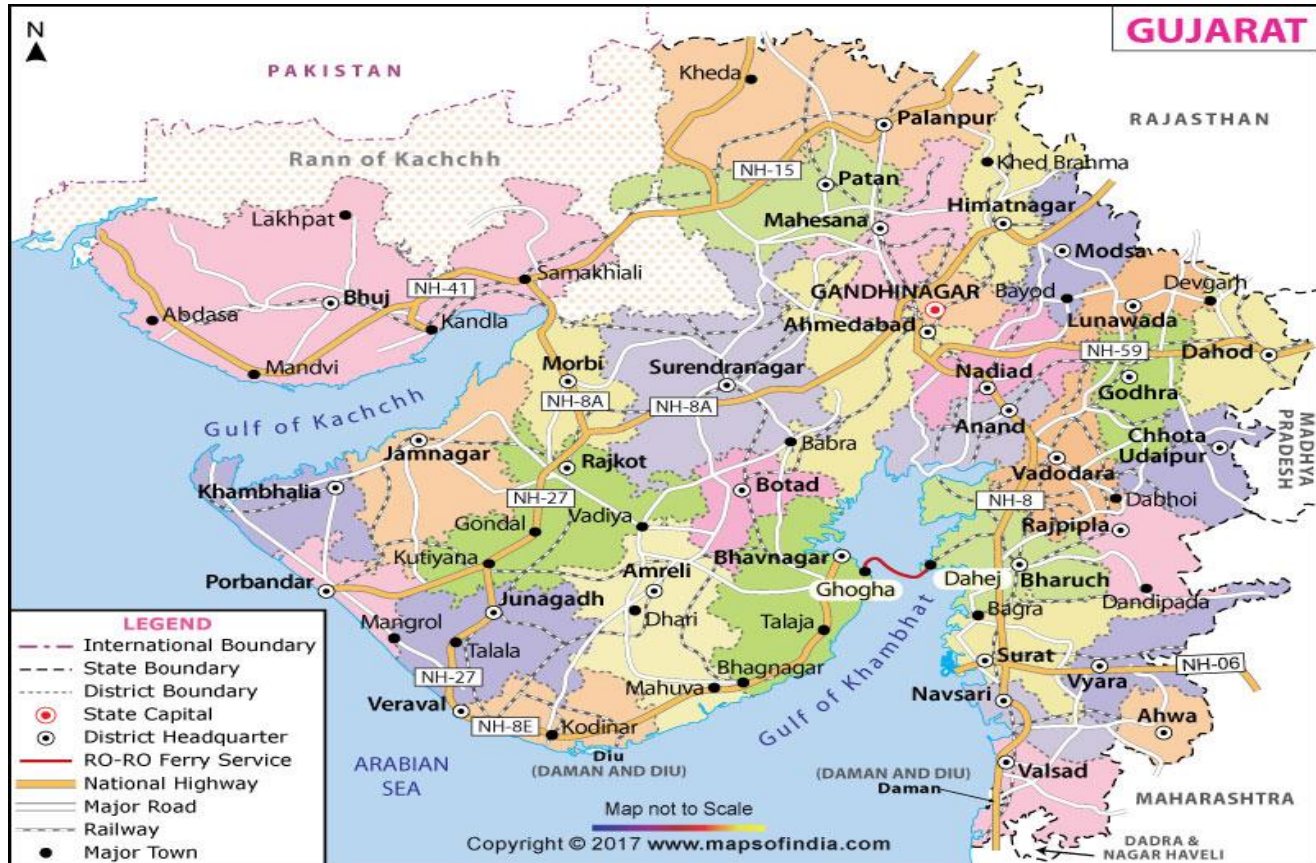
**Table 2: Quantity of Ingredients**

S. No.	Items	Quantity per Child per Day	
		Primary	Upper Primary
1.	Food grains	100 g	150 g
2.	Pulse	20 g	30 g
3.	Vegetables (leafy also)	50 g	75 g
4.	Oil & fat	5 g	7.5 g
5.	Salt & Condiments	As per need	As per need

### **1.5 Gujarat: An Introduction**

Gujarat is a state considered to be part of Western India and Northwest India with an area of 196,024 km<sup>2</sup> (75,685 sq mi), a coastline of 1,600 km (990 mi)—most of which lies on the Kathiawar peninsula, and a population in excess of 60 million. It is bordered by Rajasthan to the northeast, Daman and Diu to the south, Dadra and Nagar Haveli and Maharashtra to the southeast, Madhya Pradesh to the east, and the Arabian Sea and the Pakistani province of Sindh to the west. Its capital city is Gandhinagar, while its largest city is Ahmadabad. The Gujarati-speaking people of India are indigenous to the state.

## Gujarat Map



### Population:

As per Census 2011, Gujarat has population of 6.04 Crores, an increase of almost 1 crore from 5.07 Crore in 2001 census. Total population of Gujarat as per 2011 census is 6,04,39,692 of which male and female are 3,14,91,260 and 2,89,48,432 respectively. In 2001, total population was 5,06,71,017 in which males were 2,63,85,577 while females were 2,42,85,440. The total population growth in this decade was 19.28 percent while in previous decade it was 22.48 percent. The population of Gujarat forms 4.99 percent of India in 2011. In 2001, the figure was 4.93 percent.



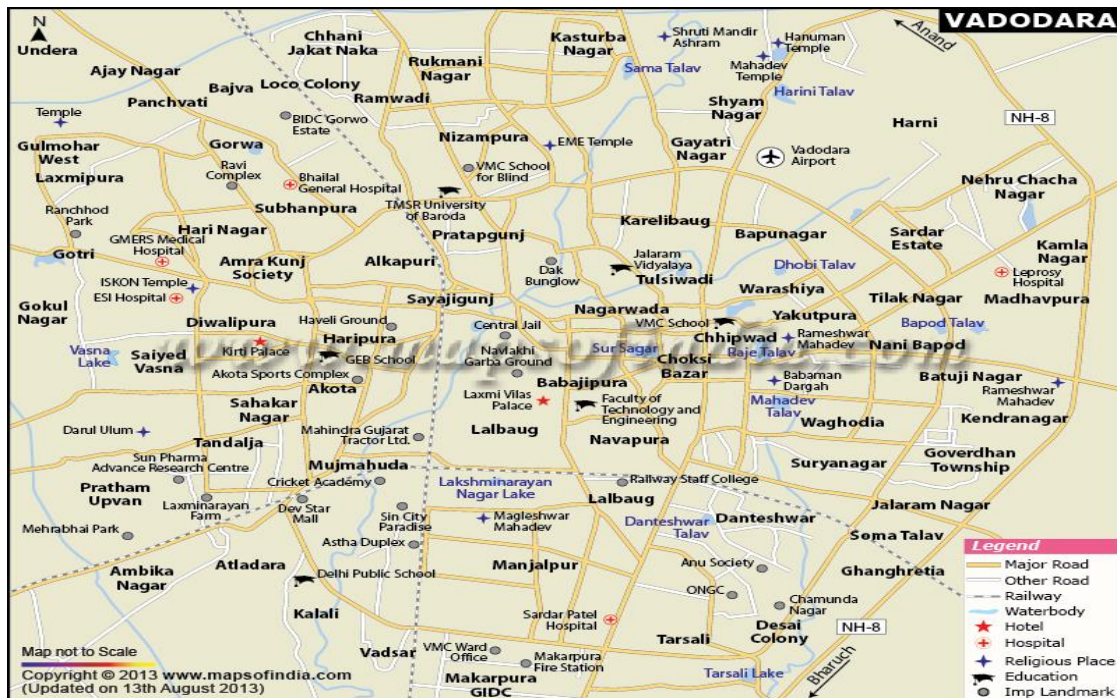


## **POPULATION:**

In 2011, Banaskantha had population of 31,20,506 of which male and female were 16,10,379 and 15,10,127 respectively. In 2001 census, Banaskantha had a population of 25,04,244 of which males were 12,97,404 and remaining 12,06,840 were females. Banaskantha District population constituted 5.16 percent of total Maharashtra population. In 2001 census, this figure for Banaskantha District was at 4.94 percent of Maharashtra population. There was change of 24.61 percent in the population compared to population as per 2001. In the previous census of India 2001, Banaskantha District recorded increase of 26.38 percent to its population compared to 1991.

### **1.7 District: Vadodara**

Vadodara is the third-largest city in the Western Indian state of Gujarat, after Ahmedabad and Surat. It is the administrative headquarters of Vadodara District and is located on the banks of the Vishwamitri river, 139 kilometres (86 mi) from the state capital Gandhinagar. The railway line and NH 8 that connect Delhi and Mumbai pass through Vadodara. The city is known for the Lakshmi Vilas Palace, the residence of Baroda State's Maratha royal family, the Gaekwads. It is also the home of the Maharaja Sayajirao University of Baroda, the largest university in Gujarat. An important industrial, cultural and educational hub of western India, the city houses several institutions of national and regional importance while its major industries include petrochemicals, engineering, chemicals, pharmaceuticals, plastics, IT and foreign exchange services.



## POPULATION:

In 2011, Vadodra had population of 41,65,626 of which male and female were 21,53,736 and 20,11,890 respectively. In 2001 census, Vadodra had a population of 36,41,802 of which males were 18,97,368 and remaining 17,44,434 were females. Vadodra District population constituted 6.89 percent of total Maharashtra population. In 2001 census, this figure for Vadodra District was at 7.19 percent of Maharashtra population. There was change of 14.38 percent in the population compared to population as per 2001. In the previous census of India 2001, Vadodra District recorded increase of 19.87 percent to its population compared to 1991.

## CHAPTER 2

### METHODOLOGY

Mid Day Meal is a flagship programme of Government of India providing meals in schools which can help in alleviating short-term hunger and improving nutritional status of children along with bringing an improvement in enrolment rates.

Mid Day Meal in schools has had a long history in India. In 1925, Mid Day Meal Programme was introduced for disadvantaged children in Madras Municipal Corporation. By the mid-1980s three States viz. Gujarat, Kerala and Tamil Nadu and the UT of Pondicherry had universalized a cooked Mid Day Meal Programme with their own resources for children studying at the primary stage and by 1990-91 the number of States implementing the Mid Day Meal programme with their own resources on a universal or a large scale had increased to twelve states.

Mid Day Meal was started in 1984 in Gujarat under which hot cooked meal is served to children in the age group of 6 to 14 years (Standard I-VIII) of government primary and upper primary schools.

The monitoring of the Mid Day Meal scheme is carried out by the ministry of human resource development through desk monitoring and field monitoring. The joint review mission carries out the field monitoring of the Mid Day Meal program in each state. As a part of the monitoring the 10<sup>th</sup> Joint review mission in the state of Gujarat was planned between 5<sup>th</sup> March to 12<sup>th</sup> March, 2018. The experimental plan for the 10<sup>th</sup> Joint review mission is discussed below:

#### **Selection of the districts:**

A survey was conducted in the primary and upper primary government run schools who were availing Mid Day Meal. The selection of two districts for the 10<sup>th</sup> Joint review mission for the state of Gujarat (one district selected by the Ministry of MHRD and the second one by the State Government) were Banaskantha and Vadodara. In

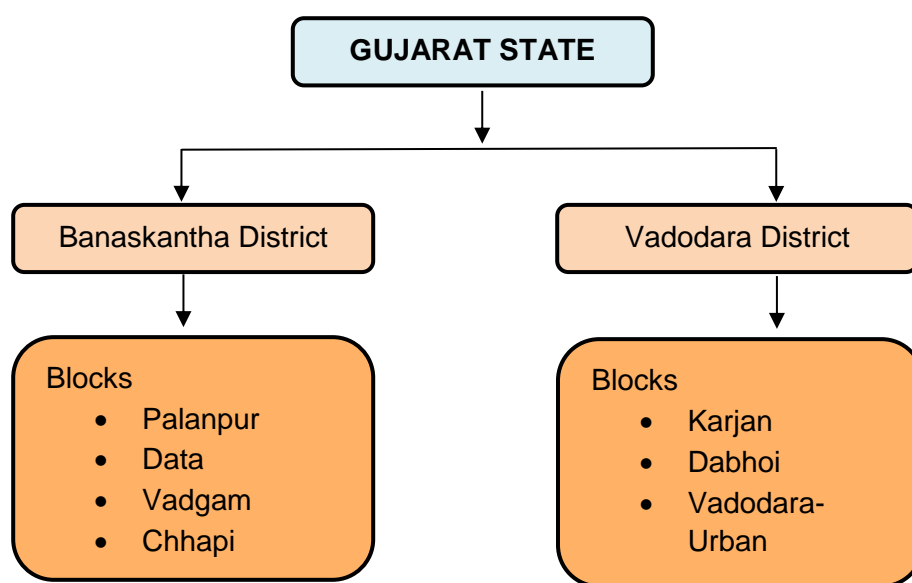


the district of Banaskantha three blocks were surveyed viz. Palanpur, Data and Vadgam. Similarly, from Vadodara district three blocks i.e. Karjan, Dabhoi and urban Vadodara were selected.

**Sample Size:**

The total sample size covered from 4 blocks of Banaskantha and 3 blocks of Vadodara was 1000 children (Banaskantha n=577, Vadodara n=423). Out of the 1000 children enrolled from 27 schools of both the districts 503 were boys and 497 girls (Figure 2.1). Different aspects of the implementation of the MDM program was studied from the children who were enrolled for the survey from class I-VIII as well as their parents, teachers, members of SMC etc.

**Fig. 2.1. EXPERIMENTAL PLAN**



**Table 2.1: List of Schools Covered under JRM**

DISTRICT	BLOCK	SCHOOL
Banaskantha	1. Danta	Punjpur, Valvada, Ratanpur, Motasada, Panchha, Dhabavadiav (n=6)
	2. Palanpur	Kanodar, Vasna, Bhagol (n=3)
	3. Vadgam	Vadgam, Magarwada (n=2)
	4. Chhapi	Majadar, Chhapi (n=2)
Vadodara	1. Karjan	Dhavat, Kurali, Ganpatpura, Gandhara (n=4)
	2. Dabhoi	Bhilapur, Thuvavi (kanya), Thuvavi (kumar), Akoti (n=4)
	3. Vadodara	Vallabhacharya, Lalbahadur, Rushivishvmitra, Swami DayandSaraswati, PanditDindayalUpadhyay, Maharanapratap (n=6)

**Table 2.2: Sample size**

District	Male	Female	Total
Banaskantha	289	288	577
Vadodara	214	209	423
Gujarat	503	497	1000

Data pertaining to the following aspects was collected:

- **Nutritional Status Assessment:**

Assessment of nutritional status was done using anthropometry and dietary assessment. Measurement of Weight, height and MUAC (Mid Upper Arm Circumference) was carried out on the selected children. Weight for age, height for age and BMI for age were used as indices for assessing nutritional status using WHO growth standards 2007.

**Weight:** Bathroom weighing balances were used for measuring weight of children. The balances were calibrated and standardised before using. Children were asked to remove their shoes and stand straight on the weighing balance while looking straight. Weight was measured to nearest 50 gm.

**Height:** Height was measured using a flexible, non- stretchable fiber glass tape. It was fixed vertically on a smooth wall of the school, perpendicular to the ground,

ensuring that the floor was smooth. The children were asked to remove their shoes and headgear (if they were wearing any). They were asked to stand erect with the shoulder, hips and heels touching the wall and looking straight ahead. The head was held comfortable erect, arms hanging loosely by the sides. A thin smooth scale was held on the top of the child's head in the centre, crushing the hair at the right angles to the tape and the height of the subject was read from the lower edge of the ruler to the nearest 0.5 cms.

**BMI:** Body Mass Index (BMI) was calculated using the following formula:

$$\text{BMI} = \text{Weight (Kg)} / \text{Height}^2 (\text{m}^2)$$

**MUAC:** Mid Upper Arms Circumference (MUAC) was measured on left arm using a non-stretchable MUAC tape. The child was asked to keep the arm relaxed. Mid point between acromian process of the scapula and the olecranon process of the ulna was marked with the help of a flexible non-stretchable fibre glass tape. The MUAC tape was then placed on that point gently but firmly to avoid compression of tissue. The measurement was taken to nearest 0.1 cm.

**Age:** It is important to know the child's age in complete months for calculating the indices in order to assess their nutritional status using anthropometry. This information was collected as secondary data from the school registers.

#### **Anthropometric Indices:**

**Weight for age:** Low weight for age is an indicator for underweight. This indicator shows chronic as well as acute undernutrition. However, it cannot distinguish between the two. As per WHO 2007 Growth Reference, Weight for age can be used for 5-10 years age group.

**Height for age:** Height for age reflects long term nutritional status. Low height for age is known as stunting. Thus, stunting indicates chronic undernutrition. It cannot measure short-term changes in malnutrition.

**BMI for age:** Low BMI for age is known as thinness. Thinness serves as an indicator of short-term undernutrition.

**Table 2.3: Anthropometric Indicators for Nutritional Status Assessment**

<b>Weight for Age (Upto 10 years of age)</b>	<-3SD- Severe Underweight
	<-2SD- Underweight
<b>Height for Age</b>	<-3SD- Severe Stunting
	-3SD to -2SD- Stunting
<b>BMI for Age</b>	<-3 SD- Severe Thinness
	-3SD to -2SD- Thinness
	-2SD to +1SD- Normal
	+1SD to +2SD- Over Weight
	>+2SD Obese

Source: WHO 2007 Growth Standards

▪ **Meal Frequency and Composition of the Meal:**

The data pertaining to the number of meals consumed and the composition of the meals was collected from the children. The children's perceptions regarding the MDM program and their preferences of different foods served in the MDM was collected through a detailed questionnaire.

**Information on MDM:** A Semi structured proforma was used for obtaining information regarding the menu, quality as well as quantity of Mid Day Meal served in the schools.

The parents as well as the teachers perceptions of the MDM scheme was assessed, along with the beneficial impact if any of the MDM on the growth of the children etc. was elicited.

The sanchalaks, cooks and helpers were also interviewed about the quality and quantity of ingredients used for the preparation as well as serving of food on a daily basis. The teachers and the principals views on the implementation of the MDM was collected.

Data pertaining to the number of children enrolled and the attendance of the students in the school along with the number of beneficiaries of MDM was collected.

Information was also collected about the infrastructure availability in the school, tasting of the meals by the teachers as well as maintenance of the on the tasting and other registers, storage of the grains, salaries to the cooks etc. as well as the utilisation of food grains and funds was collected.

**Data Analysis:** Data analysis was done using Microsoft Excel and SPSS Version 22. WHO Anthro Plus software used for analysis of anthropometric data.

## CHAPTER 3

### Review of performance: Physical and financial (2012-13 to 2017-18)

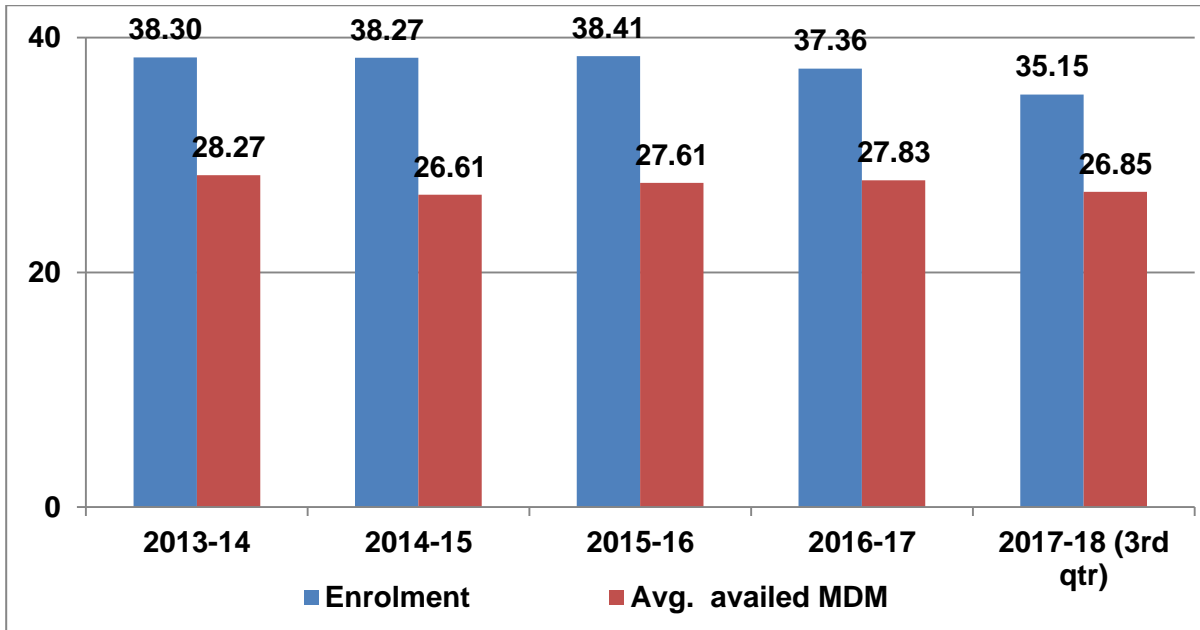
#### 3 Review the coverage of the Scheme

##### 3.1 Coverage of children: Primary

The enrolment has gone down significantly over the last 2 years however, the proportion of average number of children availed MDM has increased. The trend of coverage is given as under:

Year	Enrolment	PAB approval	Avg. availed MDM	% availed vs. Enrol.	% availed vs PAB approval
2013-14	3829598	2975696	2826581	74%	95%
2014-15	3826977	2821968	2661338	70%	94%
2015-16	3841173	2669691	2760840	72%	103%
2016-17	3736247	2760840	2783128	74%	101%
2017-18 (3 <sup>rd</sup> qtr)	3515438	2729124	2684829	76%	98%

**Graph : Trends of Enrolment and Average number of children availing MDM (in lakh) – Primary**

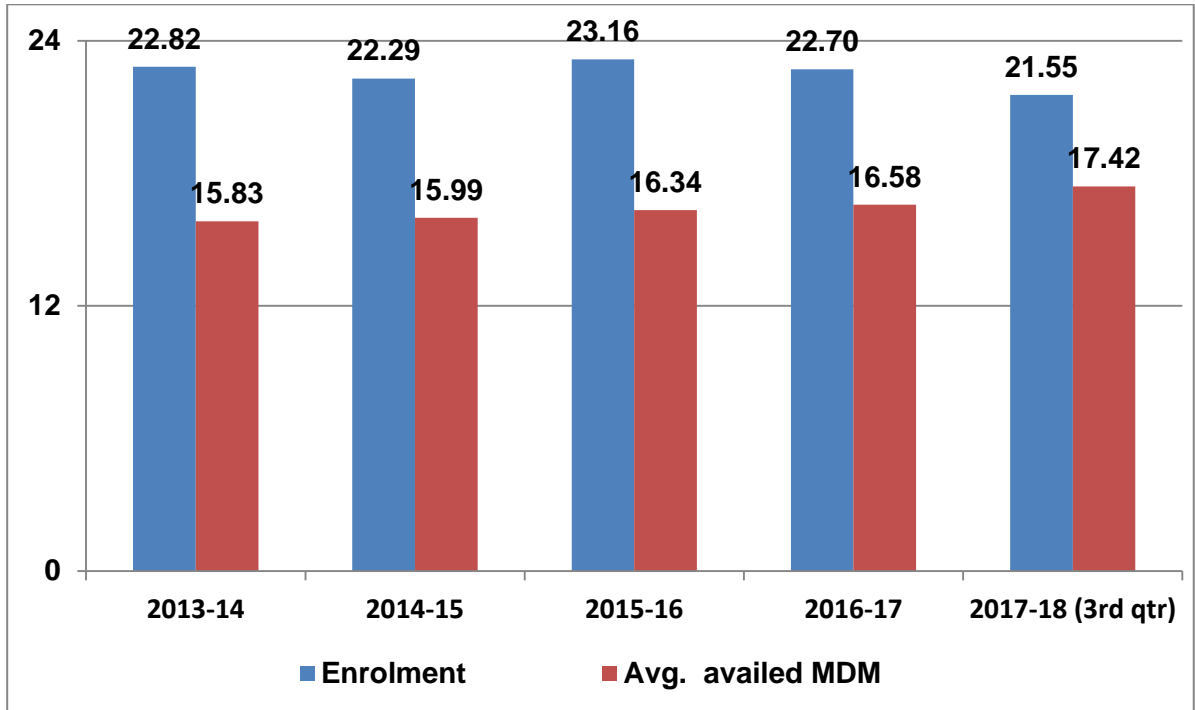


### 3.2 Coverage of children: Upper Primary

Like Primary, the enrolment has been decreased by 1.15 lakh in upper primary stage, but at the same time increase in coverage of children under MDMS is quite sharp, as only 73% of the enrolled children have availed mid day meal on an average basis during 2016-17, whereas the coverage during the 3<sup>rd</sup> quarter of 2017-18 is 81%.

Year	Enrolment	PAB approval	Avg. availed MDM	% availed vs. Enrol.	% availed vs PAB approval
2013-14	2281921	1378744	1583360	69%	115%
2014-15	2228995	1544289	1599189	72%	104%
2015-16	2316477	1556810	1634009	71%	105%
2016-17	2270324	1634009	1657943	73%	101%
2017-18 (3 <sup>rd</sup> qtr)	2154512	1637386	1741540	81%	106%

**Graph : Trends of enrolment and Average number of children availing MDM (in lakh) - Upper Primary**



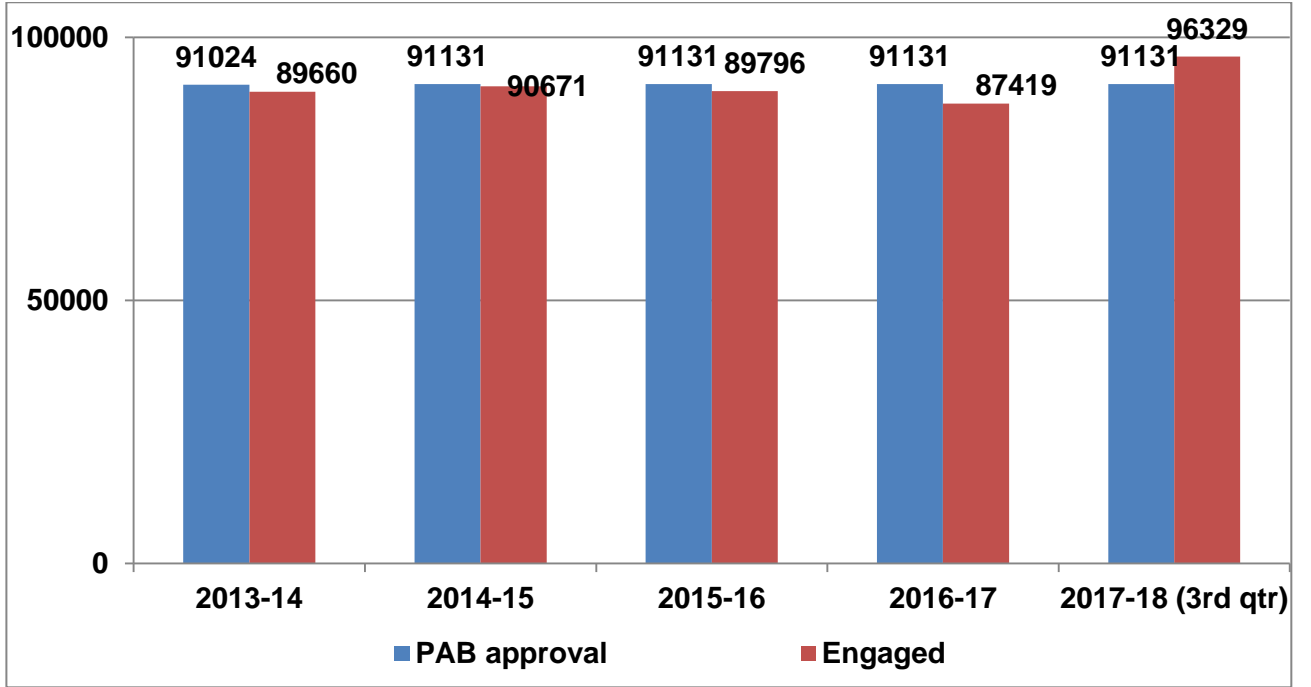
### 3.3 Cook-cum-helpers

The Programme Approval Board-Mid Day Meal has approved the engagement of 91131 cook-cum-helpers against which the State has engaged 96329 Cook-cum-helpers till December, 2017 for cooking and serving of MDM. The Review Mission observed that the all the schools had engaged the CCH as per the prescribed norms on the basis of the enrolment in the schools.

Year	PAB approval	Engaged	% Engaged
2013-14	91024	89660	99%
2014-15	91131	90671	99%
2015-16	91131	89796	99%
2016-17	91131	87419	96%
2017-18 (3 <sup>rd</sup> qtr)	91131	96329	96%



**Graph: Trends of PAB Approval and engagement of Cook-cum-helpers byState**



### 3.4 Details of Allocation of funds and Expenditure against Central Assistance

(Rs. in Lakh)

Year	Cooking cost*		TA		Hon. to CCH		MME	
	Allocation	Util.	Allocation	Util.	Allocation	Util.	Allocation	Util.
2012-13	38428.76	31061.61	882.18	1006.70	6892.80	6497.41	731.20	723.91
2013-14	39963.74	36802.28	908.09	827.13	6826.80	6467.45	775.94	775.94
2014-15	43732.70	41603.77	925.00	871.12	6834.83	6765.50	838.57	836.13
2015-16	45768.31	44806.76	865.11	848.03	5467.86	5230.76	711.86	711.86
2016-17	51020.79	39177.45	938.27	867.82	5467.86	3287.41	716.22	254.65

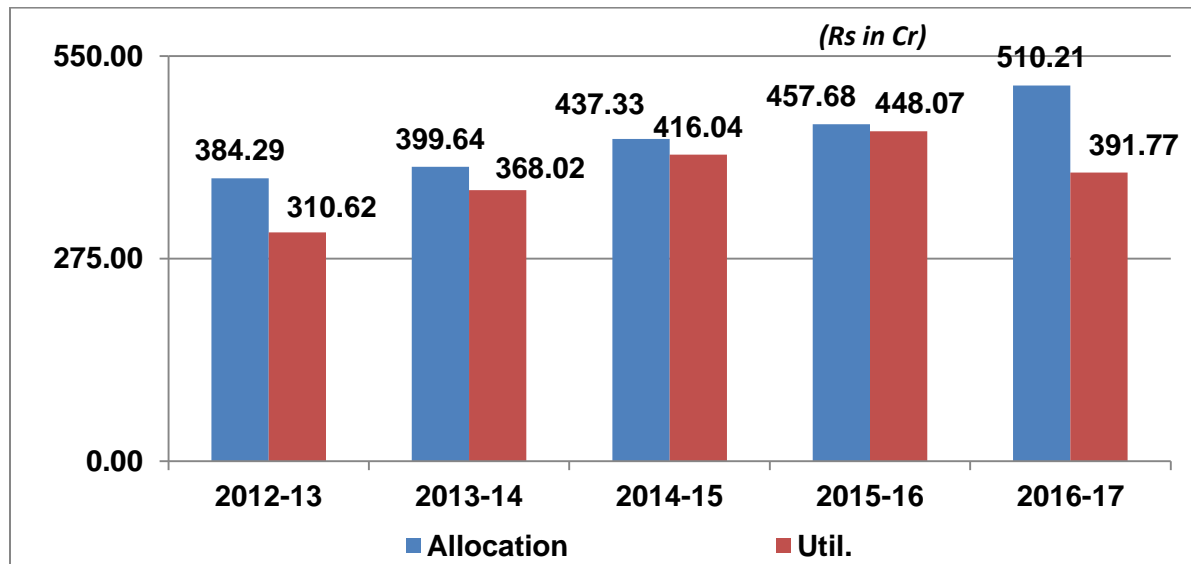
\*Central as well as State Share.

### 3.5 Component wise Details of Allocation and Expenditure

#### 3.5.1 Utilization of Cooking Cost (Central as well as State Share)

(Rs in lakh)

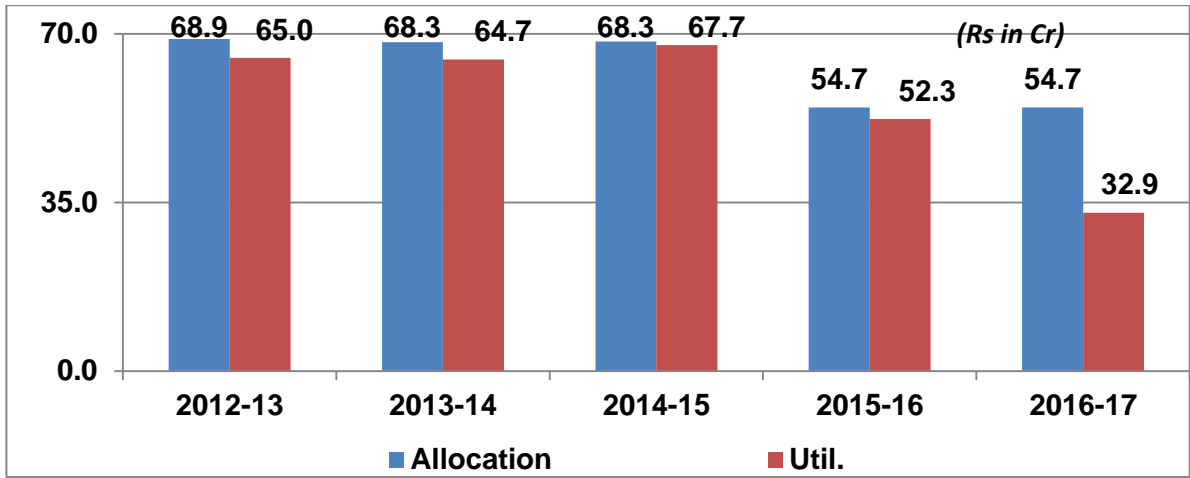
Cooking Cost	2012-13	2013-14	2014-15	2015-16	2016-17
Allocation of Funds	38428.76	39963.74	43732.70	45768.31	51020.79
Expenditure	31061.61	36802.28	41603.77	44806.76	39177.45



### 3.5.2 Utilization of Honorarium to Cook-cum-helpers

(Rs in lakh)

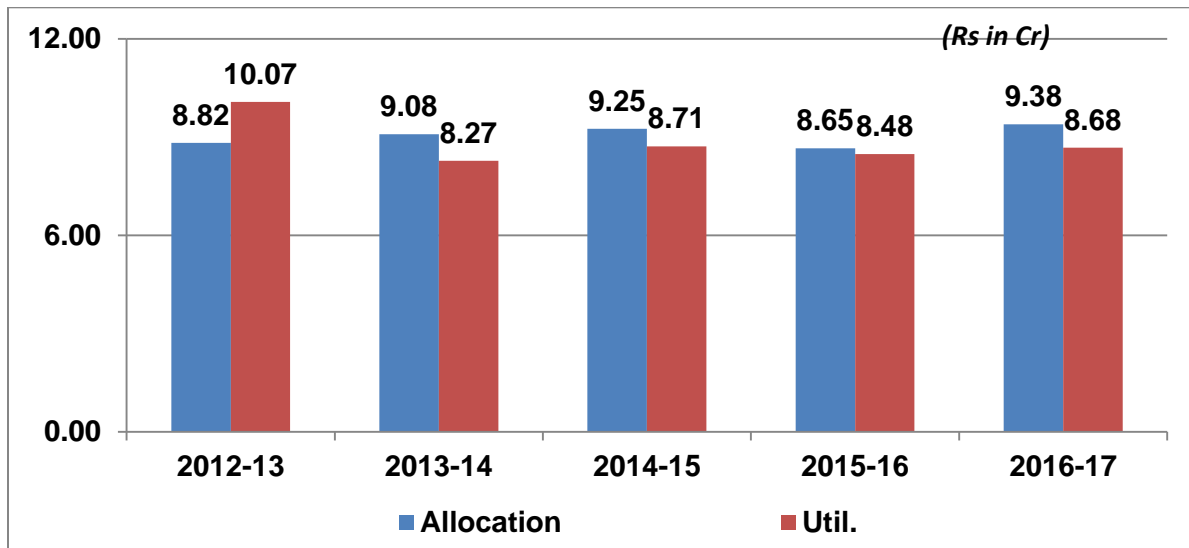
Hon. to CCH	2012-13	2013-14	2014-15	2015-16	2016-17
Allocation of Funds	6892.80	6826.80	6834.83	5467.86	5467.86
Expenditure	6497.41	6467.45	6765.50	5230.76	3287.41



### 3.5.3 Utilisation of Transportation Assistance

(Rs. in lakh)

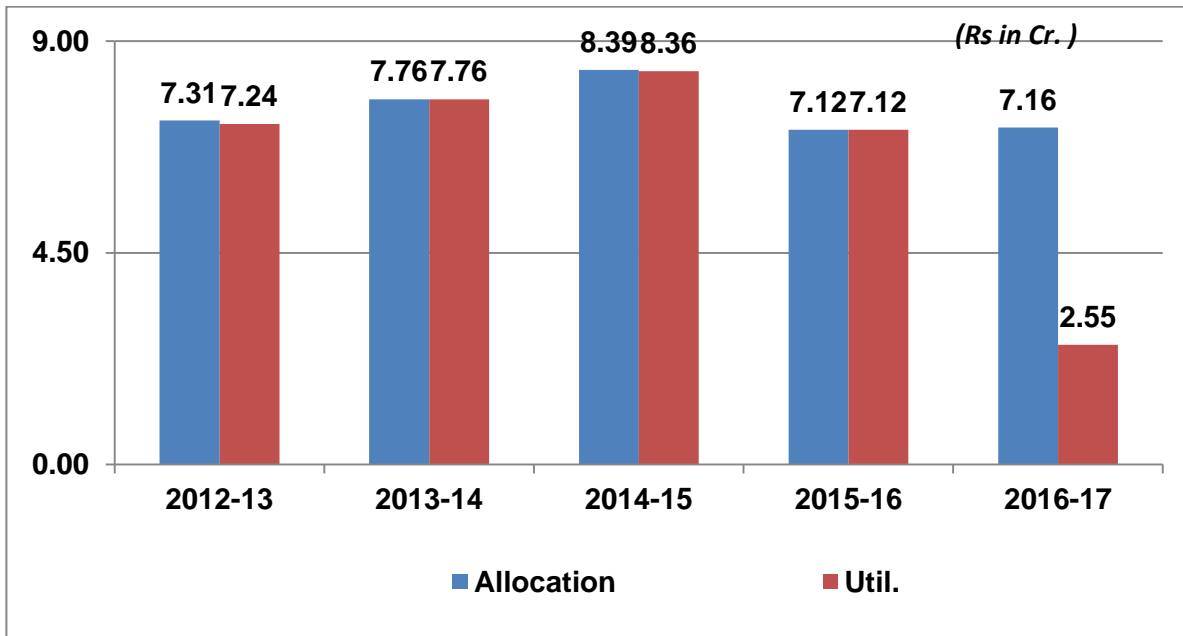
Transportation Assistance	2012-13	2013-14	2014-15	2015-16	2016-17
Allocation of Funds	882.18	908.09	925.00	865.11	938.27
Expenditure	1006.70	827.13	871.12	848.03	867.82



### 3.5.4 Utilization of Management Monitoring and Evaluation (MME)

(Rs. in lakh)

MME	2012-13	2013-14	2014-15	2015-16	2016-17
Allocation of Funds	731.20	775.94	838.57	711.86	716.22
Expenditure	723.91	775.94	836.13	711.86	254.65



## CHAPTER: 4

### OBSERVATIONS FROM THE FIELD AS PER THE TOR

#### 4.1 Fund flow Mechanism from State Government to Schools/cooking agency and the time taken in this process.

Fund flow from the State to the District and from District to Block is done through e-transfer or IFMS (Integrated Finance Management System) ensuring timely availability of funds. The State Government releases advance grants to Districts for a smooth functioning of the scheme. The details of release of funds during 2017-18 are given below:

Component	Fund received		Funds released	
	Date	Amount	Date	Amount
Cost of FG	23/05/17	2381.81	24/05/17	1901.81
Cooking cost		41020.56		32020.56
Hon. to CCH		6547.17		6247.17
Transportation Asst.	04/10/2017	728.93	05/10/2017	508.93
MME	15/01/2018	579.87	16/01/2018	579.87
Kitchen-cum-store		-		-
Kitchen Devices		-		-
Total		51258.34	537.84	41258.34

Government of India releases the fund to Government of Gujarat for Mid Day Meal Scheme accordingly State releases the fund to District level which in turn release the funds to block level which are further sent to school level for smooth functioning of the scheme. Fund flow from the State to the District and from District to Block is done through e-transfer or IFMS (Integrated Finance Management System) ensuring timely availability of funds.

The Review Mission observed that funds were released directly to the accounts of Sanchalak / organiser for the procurement of condiments and vegetables etc. at school level. It was informed by the sanchalaks that cooking cost is being released to them in time.

The mission also observed that the sanchalaks have to deposit the remaining amount, if any, for every month with the block office. The mission recommended that instead of depositing this amount every month the same may be adjusted in the releases for coming month.

The mission also observed significant delay in release of honorarium to cook-cum-helpers. In some schools cook-cum-helpers were paid only up to the month of November, 2017.

#### 4.2 Management and Monitoring Mechanisms

Sl.	Designation	Working under MDMS			
		State level	District Level	Block Level	Total
1	2	3	4	5	6
<b>I</b>	<b>Regular Employee</b>				
	Commissioner	1			1
	Asst. Commissioner	1			1
	Deputy Collector	0	13		13
	Mamalatdar	1	1		2
	Clerk	17	32	76	125
	Peon	5	40	58	103
<b>II</b>	<b>Contractual/Part time worker</b>				
	State Project Coordinator	2			2
	Dist. Project Coordinator		33		33
	Consultant	2			2
	Driver	3			3
	Supervisor			234	234
	Data Entry Operator			102	102



At the State level the programme is administered by the Commissioner (MDM), who is supported by one Joint Commissioner, two Assistant Commissioners. At the District/Municipal level, the Collector/ Municipal Commissioner is in-charge and is assisted by one Deputy Collector/ Mamlatdar, and a team of three support staff, including deputy Mamlatdar (Administration), Deputy Mamlatdar (Inspection) and Deputy Mamlatdar (Accounts).

At taluka (block) level the talukaMamlatdar is in overall charge of the program, supported by a full-time deputy Mamlatdar (Administration) and Deputy Mamlatdar (Accounts). At school level Organizers, Cooks and Helpers are appointed to cook and distribute the mid-day meal. School Management Committee is also expected to supervise the overall working of scheme.

In order to strengthen monitoring contractual posts are recruited at district and block levels as per the Education Department's GR dated 24/12/2013 and 26/12/2013. Status is as follows.

<b>Contractual Post</b>	<b>Sanctioned</b>	<b>Filled</b>
District Project Coordinator	39	33
MDM Supervisor (Block)	310	234

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It is important to mention here that out of 33 district, in only 13 district full time Dy. Collector are working at district level and in remaining 20 district the Dy. Collectors are looking after MDM as in additional charge. Similarly even the contractual post of 6 District project coordinators and 76 supervisors at block level are vacant. In Banaskantha district the contract of MDM supervisors got expired in the month of October, 2017 and since then the posts are lying vacant. This situation adversely affects the monitoring and smooth implementation of the scheme. ***It is recommended to fill all the sanctioned posts under MDM on urgent basis.***

### **4.3 Food grains:**

Gujarat State Civil Supplies Corporation has been designated as nodal agency for lifting and transportation of foodgrains from the FCI godowns to the school level by the State Government. The State issues permits towards quarterly allocation of foodgrains to the Gujarat State Civil Supplies Corporation. Accordingly, lifting is done from FCI godowns and foodgrains are stored at district godowns of Gujarat State Civil Supplies Corporation. From these godowns the foodgrains are transported to the godowns at block level. The Fair Price Shops dealers (FPS) lifts foodgrains for their allocated schools and the MDM Sanchalak of respective school, lifts the food grains from Fair Price Shops.

The quality of foodgrains was found to be good in all the visited schools. The cooks and teachers also expresses their satisfaction with the quality of foodgrains being supplied under MDM.

### **4.4 Engagement of Cook cum Helpers:**

The State Government of Gujarat has different nomenclature for cook-cum-helpers. As in every school there is one Sanchalak, cook and assistant. The sanchalak is responsible for all the activities relating to preparation of mid day meal in the school. The State has engaged 96329 Cook-cum-helpers for cooking and serving of MDM across the State, against the 91131 cook cum helpers, approved by the Programme Approval Board – Mid Day Meal for 2017-18.

The Review Mission observed in the visited schools that adequate number of cook-cum-helpers have been engaged in school based kitchens for preparing and serving of the mid-day-meal to the children.

A satellite linked communication (SATCOM) program through BISAG for head teachers, organizers and cooks was organized on 20/01/2018, where Commissioner, MDM and experts in the fields of nutrition, health and hygiene discussed various aspects of MDM.

It was found that the payment of the honorarium to cook-cum-helpers is being made directly to their bank accounts through e-payment. Approximately 3-4 months delay

was found in the payment to honorarium to cook cum helpers.

The mission observed need of training of cook-cum-helpers on various aspects of MDM i.e. safety and hygiene, preparation methods, etc.

**The Mission recommends regular training/orientation of CCHs on related subjects to enhance quality of MDM prepared.**

#### **4.5 Review the smooth implementation of the Scheme with particular reference to Interruptions.**

With efficient MIS & AMS system in place the higher authority of MDM should find out the reason for non preparation of meals on a real time basis if any.

JRM recommends that the monitoring structure to be strengthened so that necessary steps should be taken immediately in such situations. Buffer stock of food grains is also to be maintained to avoid such interruptions.

#### **4.6 Kitchen-cum-Stores, Kitchen Devices and Eating plates**

The non-recurring central assistance of Rs 232 crore has been released to the State for construction of 25077 kitchen-cum-stores. The State has constructed 24303 kitchen-cum-stores, construction work is in progress in 7 kitchen cum stores and construction work is not yet started in 767 kitchen-cum-stores. Rs 1645.72 lakh has been released for the procurement of 33540 kitchen devices. State has procured all the kitchen devices.

The status of construction of kitchen-cum-stores and procurement of kitchen devices is as under:

Component	Vadodara				Banaskantha			
	Sanctioned	Constructed / procured	In progress	Yet to start	Sanctioned	Constructed / procured	In progress	Yet to start
Kitchen-cum-store	1521	1520	0	1	2123	2100	4	19
Kitchen D (New)	1005	1005	0	0	2572	2572	0	0
Kitchen D (Replacement)	872	809	63	0	2268	2070	198	0

In district Banaskantha construction work has been completed for 2100 kitchen-cum-stores against the total sanctioned 2123. Construction work is under progress for 4 kitchens and yet to start for 19 kitchens. Likewise in district Vadodara out of the total sanctioned 1521 kitchen-cum-stores, construction has been completed for 1520, and yet to start for 1.

The mission noticed that kitchen sheds were in good condition in general in almost all the visited schools. Adequate number of kitchen devices were also available in all the visited schools. Eating plates are also provided to all the children attending the schools by community. LPG is being used as fuel in all the visited school. *The Mission appreciates the provision of LPG for the schools for preparation of MDM.*

#### **4.7 Convergence with Rashtriya Bal Swasthaya Karyakram**

The MDMS guidelines envisage that necessary interventions like regular health checkups, provision for de-worming tablets and supplementation of micronutrients like Vitamin 'A' dosage and IFA tablets are to be provided in convergence with the Rashtriya Bal Swasthaya Karyakram (RBSK) of Ministry of Health & Family Welfare. RBSK is the only public sector programme specifically focused on school age

children. Successful implementation of RBSK may ensure better educational outcomes, improved social equity and improved capabilities to handle the adult world.

Mission found that the convergence with health department was satisfactory for the effective implementation of RBSK, WIFS and NDD in both districts. IFA and deworming medicines were provided to children in all the visited schools. It was also found that health checks up were done and referrals were made for the children in some of the schools. In most of the schools health records are kept with the officials of health department, though health card were available in some schools.

The Joint Review Mission recommends that the BMI of the children should be taken regularly on annual basis and the malnourished children should be identified and necessary corrective action be taken.

In Banaskatha in the year 2017-18, around 98% children were screened for health check up, 98.20% received IFA & 97.25% children received de-worming tablets.

#### **4.8 Review the involvement of NGO's/Trust/Centralized kitchens in the Scheme**

As per the information provided by the State NGOs are serving Mid Day Meal to 5,38,000 children studying in 3327 schools spreading across 7 districts in the State. At block level Mamlatdar is responsible for monitoring of receiving cooked meals from the centralized kitchen and at school level head teacher and smc member are responsible to monitor cooked meals from the centralized kitchen. Head teacher ensures hot cooked meals are delivered to school.

## CHAPTER 5

### NUTRITIONAL AND ANTHROPOMETRIC ASSESSMENT

#### Terms of reference for nutritional aspects

1. To assess the anthropometric measurements of a sample of children availing MDM (Height, Weight, MUAC)
2. To calculate the Body Mass Index on the basis of measurement of height and weight
3. To identify children who are undernourished and over nourished
4. To review the Quality and Quantity of the served MDM
5. To review the satisfaction of the children parents and community on the served meal under MDM in respect of quality and quantity
6. To suggest some nutritionally balanced region specific recipes

In order to fulfill the above objectives, the results are depicted in 3 sections

**SECTION I:** Nutritional assessment of School children using anthropometric indices (TOR 1, 2 & 3)

**SECTION II:** Evaluation of MDM, diet pattern & satisfaction levels of children, parents, teachers (TOR 4, 5)

**SECTION III:** Nutritionally balanced region specific recipes (TOR 6)

#### SECTION 1- ANTHROPOMETRIC MEASUREMENTS

The anthropometric measurements height and weight were taken on 1000 school children from the 2 districts. Mid upper arm circumference (MUAC) was taken only on a subsample of 187 children. The Mean height, weight, MUAC of the children was calculated based on age, gender and the class that they were studying. As seen from the tables (Table 5.1 to 5.6) the height, weight and MUAC increased with increasing age and the class that they were studying which is expected during the growth phase.

## **Prevalence of undernutrition using anthropometric indices:**

- a) Prevalence of Thinness:** The prevalence of thinness is given in table 5.7. The prevalence of severe thinness was found to be 12.9% with higher prevalence in boys (14.7%) as compared to girls (11.1%). Further the prevalence was higher in Vadodara than Banaskantha for both boys and girls. The prevalence of moderate thinness was nearly 30%. The graph clearly projects the high prevalence of thinness in the population studied.
- b) Prevalence of Overweight and Obesity:** The prevalence of overweight and obesity in children was found to be 2.3% and 0.7% respectively. The prevalence of overweight in school children was 1.9% in Vadodara and 2.6% in Banaskantha. (Table 5.7, Figure 5.1 to 5.3)
- c) Prevalence of Stunting:** The prevalence of severe stunting amongst the children was found to be 4.2% in Banaskantha and 5.4% in Vadodara. The prevalence of moderate stunting was 18.7% with higher prevalence in Vadodara children (26.2%) as compared to Banaskantha children (13.7%). The prevalence of moderate stunting was similar in both boys and girls of Vadodara. (Table 5.8, Figure 5.4 to 5.6)
- d) Prevalence of Underweight:** The overall prevalence of severe underweight was 12.9% in the children. The prevalence of severe underweight was higher in Vadodara than Banaskantha. (17.2% to 4.2%). The prevalence of moderate underweight was 34% amongst the children. It was 30.8% in Banaskantha and 38.2% in Vadodara. (Table 5.9)
- e) Trends of undernutrition among primary & upper primary school children:**
- The prevalence of overweight was higher in upper primary school children than lower primary school children. The prevalence of overweight was 4.3% in Banaskantha and 2.5 % in Vadodara.
  - The prevalence of stunting was similar in younger and older children. (Table 5.10). Nearly 78% of the subjects were in normal category
  - The prevalence of Thinness was similar in primary both and upper primary children of the 2 districts.

Thus the anthropometric indices clearly indicate that there is a need to improve the nutritional status of nearly 25% of the children to tackle the problem of undernutrition. However prevalence of overweight and obesity has not reached a magnitude of concern.



**Table 5.1: Nutritional Anthropometry Cross Tabulated by Age and Gender of Children (Mean±SD)**

Age (Years)	Height (cm)		Weight (kg)		BMI (kg/m <sup>2</sup> )		MUAC (cm)	
	Male	Female	Male	Female	Male	Female	Male	Female
5.0	112.3±6	109.0±7	17.3±2	15.7±2	13.6±1	13.2±1	16.1±1	15.0±1
6.0	111.8±5	110.6±5	16.9±2	16.3±2	13.6±2	13.3±1	15.5±1	15.7±1
7.0	117.1±6	117.4±5	18.5±3	18.7±3	13.6±2	13.6±2	15.6±2	16.2±1
8.0	123.2±7	121.8±6	21.1±3	20.4±4	13.8±1	13.7±2	16.6±1	17.3±1
9.0	127.3±8	125.6±6	22.8±4	21.6±4	14.2±2	13.7±2	16.7±1	16.9±2
10.0	132.7±7	133.9±8	25.7±4	25.8±5	14.7±2	14.3±2	17.3±1	17.4±1
11.0	137.1±6	138.5±7	27.5±5	29.0±7	14.6±2	15.1±3	18.8±3	18.8±3
12.0	143.0±9	145.7±7	32.0±7	32.4±6	15.7±3	15.5±3	18.5±1	20.7±3
13.0	147.9±9	146.9±8	37.0±9	34.7±7	16.7±3	16.0±2	21.6±4	21.0±3
14.0	150.5±13	144.7±9	35.9±8	33.8±6	15.6±2	16.1±2	19.6±3	20.0
15.0	162.9±5	144.2	46.5±5	33.5	17.5±1	16.1	-	20.7
16.0	164.5±1	-	51.3±3	-	22.8±2	-	26.0	-

**Table 5.2: Nutritional Anthropometry Cross Tabulated by Age and Gender of Children of Banaskantha (Mean±SD)**

Age (Years)	Height (cm)		Weight (kg)		BMI (kg/m <sup>2</sup> )		MUAC (cm)	
	Male	Female	Male	Female	Male	Female	Male	Female
5.0	112.8±7	107.1±5	17.5±2	14.6±1	13.7±1	12.8±1	16.3±1	15.0±1
6.0	112.8±5	111.0±5	17.3±2	16.6±2	13.6±2	13.5±1	15.5±1	15.7±1
7.0	118.1±6	118.8±5	18.9±3	19.6±3	13.5±1	13.9±2	16.0±2	16.2±1
8.0	123.9±76	123.3±6	21.2±3	21.2±3	13.8±1	13.9±2	16.2±1	17.2±1
9.0	128.8±8	126.9±7	23.9±4	21.9±4	14.4±3	13.5±2	16.9	16.6±2
10.0	133.2±6	134.2±8	25.7±4	26.2±6	14.4±2	14.4±2	17.1±1	17.2±1
11.0	139.2±6	139.6±7	28.8±6	29.3±6	14.8±2	14.9±2	18.8±3	18.2±2
12.0	143.4±8	148.2±8	31.4±5	34.2±7	15.2±2	15.5±2	18.0±1	20.8±3
13.0	151.7±8	147.9±8	38.7±10	35.6±7	16.7±3	16.1±3	21.8±4	21.3±3
14.0	151.1±14	146.0±11	35.9±9	33.5±7	15.5±2	15.7±3	19.6±3	20.0±3
15.0	166.7	144.2	50.0	33.5	18.0	16.1	-	20.7
16.0	163.5	-	56.5	-	21.1	-	26.0±	-

**Table 5.3: Nutritional Anthropometry Cross Tabulated by Age and Gender of Children of Vadodara (Mean±SD)**

Age (Years)	Height (cm)		Weight (kg)		BMI (kg/m <sup>2</sup> )		MUAC (cm)	
	Male	Female	Male	Female	Male	Female	Male	Female
5.0	111.1±4	110.7±8	16.5±2	16.7±2	13.4±1	13.6±1	15.6	-
6.0	110.2±45	109.4±5	16.3±2	15.4±2	13.5±2	12.8±1	14.8	16.1
7.0	116.2±6	116.0±5	18.1±3	17.6±2	13.6±2	13.3±1	14.5±1	16.1
8.0	122.2±8	120.1±6	20.9±3	19.7±4	14.0±1	13.5±2	18.2	17.5±1
9.0	125.1±7	123.8±5	21.3±3	21.2±3	13.8±2	14.0±2	16.1±1	18.0±1
10.0	131.7±8	133.5±7	25.8±5	25.2±4	15.2±2	14.1±2	18.5	18.2±0
11.0	134.9±6	137.3±8	26.2±5	28.6±8	14.5±2	15.3±3	19.0±2	21.7±6
12.0	142.5±11	142.7±6	32.6±8	30.3±5	16.3±4	15.6±3	19.2±1	19.2±0
13.0	143.5±9	145.2±9	34.9±9	33.2±5	16.8±3	15.7±1	19.4	20.0±1
14.0	146.5±2	142.5±3	35.8±2	34.3±4	16.7±0	16.8±1	-	-
15.0	159.0	-	43.0	-	17.0	-	-	-
16.0	165.5	-	46.0	-	24.5	-	-	-

**Table 5.4: Mean anthropometric measurements of children based on Standard**

Std	Height (cm)	Weight (kg)	BMI (kg/m <sup>2</sup> )	MUAC (cm)
1	111.2±6	16.5±2	13.4±1	15.7±1
2	116.1±5	17.9±2	13.4±2	15.7±1
3	122.6±7	21.0±3	14.0±2	16.9±1
4	126.8±6	22.3±3	13.9±2	17.2±1
5	130.7±7	24.6±5	14.4±2	16.9±1
6	137.6±7	28.1±6	14.8±2	19.3±3
7	142.2±8	31.2±6	15.5±3	19.2±2
8	149.7±8	36.6±8	16.3±3	21.6±3

**Table 5.5: Mean anthropometric measurements of children of Banaskantha based on Standard**

Standard	Height (cm)	Weight (kg)	BMI (kg/m <sup>2</sup> )	MUAC (cm)
1	111.3±5	16.6±2	13.4±1	15.6±1
2	116.2±6	18.3±2	13.5±2	15.9±1
3	123.1±6	21.2±3	14.0±1	16.6±1
4	127.9±6	22.7±3	13.8±2	17.1±1
5	130.9±7	24.4±4	14.2±2	16.8±1
6	138.8±7	28.8±6	14.9±2	19.1±3
7	143.8±7	32.0±6	15.4±2	19.1±2
8	151.9±8	37.8±8	16.3±3	22.0±3

**Table 5.6: Mean anthropometric measurements of children of Vadodara based on Standard**

Standard	Height (cm)	Weight (kg)	BMI (kg/m <sup>2</sup> )	MUAC (cm)
1	111.1±7	16.3±2	13.3±1	15.7±1
2	115.8±5	17.5±2	13.2±2	15.2±1
3	121.9±7	20.7±4	14.0±2	18.2
4	125.3±7	21.8±3	14.0±2	17.4±2
5	130.5±7	25.0±6	14.7±3	17.9±1
6	135.8±7	26.9±6	14.6±2	20.3±4
7	140.1±8	30.2±6	15.6±3	19.5±1
8	146.3±8	34.7±7	16.4±3	19.4±1

**Table 5.7: Prevalence of Thinness among children**

District	Gender	Severe Thinness (<-3SD)	Thinness (-3SD to -2SD)	Normal (-2SD to 2SD)	Overweight (2SD to 3 SD)	Obese (≥3SD)
Banaskantha	Boys	37 (12.8)	88 (30.4)	154 (53.3)	7 (2.4)	3 (1.0)
	Girls	26 (9.0)	85 (29.5)	169 (58.7)	8 (2.8)	0
	Total	63 (10.9)	173 (30.0)	323 (56)	15 (2.6)	3 (0.5)
Vadodara	Boys	37 (17.3)	54 (25.2)	115 (53.7)	5 (2.3)	3 (1.4)
	Girls	29 (13.9)	67 (32.1)	109 (52.2)	3 (1.4)	1 (0.5)
	Total	66 (15.6)	121 (28.6)	224 (53)	8 (1.9)	4 (0.9)
Combined	Boys	74 (14.7)	142 (28.2)	269 (53.5)	12 (2.4)	6 (1.2)
	Girls	55 (11.1)	152 (30.6)	278 (55.9)	11 (2.2)	1 (0.2)
	Total	129 (12.9)	294 (29.4)	547 (54.7)	23 (2.3)	7 (0.7)

Values in parenthesis indicate percentage

Table 5.8: Prevalence of Stunting among children

District	Gender	Severe Stunting (<-3SD)	Stunting (-3SD to -2SD)	Normal (≥-2SD)
Banaskantha	Boys	15 (5.2)	29 (10)	245 (84.8)
	Girls	9 (3.1)	50 (17.4)	229 (79.5)
	Total	24 (4.2)	79 (13.7)	474 (82.1)
Vadodara	Boys	13 (6.1)	56 (26.2)	145 (67.8)
	Girls	10 (4.8)	52 (26.2)	147 (70.3)
	Total	23 (5.4)	108 (25.5)	292 (69)
Combined	Boys	28 (5.6)	85 (16.9)	390 (77.5)
	Girls	19 (3.8)	102 (20.5)	376 (75.7)
	Total	47 (4.7)	187 (18.7)	766 (76.6)

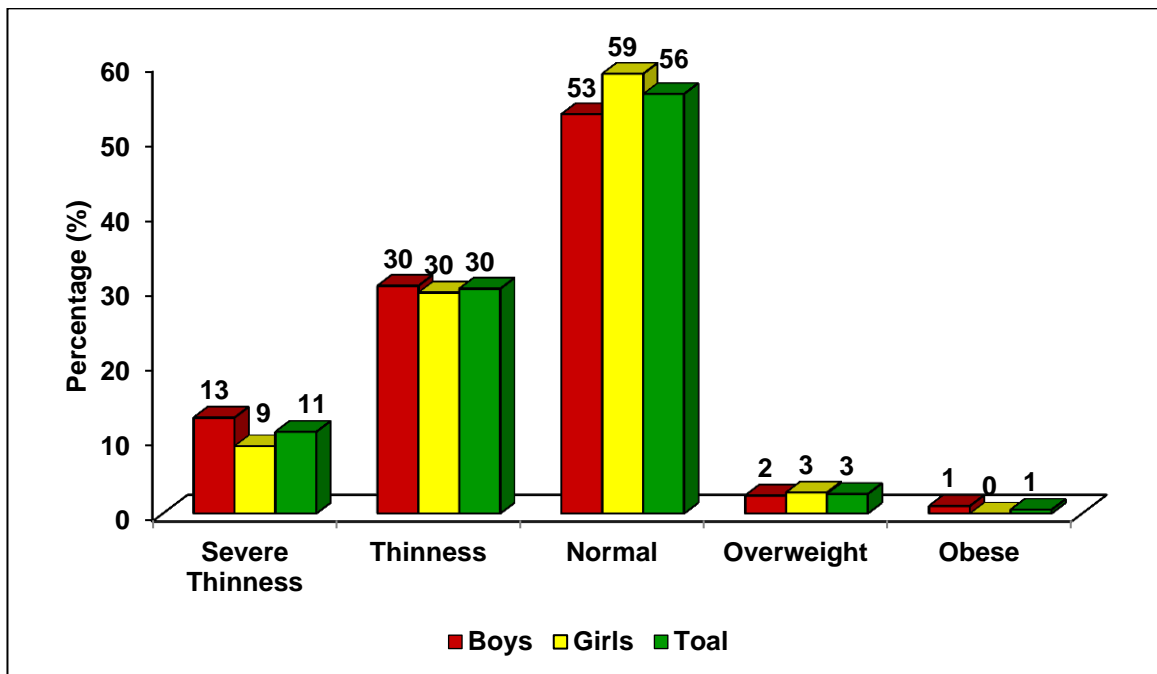
Values in parenthesis indicate percentage

**Table 5.9: Prevalence of Underweight among children**

District	Gender	Severe Underweight (<-3SD)	Underweight (-3SD to -2SD)	Normal ( $\geq$ -2SD)
Banaskantha	Boys (N=153)	17 (11.1)	42 (27.5)	94 (61.4)
	Girls (N=159)	13 (8.2)	54 (34.0)	92 (57.8)
	Total (N=312)	30 (4.2)	96 (13.7)	186(82.1)
Vadodara	Boys (N=122)	26 (21.3)	45 (36.9)	51 (41.8)
	Girls (N=116)	15 (12.9)	46 (39.7)	55 (47.4)
	Total (N=238)	41 (17.2)	91 (38.2)	106 (44.6)
Combined	Boys (N=275)	43 (15.6)	87 (31.6)	145 (52.7)
	Girls (N=275)	28 (10.2)	100 (36.4)	147 (53.5)
	Total (N=550)	71 (12.9)	187 (34.0)	292 (53.1)

Values in parenthesis indicate percentage

**Fig. 5.1 Prevalence of Thinness, Overweight and Obesity in Banaskantha District**



**Fig. 5.2 Prevalence of Thinness, Overweight and Obesity in Vadodara District**

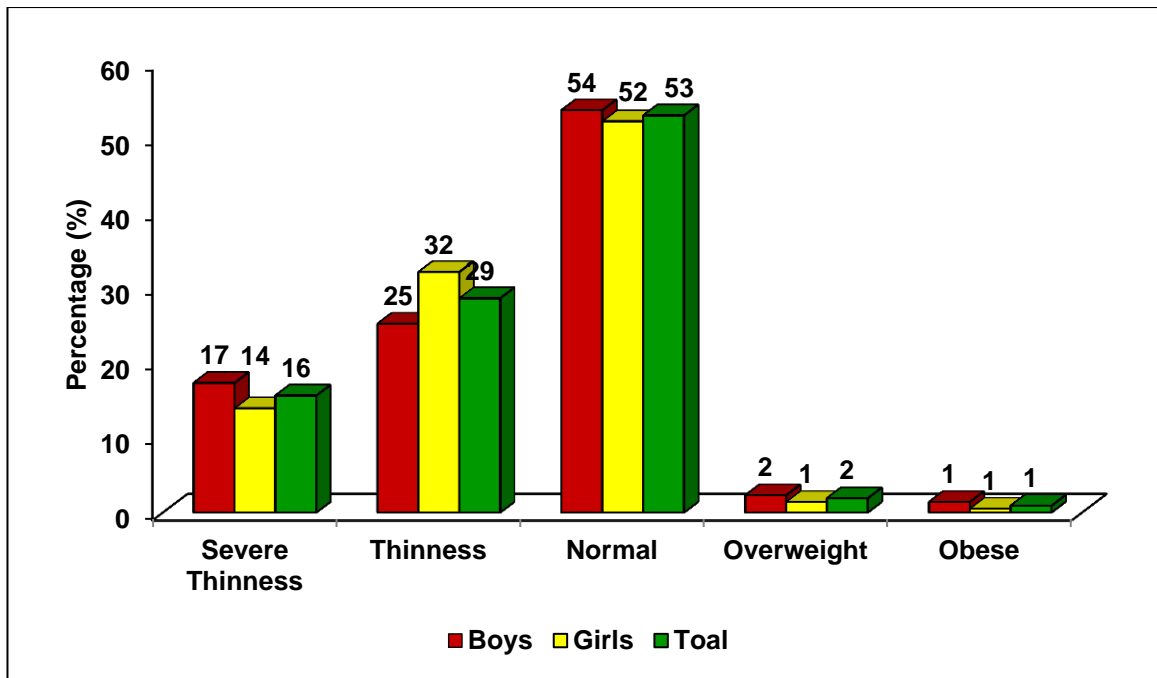


Fig. 5.3 Prevalence of Thinness, Overweight and Obesity Banaskantha + Vadodara

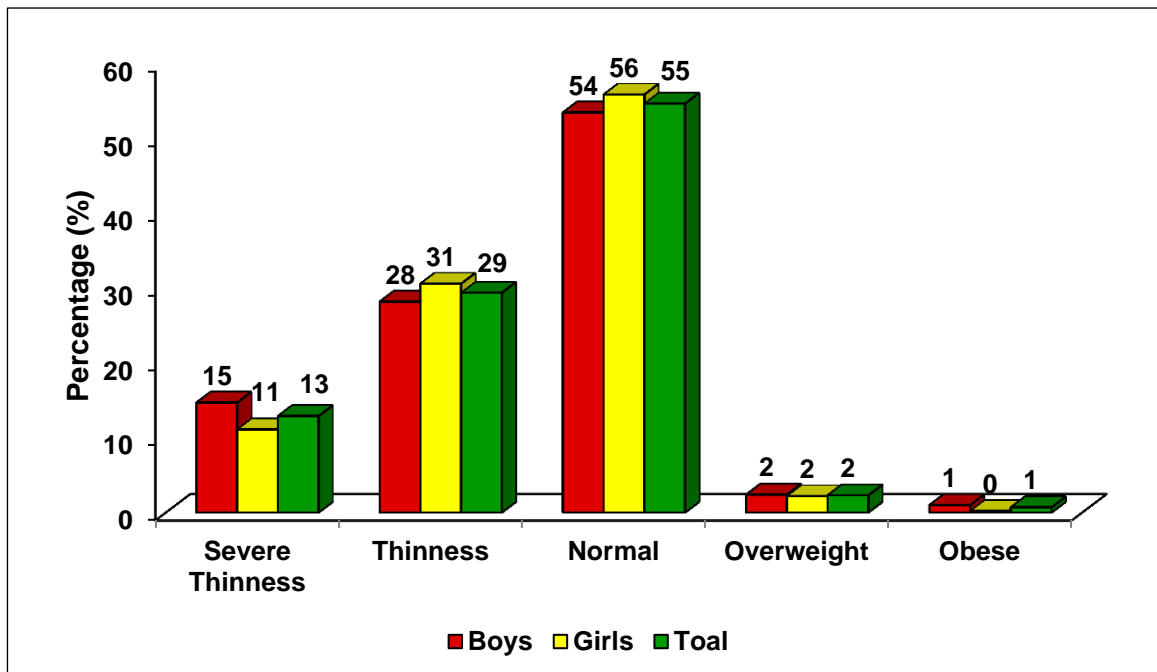


Fig. 5.4 Prevalence of Stunting among Children in Banaskantha District

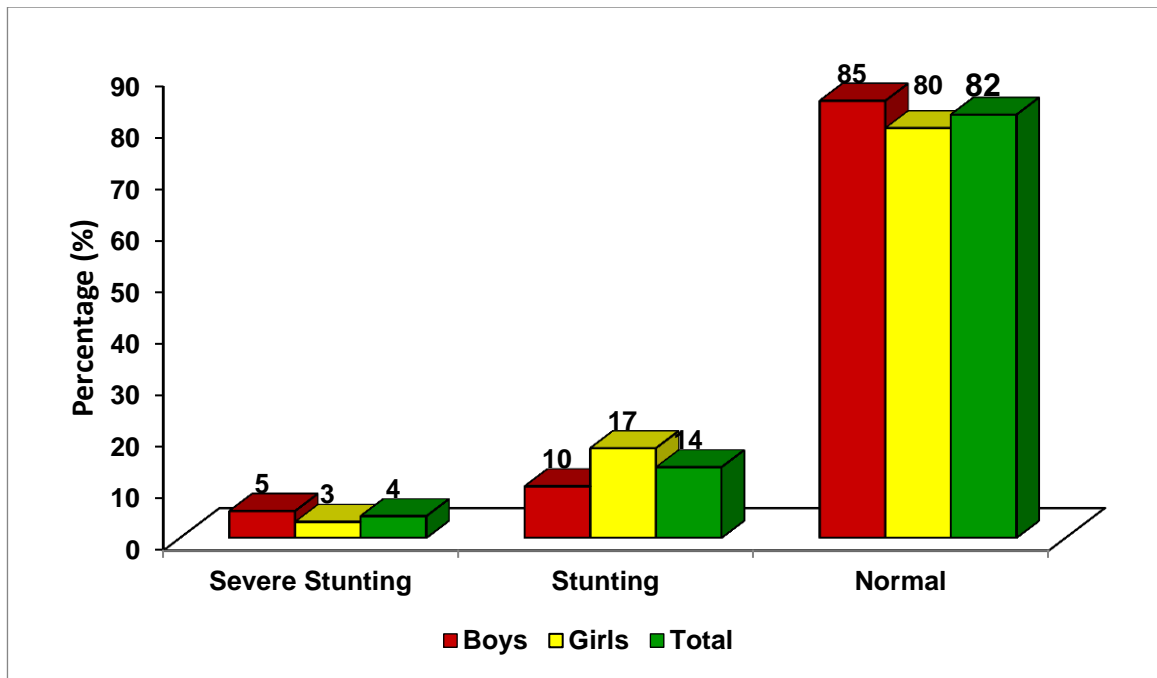


Fig. 5.5 Prevalence of Stunting among Children in Vadodara District

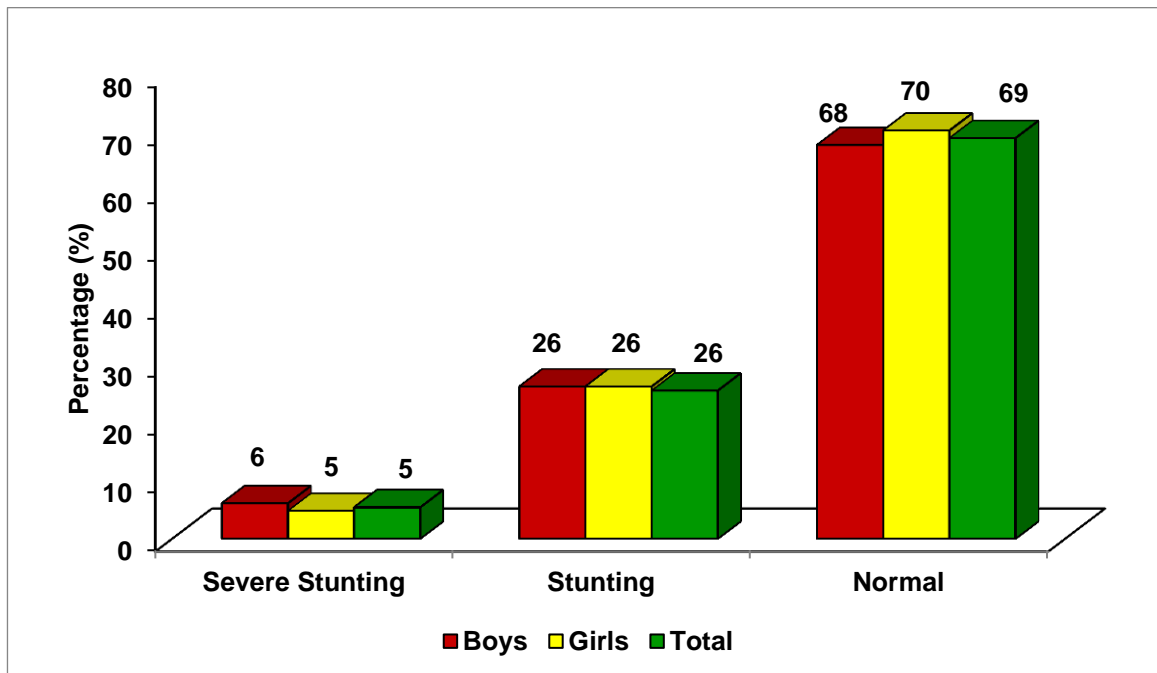
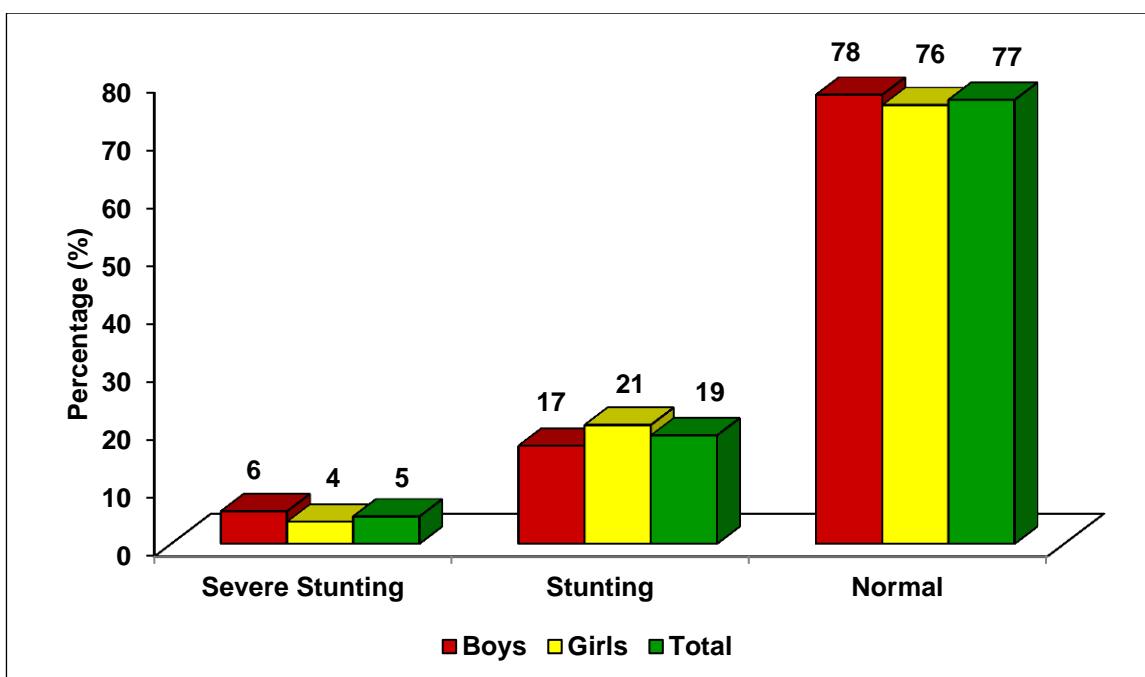


Fig. 5.6 Prevalence of Stunting among Children Banaskantha + Vadodara





**Table 5.10: Prevalence of Underweight among Primary and Upper Primary School Children**

District	Category	Primary			Upper Primary		
		Female	Male	Total	Female	Male	Total
<b>Banaskantha</b>	Normal	88 (56.8)	87 (59.6)	175 (58.1)	4 (100)	7 (100)	11 (100)
	Severe Underweight	13 (8.4)	17 (11.6)	30 (10.0)	0	0	0
	Underweight	54 (34.8)	42 (28.8)	96 (31.9)	0	0	0
	<b>Total</b>	<b>155</b>	<b>146</b>	<b>301</b>	<b>4</b>	<b>7</b>	<b>11</b>
<b>Vadodara</b>	Normal	53 (46.5)	44 (38.3)	97 (42.4)	2 (100)	7 (100)	9 (100)
	Severe Underweight	15 (13.2)	26 (22.6)	41 (17.9)	0	0	0
	Underweight	46 (40.4)	45 (39.1)	91 (39.7)	0	0	0
	<b>Total</b>	<b>114</b>	<b>115</b>	<b>229</b>	<b>2</b>	<b>7</b>	<b>9</b>
<b>Total</b>	Normal	141	131	272	6	14	20

District	Category	Primary			Upper Primary		
		Female	Male	Total	Female	Male	Total
		(52.4)	(50.2)	(51.3)	(100)	(100)	(100)
	Severe Underweight	28 (10.4)	43 (16.5)	71 (13.4)	0	0	0
	Underweight	100 (37.2)	87 (33.3)	187 (35.3)	0	0	0
	<b>Total</b>	<b>269</b>	<b>261</b>	<b>530</b>	<b>6</b>	<b>14</b>	<b>20</b>

Values in parenthesis indicate percentage

**Table 5.11: Prevalence of Stunting among Primary and Upper Primary School Children**

District	Category	Primary			Upper Primary		
		Female	Male	Total	Female	Male	Total
Banskantha	Normal	131 (75.7)	142 (82.6)	273 (79.1)	98 (85.2)	103 (88.0)	201 (86.6)
	Severe Stunting	7 (4.0)	10 (5.8)	17 (4.9)	2 (1.7)	5 (4.3)	7 (3.0)
	Stunting	35 (20.2)	20 (11.6)	55 (15.9)	15 (13.0)	9 (7.7)	24 (10.3)
Vadodara	Normal	97 (72.9)	89 (69.0)	186 (71.0)	50 (65.8)	56 (65.9)	106 (65.8)
	Severe Stunting	6 (4.5)	7 (5.4)	13 (5.0)	4 (5.3)	6 (7.1)	10 (6.2)
	Stunting	30 (22.6)	33 (25.6)	63 (24.0)	22 (28.9)	23 (27.1)	45 (28.0)
Total	Normal	228 (74.5)	231 (76.7)	459 (75.6)	148 (77.5)	159 (78.7)	307 (78.1)
	Severe Stunting	13 (4.2)	17 (5.6)	30 (4.9)	6 (3.1)	11 (5.4)	17 (4.3)
	Stunting	65 (21.2)	53 (17.6)	118 (19.4)	37 (19.4)	32 (15.8)	69 (17.6)

Values in parenthesis indicate percentage

**Table 5.12: Prevalence of Thinness, Overweight and Obesity among Primary and Upper Primary School Children**

District	Category	Primary			Upper Primary		
		Female	Male	Total	Female	Male	Total
Banaskantha	Normal	99 (57.2)	95 (55.2)	194 (56.2)	70 (60.9)	59 (50.4)	129 (55.6)
	Obese	0 (0.0)	2 (1.2)	2 (0.6)	0 (0.0)	1 (0.9)	1 (0.4)
	Over Weight	4 (2.3)	1 (0.6)	5 (1.4)	4 (3.5)	6 (5.1)	10 (4.3)
	Severe Thinness	16 (9.2)	22 (12.8)	38 (11.0)	10 (8.7)	15 (12.8)	25 (10.8)
	Thinness	54 (31.2)	52 (30.2)	106 (30.7)	31 (27.0)	36 (30.8)	67 (28.9)
Vadodara	Normal	72 (54.1)	71 (55.0)	143 (54.6)	37 (48.7)	44 (51.8)	81 (50.3)
	Obese	1 (0.8)	0 (0.0)	1 (0.4)	0 (0.0)	3 (3.5)	3 (1.9)
	Over Weight	1 (0.8)	3 (2.3)	4 (1.5)	2 (2.6)	2 (2.4)	4 (2.5)
	Severe Thinness	18 (13.5)	21 (16.3)	39 (14.9)	11 (14.5)	16 (18.8)	27 (16.8)
	Thinness	41 (30.8)	34 (26.4)	75 (28.6)	26 (34.2)	20 (23.5)	46 (28.6)
Total	Normal	171 (55.9)	166 (55.1)	337 (55.5)	107 (56.0)	103 (51.0)	210 (53.4)
	Obese	1 (0.3)	2 (0.7)	3 (0.5)	0 (0.0)	4 (2.0)	4 (1.0)
	Over Weight	5 (1.6)	4 (1.3)	9 (1.5)	6 (3.1)	8 (4.0)	14 (3.6)
	Severe Thinness	34 (11.1)	43 (14.3)	77 (12.7)	21 (11.0)	31 (15.3)	52 (13.2)
	Thinness	95 (31.0)	86 (28.6)	181 (29.8)	57 (29.8)	56 (27.7)	113 (28.8)

Values in parenthesis indicate percentage

## **SECTION II: DIETARY PATTERN, MDM EVALUATION AND SATISFACTION LEVELS OF PARENTS, TEACHERS AND CHILDREN**

### **Dietary pattern of the children**

The typical dietary pattern of the children from the schools of the two districts was similar and is depicted in Table 5.13

Following are the salient observations emerging from the dietary information elicited (Table 5.14)

1. Predominantly all the children had the habit of having tea in the morning (96% to 99%). Along with tea they used to consume biscuits, khari and toast. Less than 10 % of children had cereal along with tea in the form of Rotli /Rotla/ Bhakhri/ which may decrease the iron absorption.
2. Practically all i.e. 90-100 % of the children used to have their meals at home before coming to schools. The meals primarily comprised of Roti and Vegetable or Khichdi or Rotlo and Onion/Vegetable.
3. Only 10 % of the children of Vadodara did not have meal before coming to school. This was more among older children than younger children.
4. Nearly 92-97% of children consumed MDM at school.
5. Practically 80% of the children did not have the habit of eating snack in the evening.
6. A typical dinner comprised of Roti Vegetable or Khichdi or Dal Rice.

Thus, the dietary pattern suggested that

- The children had 4 meals a day including the MDM
- Predominantly the children were vegetarians.
- The intake of milk was confined to one cup of tea for majority of children to a maximum of one glass of milk.
- The intake of GLVs and vegetables was very poor. MDM contributed significantly to the nutrient intake in the diets of children.

**Table 5.13: Typical Dietary Pattern of School Children in Banaskantha and Vadodara**

<b>Breakfast</b>	<ul style="list-style-type: none"> <li>• Tea</li> <li>• Biscuits/Khari / Toast</li> <li>Or</li> <li>• Rotli / Rotla</li> </ul>
<b>Mid morning</b>	<ul style="list-style-type: none"> <li>• Lunch</li> <li>• Roti -Vegetable/Khichdi/Roti Kadhi</li> </ul>
<b>Mid Day Meal</b>	<ul style="list-style-type: none"> <li>• Served in school</li> <li>• Snacks</li> <li>• Lunch</li> </ul>
<b>Evening</b>	-
<b>Dinner</b>	<ul style="list-style-type: none"> <li>• Roti Vegetable / Rice Dal/ Rotlo with Onion</li> </ul>

**Table 5.14: Dietary pattern of school children of Banaskantha and Vadodara (n, %)**

<b>Banaskantha</b>							
<b>Meal</b>		<b>Male (N=289)</b>		<b>Female (N=288)</b>		<b>Total= (577)</b>	
		<b>n</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>n</b>	<b>%</b>
Breakfast	<b>yes</b>	278	96.2	281	97.6	559	96.9
	<b>no</b>	11	3.8	7	2.4	18	3.1
Mid Morning	<b>yes</b>	289	100.0	288	100.0	577	100.0
	<b>no</b>	0	0.0	0	0.0	0	0.0
MDM	<b>yes</b>	260	90.0	271	94.1	531	92.0
	<b>no</b>	29	10.0	17	5.9	46	8.0
Evening Snacks	<b>Yes</b>	71	24.6	50	17.4	121	21.0
	<b>No</b>	218	75.4	238	82.6	456	79.0
Dinner	<b>Yes</b>	289	100.0	288	100.0	577	100.0
	<b>No</b>	0	0.0	0	0.0	0	0.0
<b>Vadodara</b>							
<b>Meal</b>		<b>Male (N=197)</b>		<b>Female (N=193)</b>		<b>Total (N=390)</b>	
		<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
Breakfast	<b>Yes</b>	196	99.5	192	99.5	388	99.5
	<b>No</b>	1	0.5	1	0.5	2	0.5
Mid Morning	<b>Yes</b>	178	90.4	175	90.7	353	90.5
	<b>No</b>	19	9.6	18	9.3	37	9.5
MDM	<b>yes-at school</b>	196	99.5	183	94.8	379	97.2
	<b>No</b>	1	0.5	0	0.0	1	0.3
	<b>at</b>	0	0.0	8	4.1	8	2.1

Banaskantha							
Meal		Male (N=289)		Female (N=288)		Total= (577)	
		n	%	N	%	n	%
	<b>home</b>						
	<b>Tiffin</b>	0	0.0	2	1.0	2	0.5
Evening Snacks	<b>Yes</b>	37	18.8	38	19.7	75	19.2
	<b>No</b>	160	81.2	155	80.3	315	80.8
Dinner	<b>Yes</b>	197	100.0	193	100.0	390	100.0
	<b>No</b>	0	0.0	0	0.0	0	0.0

### MDM Observations

1. All the children sat together to have meals. No discrimination was observed with regard to gender or caste. The social equity was maintained in all the schools.
2. The serving was done by the helpers and in some schools girls of higher standard.
3. Quantity of food served was not standardized. Depending on the child's request the food was served. Additional serving was given if the child demanded.
4. The serving plates were provided by the school.
5. School corridor was the venue for serving the food.
6. The utensils were clean.
7. All the children washed the hands before eating
8. The MDM was served in two slots. One time the snacks (Chana) was given & other time hot cooked proper meal (Khichdi, Dal Rice- Roti) was given

### Spot Observations on Consumption of MDM

We made an attempt to quantify the food eaten by the school children by actually measuring the quantity of foods eaten by the children using standard cups. The Table 5.15 gives the nutritive value of the foods consumed by the children. Overall based on actual consumption the children were able to meet the RDA norms set for MDM. (Figure 5.7 and 5.8) This was possible as snacks and meals were served to children. This strategy helps to bridge the gap between the norms and

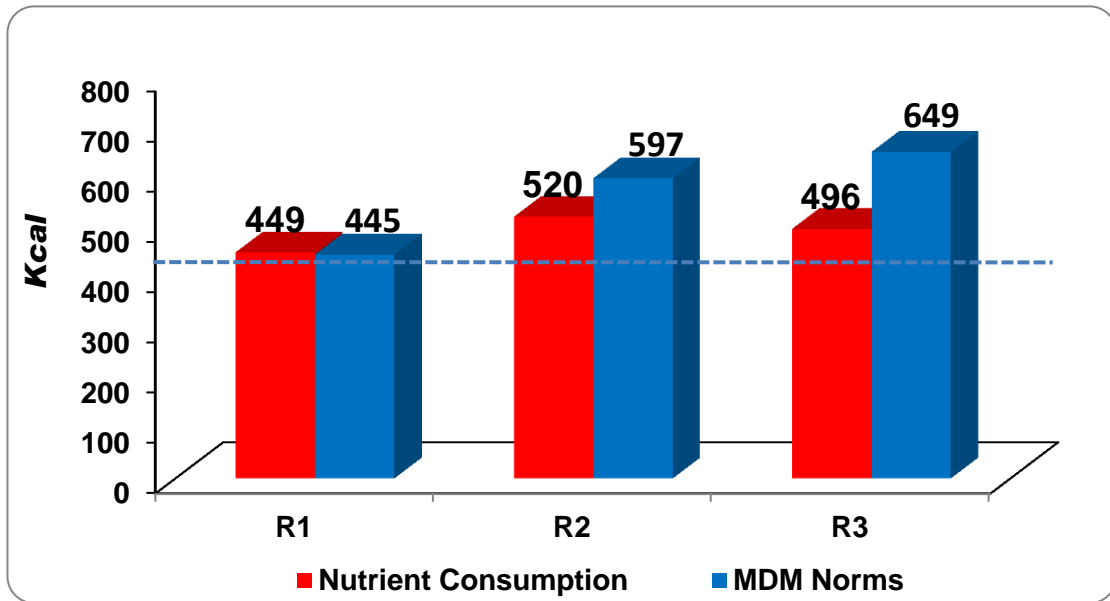
actual intake. On long run the strategy may help to reduce the burden of undernutrition amongst the school children.

**Table 5.15: Spot Observations on Consumption of MDM**

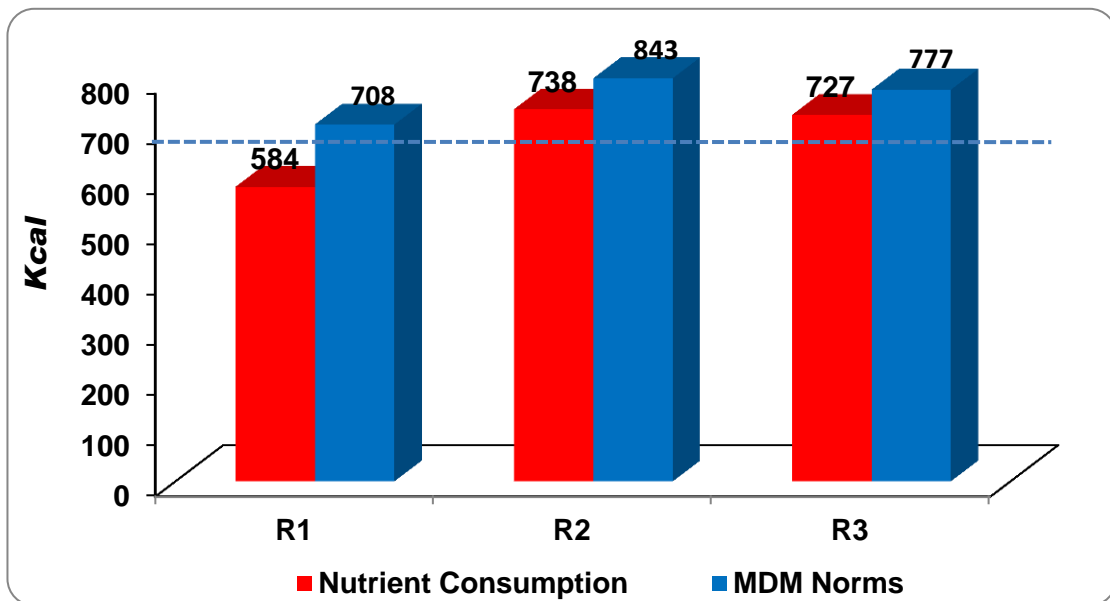
Recipe	Class	Cooked volume (ml)	Nutrient Composition		MDM Norms	
			Energy (Kcal)	Protein (g)	Energy (Kcal)	Protein (g)
<b>Non – Centralized Kitchen</b>						
Primary	Chana Chat	150	171	5.9	72	3.4
	Khichdi	200	278	4.9	373	8.9
	<b>Total</b>		<b>449</b>	<b>10.8</b>	<b>445</b>	<b>12.3</b>
Upper Primary	Chana Chat	150	171	5.9	108	5.1
	Khichdi	300	413	7.3	600	19.7
	<b>Total</b>		<b>584</b>	<b>13.2</b>	<b>708</b>	<b>24.8</b>
<b>Centralized Kitchen</b>						
Primary	Pulav	200	270	4.0	364	9.2
	Sukhadi	150	250	3.0	233	2.5
	<b>Total</b>		<b>520</b>	<b>7.0</b>	<b>597</b>	<b>11.7</b>
Upper Primary	Pulav	300	405	6	573	20.6
	Sukhadi	200	333	4.0	270	3.1
	<b>Total</b>		<b>738</b>	<b>10.0</b>	<b>843</b>	<b>23.7</b>
<b>Centralized Kitchen</b>						
Primary	Fried Groundnut	50	170	7.6	227	10.1
	Dudhi Chana Dal	150	101	3.3	135	4.4
	Roti (n)	1.5 (22g)	121	2.6	114	2.4
	Jeera Rice	150	104	2.1	173	3.4
	<b>Total</b>		<b>496</b>	<b>15.6</b>	<b>649</b>	<b>20.3</b>
Upper Primary	Fried Groundnut	50	170	7.6	227	10.1
	Dudhi Chana Dal	350	236	7.7	185	7.0
	Roti (n)	2.5 (37g)	127	4.5	158	4.0
	Jeera Rice	280	194	3.8	207	4.1
	<b>Total</b>		<b>727</b>	<b>23.6</b>	<b>777</b>	<b>25.2</b>



**Graph 5.7: MDM Norms vs. Actual Consumption of MDM for Primary School Children- Energy**



**Graph 5.8: MDM Norms vs. Actual Consumption of MDM for Upper Primary School Children- Energy**

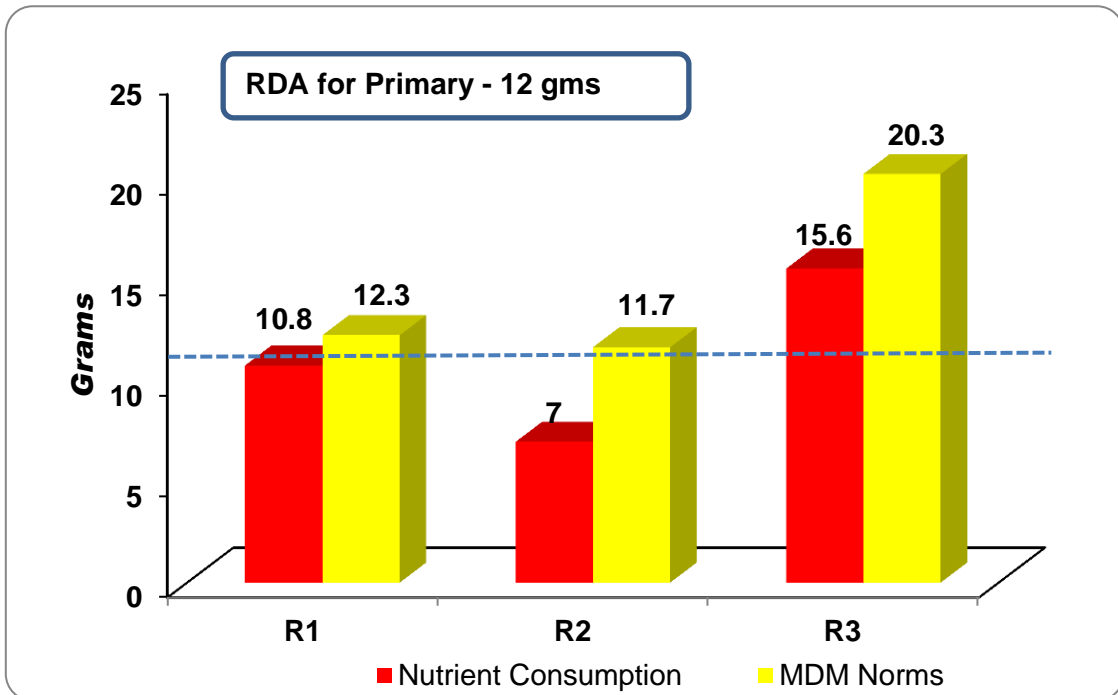


**R1: Chana Chat + Khichdi,**

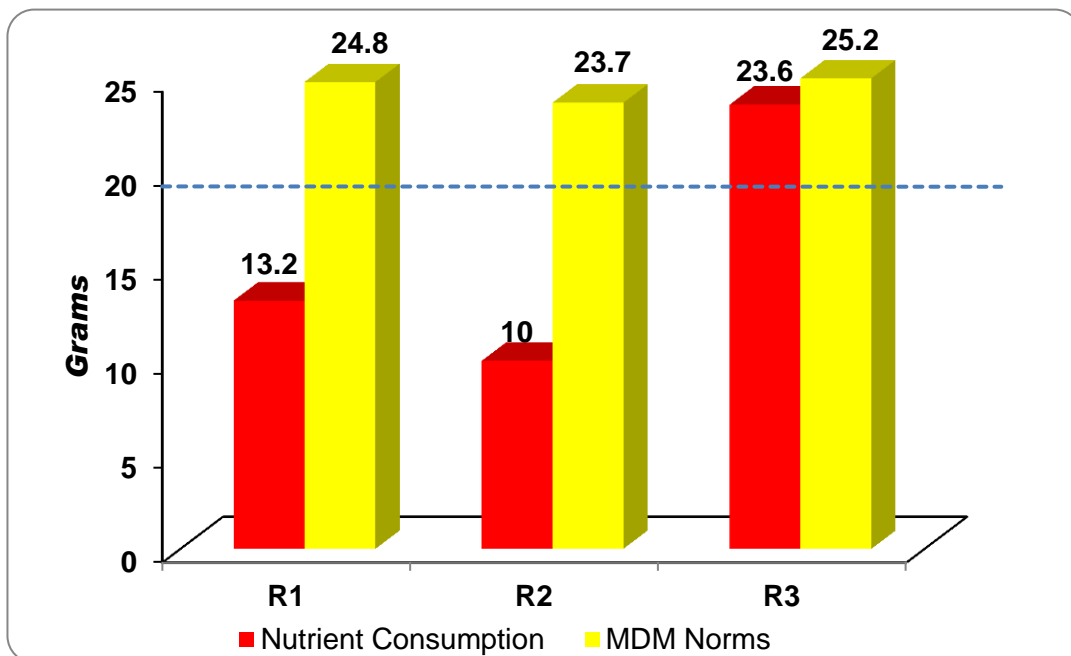
**R2: Sukhadi+ Pulao,**

**R3: Fried Groundnut, Dudhi Chana Dal, Roti, Jeera Rice**

**Graph 5.9: MDM Norms vs. Actual Consumption of MDM for Primary School Children- Protein**



**Figure 5.10: MDM Norms vs. Actual Consumption of MDM for Upper Primary School Children- Protein**



**R1: Chana Chat + Khichdi,**

**R2: Sukhadi+ Pulao,**

**R3: Fried Groundnut, Dudhi Chana Dal, Roti, Jeera Rice**

### **Preference given by the children**

1. The children appreciated and were satisfied with the meals given in the MDM programme. They were also satisfied with the quantity that was being served as they were given a second helping on demand
2. The most preferred recipes by the children were Khichdi followed by Dal Dhokli and Dal rice. (Table 5.16)
3. Children liked Chana, Groundnuts and Sukhadi in the snacks served in schools.

Overall the children liked the various recipes and enjoyed eating together with their peers.

### **Teachers Perceptions**

All the teachers interviewed were satisfied with the quality and quantity of food served. They also felt that MDM is beneficial to children and it had a positive impact on the overall physical growth, health and cognitive development of the children. (Table 5.17)

### **Parents Perceptions (Table 5.18)**

Around 33 parents were interviewed for their perception regarding MDM and the observations are as follows.

- Around 97% of the parents said that the child has meals at school.
- Majority (72.7%) of the parents said that their children had on all 6 days and 21.9% of them responded that their child has food for less than 3 days.
- Nearly 91% of them said that their child liked the food served through MDM Programme.
- All the parents were of the opinion that MDM was beneficial to children and it had positive impact on physical growth, health and cognitive development (84.8%)
- The parents were satisfied with the quality of MDM (87.9%) and quantity of MDM (97%)

Thus, the parents and teachers were satisfied with the ongoing MDM Programme.

**Table 5.16: MDM preference by Children**

Sr. No.	Name of food	Total		Banaskantha		Vadodara	
		n	%	n	%	n	%
1.	Can't say	66	7.0	51	10.5	15	3.3
2.	Khichdi/vegetable Khichdi	324	34.6	140	28.8	184	40.8
3.	Dal dhokli	301	32.1	143	29.4	158	35.0
4.	Dal rice	133	14.2	58	11.9	75	16.6
5.	Chana chat	95	10.1	65	13.4	30	6.7
6.	Roti/ Bhakhari/ Thepla/ with Subji/shak	73	7.8	38	7.8	35	7.8
7.	All food items served in MDM	48	5.1	28	5.8	20	4.4
8.	Muthiya	37	3.9	21	4.3	16	3.5
9.	Vegetable pulao	33	3.5	6	1.2	27	6.0
10.	Sukhadi	18	1.9	11	2.3	7	1.6
11.	Shingdana	5	0.5	0	0.0	5	1.1
12.	Idli	4	0.4	0	0.0	4	0.9
13.	Rice and Subji	4	0.4	0	0.0	4	0.9
14.	Chana rice	1	0.1	0	0.0	1	0.2

**Table 5.15: Teachers views on Mid Day Meal**

<b>TEACHERS REPONSES (N=47)</b>	<b>%</b>
MDM is beneficial to children	100
Positive impact on physical growth, health and cognitive development	100
Satisfaction of quality of served MDM	100
Satisfaction of quantity served MDM	100

**Table 5.18: Parents' Views on Mid Day Meal**

<b>PARENTS RESPONSES</b>	<b>%</b>
<b>Child Eats MDM</b>	
• Yes	97.0
• No	3.0
<b>Frequency of eating MDM</b>	
• Less than 3 days	21.9
• 3-5 days	3.1
• 6 days	72.7
<b>Likes served food</b>	
• Yes	90.9
• No	9.1
<b>MDM is beneficial to children</b>	
• Yes	100.0
<b>Positive impact on physical growth, health and cognitive development</b>	
• Yes	84.8
• No	6.1
• Can't say	6.1
<b>Satisfaction of quality of served MDM</b>	
• Yes	87.9
• No	6.1
• Can't say	6.1
<b>Satisfaction of quantity served MDM</b>	
• Yes	97.0
• Can't say	3.0

**Table 5.19: Quality Assessment of Food Grains in School Kitchen (N=18)**

<b>Quality of Ingredients</b>		<b>n</b>	<b>%</b>
Cereals	satisfactory	18	100.0
Pulses	satisfactory	17	94.4
	stock not available	1	5.6
Oils	satisfactory	18	100.0
Spices	satisfactory	18	100.0
Salt	satisfactory	17	94.4
	not sure	1	5.6
Vegetables	satisfactory	16	88.9
	stock not available	2	11.1
<b>Storage of ingredients</b>			
Cereals	satisfactory	17	94.4
	not satisfactory	1	5.6
Pulses	satisfactory	16	88.9
	not satisfactory	1	5.6
	stock not available	1	5.6
Oils	satisfactory	17	94.4
	not satisfactory	1	5.6
Spices	satisfactory	17	94.4
	not satisfactory	1	5.6
Salt	satisfactory	17	94.4
	not satisfactory	1	5.6
Vegetables	satisfactory	17	94.4
	not satisfactory	1	5.6
Cleanliness of utensils	satisfactory	17	94.4
	ok	1	5.6
Cleanliness of kitchen	satisfactory	15	83.3
	ok	3	16.7
<b>Miscellaneous</b>			
Source of water	tap water	11	61.1
	handpump	2	11.1
	borewell	3	16.7
	well	1	5.6
	RO	1	5.6
	water jug	1	5.6
Handwashing soap	present	15	83.3
	not present	3	16.7
Soap for washing utensils	soap	17	94.4
	Ash and Mud	1	5.6

Quality of the following food ingredients was assessed in 18 school kitchens.

1. Cereals-Wheat, Rice, Wheat Flour
2. Pulses-Tuver Dal And Channa Dal,
3. Oil-Cottonseed Oil Was Used
4. Spices-Turmeric, Red Chilli Powder, Dried Spices Namely Cloves, Cumin, Cinnamon, Bay Leaves
5. Salt-They Were Using Iodized Tata Salt

- Quality of cereals, spices, salt was found satisfactory in all the schools (100%)
- Quality of pulses was satisfactory in 95% school kitchen. In one school pulses and vegetables were out of stock.
- Spices used are of local brands. Wheat was stored in gunny bags. According to them food materials get spoiled in barrels.
- Utensils used for cooking were clean and in 94% of the school, soap was used for washing utensils.
- Majority of schools had potable tap water. Other sources were, hand pump, bore well and RO plant.
- In 83% the schools, soap was available for washing hands for children.

Thus, overall the storage facilities were good and the scope for strengthening it further.

**SECTION III: SUGGESTED NUTRITIOUS RECIPES FOR MDM GUJARAT  
(PRIMARY)**

**1. SHEERA + ROTI, DESI CHANA**

<b>Roti (3) + Desi Chana</b>	<b>Amount (g)</b>	<b>Energy (Kcal)</b>	<b>Protein (g)</b>
Wheat flour	40	128	4.2
Bengal gram whole	20	57	3.8
Onion	40	23	0.7
Tomato	40	8	0.4
Oil	5	45	-
Salt	To taste		
Spices	To taste		
<b>Total</b>		<b>261</b>	<b>9.2</b>

<b>Sheera</b>	<b>Amount (g)</b>	<b>Energy (Kcal)</b>	<b>Protein (g)</b>
Wheat flour	50	160	5.3
Oil	5	45	-
Jaggery	10	35	0.2
<b>Total</b>		<b>240</b>	<b>5.5</b>

**2. POHA + BAJRA ROTLA, GREEN MOONG**

<b>Bajrarotla (2 thin) + Green Moong</b>	<b>Amount (g)</b>	<b>Energy (Kcal)</b>	<b>Protein (g)</b>
Bajra flour	50	174	5.5
Green gram whole	20	59	4.5
Onion	40	23	0.7
Tomato	40	8	0.4
Oil	5	45	-
Salt	To taste		
Spices	To taste		
<b>TOTAL</b>		<b>309</b>	<b>11.1</b>



<b>Poha</b>	<b>Amount (g)</b>	<b>Energy (Kcal)</b>	<b>Protein (g)</b>
Rice flakes	40	142	3.7
Onion	40	23	0.7
Carrot	25	10	0.3
Green	5	4	0.4
Peas	5	45	-
Oil			
	To taste		
Salt	To taste		
Spices			
<b>TOTAL</b>		<b>224</b>	<b>5.1</b>

### 3. IDADA + MIX VEGETABLE KHICHDI

<b>Mix Vegetable Khichdi</b>	<b>Amount (g)</b>	<b>Energy (Kcal)</b>	<b>Protein (g)</b>
Rice	50	178	4
Yellow moong dal	20	65	4.8
Brinjal	25	6	0.4
Red gram tender	5	6	0.4
Drumstick leaves	15	10	1
Oil	7.5	68	-
Salt	To taste		
Spices	To taste		
<b>TOTAL</b>		<b>333</b>	<b>10.6</b>

<b>Idada</b>	<b>Amount (g)</b>	<b>Energy (Kcal)</b>	<b>Protein (g)</b>
Rice	50	178	4
Udad dal	15	49	3.5
Oil	2.5	23	-
<b>TOTAL</b>		<b>250</b>	<b>7.5</b>

#### 4. METHI MUTHIA + VEGETABLE BIRYANI

Vegetable Biryani	Amount (g)	Energy (Kcal)	Protein (g)
Rice	50	178	4
Potato	30	22	0.4
Cauliflower greens	10	4	0.4
Peas	5	4	0.4
Carrot	20	8	0.2
Onion	20	11	0.4
Salt	To taste		
Spices	To taste		
<b>TOTAL</b>		<b>227</b>	<b>5.8</b>

Methimuthia	Amount (g)	Energy (Kcal)	Protein (g)
Rice	50	178	4
Red gram dal	20	66	4.3
Bengal gram dal	15	49	3.2
Fenugreek leaves	15	5	0.6
Oil	5	45	-
<b>TOTAL</b>		<b>343</b>	<b>12.1</b>

#### 5. HANDVO + KADHI, KHICHDI

Kadhi-Khichdi	Amount (g)	Energy (Kcal)	Protein (g)
Rice	30	107	2.4
Red gram dal	15	50	3.2
Oil	2.5	23	-
Curd	50	30	1.5
Besan	3	10	0.6
Oil	2.5	23	-
Salt	To taste		
Spices	To taste		
<b>TOTAL</b>		<b>243</b>	<b>7.7</b>

Handvo	Amount (g)	Energy (Kcal)	Protein (g)
Rice	50	178	4
Red gram dal	30	99	6.5
Bottle gourd	20	3	0.1
Oil	5	45	-
<b>TOTAL</b>		<b>325</b>	<b>10.6</b>

#### 6. FADA UPMA + DAL PALAK, RICE

Dal Palak + Rice	Amount (g)	Energy (Kcal)	Protein (g)
Bengal gram dal	30	99	6.5
Rice	50	178	4
Spinach	30	7	0.6
Onion	30	17	0.5
Tomato	30	6	0.3
Oil	7	63	-
<b>TOTAL</b>		<b>370</b>	<b>11.9</b>

FadaUpma	Amount (g)	Energy (Kcal)	Protein (g)
Broken wheat	50	171	5.4
Oil	3	27	-
<b>TOTAL</b>		<b>198</b>	<b>5.4</b>

#### 7. LADDOO + PALAK TOMATO RICE

Palak Tomato Rice	Amount (g)	Energy (Kcal)	Protein (g)
Rice	50	178	4
Bengal gram dal	20	66	4.3
Tomato	50	10	0.5
Spinach	10	2	0.2
Onion	20	11	0.4
Oil	3	27	-
<b>Total</b>		<b>294</b>	<b>9.4</b>

Laddoo	Amount (g)	Energy (Kcal)	Protein (g)
Coarse Wheat flour	50	160	5.3
Oil	7	63	-
Jaggery	15	53	0.3
<b>Total</b>		<b>276</b>	<b>5.6</b>

## SUGGESTED NUTRITIOUS RECIPES FOR MDM GUJARAT (UPPER PRIMARY)

### 1. SHEERA + ROTI, DESI CHANA

Roti (3) + Desi Chana	Amount (g)	Energy (Kcal)	Protein (g)
Wheat flour	75	240	8.8
Bengal gram whole	30	86	5.7
Onion	50	24	0.8
Tomato	50	10	0.5
Oil	5	45	-
Salt	To taste		
Spices	To taste		
<b>Total</b>		<b>405</b>	<b>15.8</b>

Sheera	Amount (g)	Energy (Kcal)	Protein (g)
Wheat flour	75	240	8.8
Oil	5	45	-
Jaggery	10	35	1.1
<b>Total</b>		<b>320</b>	<b>9.9</b>

### 2. POHA + BAJRA ROTLA, GREEN MOONG

Bajrarotla (2 thin) + Green moong	Amount (g)	Energy (Kcal)	Protein (g)
Bajra flour	100	348	10.9
Green gram whole	30	88	6.8
Onion	50	30	0.9
Tomato	50	10	0.3
Oil	5	45	-
Salt	To taste		
Spices	To taste		
<b>TOTAL</b>		<b>521</b>	<b>18.9</b>

<b>Poha</b>	<b>Amount (g)</b>	<b>Energy (Kcal)</b>	<b>Protein (g)</b>
Rice flakes	60	212	4.5
Onion	40	24	0.7
Carrot	25	10	0.3
Green	5	4	0.4
Peas	5	45	-
Oil			
	To taste		
Salt	To taste		
Spices			
<b>TOTAL</b>		<b>295</b>	<b>5.9</b>

### 3. IDADA + MIX VEGETABLE KHICHDI

<b>Mix Vegetable Khichdi</b>	<b>Amount (g)</b>	<b>Energy (Kcal)</b>	<b>Protein (g)</b>
Rice	80	285	6.4
Yellow moong dal	30	98	7.2
Brinjal	40	10	0.6
	10	12	0.8
Red gram tender	20	14	1.3
Drumstick leaves	7.5	68	-
Oil			
	To taste		
Salt	To taste		
Spices			
<b>TOTAL</b>		<b>487</b>	<b>16.3</b>

<b>Idada</b>	<b>Amount (g)</b>	<b>Energy (Kcal)</b>	<b>Protein (g)</b>
Rice	70	249	5.6
Udad dal	20	65	4.7
Oil	2.5	23	-
<b>TOTAL</b>		<b>337</b>	<b>10.3</b>

#### 4. ETHI MUTHIA + VEGETABLE BIRYANI

Vegetable Biryani	Amount (g)	Energy (Kcal)	Protein (g)
Rice	70	249	5.6
Potato	30	22	0.4
Cauliflower greens	20	8	0.8
Peas	5	4	0.4
Carrot	25	10	0.3
Onion	30	17	0.6
Salt	To taste		
Spices	To taste		
<b>TOTAL</b>		<b>310</b>	<b>8.1</b>

Methimuthia	Amount (g)	Energy (Kcal)	Protein (g)
Rice	80	285	6.4
Red gram dal	35	116	7.6
Bengal gram dal	20	66	4.3
Fenugreek leaves	15	5	0.6
Oil	5	45	-
<b>TOTAL</b>		<b>517</b>	<b>18.9</b>

#### 5. HANDVO + KADHI, KHICHDI

Kadhi-Khichdi	Amount (g)	Energy (Kcal)	Protein (g)
Rice	70	249	5.6
Red gram dal	30	100	6.4
Oil	2.5	23	-
Curd	80	48	2.4
Besan	8	27	1.6
Oil	2.5	23	-
Salt	To taste		
Spices	To taste		
<b>TOTAL</b>		<b>470</b>	<b>16</b>

<b>Handvo</b>	<b>Amount (g)</b>	<b>Energy (Kcal)</b>	<b>Protein (g)</b>
Rice	80	285	6.4
Red gram dal	40	132	8.7
Bottle gourd	40	6	0.2
Oil	5	45	-
<b>TOTAL</b>		<b>468</b>	<b>15.3</b>

#### 6. FADA UPMA + DAL PALAK, RICE

<b>Dal Palak + Rice</b>	<b>Amount (g)</b>	<b>Energy (Kcal)</b>	<b>Protein (g)</b>
Bengal gram dal	30	99	6.5
Rice	70	249	5.6
Spinach	30	7	0.6
Onion	30	17	0.5
Tomato	30	6	0.3
Oil	7	63	-
<b>TOTAL</b>		<b>441</b>	<b>13.5</b>

<b>FadaUpma</b>	<b>Amount (g)</b>	<b>Energy (Kcal)</b>	<b>Protein (g)</b>
Broken wheat	80	273	8.7
Oil	3	27	-
<b>TOTAL</b>		<b>300</b>	<b>8.7</b>

## 7. LADDOO + PALAK TOMATO RICE

Palak Tomato Rice	Amount (g)	Energy (Kcal)	Protein (g)
Rice	70	249	5.6
Bengal gram dal	30	99	6.5
Tomato	50	10	0.5
Spinach	20	5	0.4
Onion	30	17	0.5
Oil	3	27	-
<b>Total</b>		<b>407</b>	<b>13.5</b>

Laddoo	Amount (g)	Energy (Kcal)	Protein (g)
Coarse Wheat flour	80	256	8.5
Jaggery	25	88	0.5
Oil	7	63	-
<b>Total</b>		<b>407</b>	<b>9</b>

Sr. No.	Name of the recipe	Nutritive Value			
		Energy (Kcal)	Protein (g)	Energy (Kcal)	Protein (g)
1.	Sheera + Roti, Desi Chana	501	14.7	725	25.7
2.	Poha + Bajra Rotla, Green Moong	533	16.2	816	24.8
3.	Idada + Mix Vegetable Khichdi	583	18.1	824	26.6
4.	Methi Muthiya + Vegetable Biryani	570	17.9	827	27
5.	Handvo + Kadhi Khichdi	568	18.3	938	31.3
6.	Daliya + Dal Palak, Rice	568	17.3	741	22.2
7.	Laddoo + Palak Tomato Rice	570	15	814	22.5

### Consolidated list of Suggested Recipes



## CHAPTER: 6

### Best Practices, Issues and Recommendations

#### Best Practices:

1. Sukhadi is being served once in a week.
2. Pasteurized 200 ml. of milk in all non tribal developing blocks for 6,04,956 beneficiaries.
3. Anna Triveni Yojana : 30 kgs food grains (10 kgs wheat rice and maize) per semester per girl a total of 60 kg food grains.(tribal girls).
4. ROs are available in schools.
5. Modernization of kitchen-cum store.

#### Issues:

1. Entitlements , MDM menu and MDM logo are not displayed in schools
2. MDM-MIS entries are not made regularly.
3. Stakeholders at State/district/block level are not aware about the norms of MDM.
4. Delay in payment of honorarium to cook cum helpers.
5. Akshaypatra is delivering the cooked MDM in same time in double shift school.

### RECOMMENDATIONS & SUGGESTIONS

**The JRM members propose the following recommendations and suggestions**

**SCHOOL KITCHEN:** In most of the schools, the kitchen was well maintained with basic infrastructure facilities. However the following points may be considered for strengthening the kitchen area

- i) Provision of pest control in the kitchen area.
- ii) Regular sanitization of the kitchen.
- iii) Provision of KMnO<sub>4</sub> solution for washing hands for cook cum helpers.
- iv) Proper storage facilities for raw ingredients wherever lacking.
- v) Standard weights, weighing balance, measuring cups for weighing raw food ingredients should be provided wherever not available.

**MDM FOOD:** The Government of Gujarat has adopted a new system in MDM by introducing breakfast/snacks along with MDM. The MDM & Snacks are well accepted by the children. The following suggestions may be considered for further strengthening of this novel concept:

- i) In order to introduce variety, locally available foods and recipes should be included in the menu. There is a need to develop recipe atlas of Gujarat for MDM meeting the nutritional norms.
- ii) The dietary pattern of the children revealed poor intake of green leafy vegetables (GLV) and milk. The recipes may be targeted using the optimal levels of pulses and GLVs/Vegetables to meet the prescribed food and nutrition norms under MDM.
- iii) As the nutritional norms are different for primary and upper primary children, the serving size/ration of cooked food should be standardized with local household measures to ensure appropriate ration of cooked food to the child. The schools should be provided with standard serving measures to ensure the provision of food to primary and upper primary children as per the nutritional norms.
- iv) Snacks served as breakfast to children is a very good initiative of the govt. This practice should be continued.
- v) The menu of MDM (including snacks as breakfast) provided should be displayed in all the schools at strategic location so as to be visible to parents, children and teachers.
- vi) The Government may consider the idea of developing a banner of MDM comprising of following points. MDM Logo, Children's entitlement, ration, menu with nutritive value, emergency contact number etc.
- vii) Government may also consider the reintroduction of fortified flour for MDM programme.
- viii) Various traditional millets consumed in the region are bajra, jowar and ragi. Attempt should be made to incorporate these in various recipes.

**NUTRITIONAL STATUS BASED ON ANTHROPOMETRY:** Overall the nutritional status assessment showed that the prevalence of thinness, stunting and underweight was 42.3%, 23.4% and 46.9% respectively. The provision of having breakfast and lunch by the state Government may improve compliance

and improve the intake thereby improving the nutritional status of the school children. It was also heartening to know that health checkup is routinely done in schools which included anthropometry, clinical signs and symptoms and Hb levels. Deworming tablets were given regularly however the once weekly IFA tablet supply was irregular. Looking into all these,

- i) There is a need to develop a nutrition health index card for each child so that tracking can be done easily for monitoring of moderate and severely undernourished or anemic child.
- ii) The Government may evolve a system of supplying IFA tablets regularly. One of the ways to ensure this is the possibility of picking up the tablets on monthly basis along with supply of foodgrains.
- iii) The school may receive appreciation/award for maximum coverage of MDM along with least prevalence of undernutrition and Iron deficiency anemia.

**MONITORING & SUPERVISION:** It is a vital component for the success of any programme.

- i) The teachers were tasting the food daily. However, tasting record register was not maintained on a daily basis, which is a missing component in the programme. Tasting register should be maintained.
- ii) The Supervisor should visit the school regularly and enter the remarks in the school visitor register.
- iii) Unified formats may be designed for field level monitoring and each official should submit the same after visit to higher authority.
- iv) The data coming from MIS and AMS system should be put to use.
- v) All schools were maintaining the attendance register very well. In order to facilitate the teachers, the format of the data entry in the register can be simplified.
- vi) The schools where the SMC was very active showed positive results with respect to the proper implementation of MDM. Hence, SMC maybe roped in to monitor the ongoing MDM programme. MDM should be a part of agenda of the SMC meeting.
- vii) The state may constitute a State level Joint Review Mission teams for Mid Day Meal on the lines of Central Government. These teams may

visit 5-6 districts in a year to oversee the implementation of the MDM scheme.

**TRAINING:** Training on sensitization and capacity building maybe done on the following aspects

- i) Supervisors, Principals and teachers on the role and responsibilities for the effective implementation of MDM
- ii) Teachers, Parents and children about the MDM programme, the norms, menu etc.
- iii) Food safety and the food ration to be provided per child aspects to cooks and helpers.
- iv) Sanitation and Hygiene practices to be followed by children, cooks and helpers.
- v) Involvement of Home Science college teachers for training , capacity building and development of IEC materials to impart key messages related to MDM.
- vi) Research in the area of MDM may be supported by the Government.

**SUPPORT OF CORPORATE SOCIAL RESPONSIBILITY:** The Government may take the initiative for supporting and strengthening MDM programme with the help of CSR. The support may be in the following ways

- i) Plates for lunch (big) and snacks (snacks).
- ii) Measuring cups, spoons, utensils, storage vessels, weighing balance etc.
- iii) Upgradation of Kitchen.
- iv) Development of Kitchen Garden in schools.
- v) Aprons, headgears, gloves, etc.

**COMMUNITY PARTICIPATION:** Parents/Community are important stakeholders who can play a significant role in strengthening the MDM programme. They can help by

- i) Intermittently supervising & monitoring the cooking & consumption of food by the children.

- ii) Giving feedback on the quality of food served to the children.
- iii) Recommend doable local recipes through recipe competitions meeting the nutritional norms.
- iv) The good practice of Tithi Bhojan can be strengthened by encouraging the donor to give local seasonal fruits to children like Amla, Guava, Papaya etc. which is not reflected in their dietary pattern.

**AKSHAYAPATRA:** The NGO provides MDM to school children of Vadodara. The NGO needs to consider the following

- i) Food should reach the destination as per the MDM guidelines i.e. The gap between cooking and consumption should not be more than 4 hours.
- ii) MDM logo should be prominently displayed in vans and menu list.
- iii) Additional recipes may be standardized and scaled up to break the monotony of the recipes/snacks
- iv) Snack recipes incorporating millets should be provided to the children.

**MANPOWER:** The coordinators and supervisors are appointed on contract basis. The age limit is 35 years. It is recommended that the age limit may be relaxed keeping all other procedures unchanged for efficient staff.

The state may relook at the recruitment of the contractual staff may amend the regulations to re- induct experienced and efficient staff.

For the smooth implementation of the MDM scheme, multiple charge should not be given to the MDM staff.

Lastly, in future other districts may be evaluated for the for the JRM visit.

## SWOC Analysis

<b><u>Strengths</u></b> <ul style="list-style-type: none"><li>• Providing snacks and meals.</li><li>• Attendance- Mobile App Based</li><li>• MDM Attendance Register</li><li>• Ingredient Register</li><li>• Health Checkup</li><li>• TithiBhojan</li></ul>	<b><u>Weakness</u></b> <ul style="list-style-type: none"><li>• Tasting Register</li><li>• Continuous Supply of IFA</li><li>• Delay in payment of honorarium of cook-cum-helpers</li></ul>
<b><u>Opportunity</u></b> <ul style="list-style-type: none"><li>• Introduce variety of recipes</li><li>• Incorporate millets</li><li>• Use of fortified grains</li><li>• Training of stake holders</li><li>• CSR, SMC</li><li>• Developing Kitchen Garden</li></ul>	<b><u>Challenge</u></b> <ul style="list-style-type: none"><li>• Improve Kitchen Infrastructure</li><li>• Universal coverage of children</li></ul>

On the whole, the Mid Day Meal Scheme has made strident improvements in the physiological, social and mental well-being of our school children; and it is expected to continue doing so for our future generations with greater efficiency and much better impact.

Ms. Sabera Malek

Bhupendra Kumar

Dr. Anindita Shukla

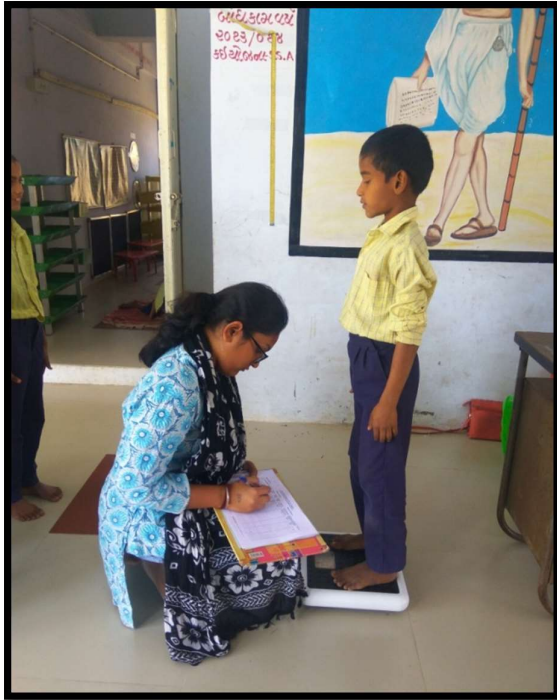
Dr. Swati Dhruv

Prof. Uma Iyer

# ***Picture Gallery***



## Anthropometric Assessment





## Dietary Assessment



## Parents Interview



## STORAGE AND INFRASTRUCTURE



## QUANTIFICATION





## QUALITY ASSESSMENT



## OBSERVATIONS





















**10<sup>TH</sup> JOINT REVIEW MISSION, MID DAY MEAL SCHEME, GUJARAT STATE  
MINISTRY OF HUMAN RESOURCE DEVELOPMENT, NEW DELHI**