

## Chapter II

### Delhi MDMP- A Case Study

Under the Mid Day Meal Programme in Delhi, as per Annual Plan of Government of Delhi 1998-99 a nutritious meal is provided to the children of primary schools and nursery schools with the following objectives in view:

- ▶ To meet the nutritional deficiency of the children.
- ▶ To prevent the children from purchasing unhygienic foods from the hawker during recess time.
- ▶ To provide incentive to children to come to the schools under the universalization of elementary education.
- ▶ To ensure reduction in the number of absentees in the class.
- ▶ To minimize the drop out and increase regular attendance.

In Delhi the MDMP is run by three agencies namely Municipal Corporation of Delhi (MCD), New Delhi Municipal Corporation (NDMC) and Delhi Government. The coverage of children under the programme (2004-05) is ~10.88 Lacs. According to the ninth plan, MCD catering to primary education has a wide network of schools. It has more than 1800 schools where around 9 lac students are enrolled. The MDM Programme is under the department of the Primary Education and is presently run in all the schools spread over 12 zones. The MCD has been providing MDM since the 1997-98. The items served were fruity bread, biscuits, roasted *bengal* gram, cake, fresh seasonal fruits. The provision of MDM was generally irregular and served for approximately 50 days of the year as against the 200 days.

In compliance with the Supreme Court Order, the Government of Delhi initiated the programme in about 400 MCD schools for serving hot cooked meals covering 2.25 lac children in 2003. Owing to the substantial number of beneficiaries in the MDM Programme the MCD passed on the baton of supplying hot cooked meals to 35 initially and later extended to 72 food service providers making the programme a decentralized one. The programme has now been extended to all the 1800 odd MCD schools covering a total of about nine lac school going children as of 2004-05. The MCD provides MDM to children both in the morning and afternoon shift schools.

In 2003 NFI was requested by MCD to evaluate the revised MDMP to:

- ▶ Undertake surprise checks and inspection of the cooking area of the NGOs/RWAs/Caterers providing MDM to the children of MCD Schools.
- ▶ In addition, to make necessary observations at the food FSPs, school and the class level with major focus on hygiene/sanitation, nutritional quality and acceptability of the food served under the scheme.

A team of trained field investigators carried out the evaluation and consolidated reports were forwarded to MCD from time to time for their necessary action.

## Out line of NFI's Protocol

The study was carried out from August '03 to December '04 in two rounds:

- ▶ **Round I** comprising 410 schools and 72 FSPs as per the list provided by the MCD and were evaluated during **August 2003 – June 2004**.
- ▶ **Round II** comprising of randomly selected schools from the list of 1800 schools provided by the MCD (250 schools) and 51 FSPs as per the list provided by the MCD were evaluated during the year **July 2004 - December 2004**.

### Text Box 2.1 Objectives of the study

The objectives of the evaluation were to assess/compare

- ▶ The infrastructural facilities available at the food supplier level and the hygienic aspects of the food prepared by them.
- ▶ The food receiving, storage and distribution system for the meals at the schools.
- ▶ Overall quality (with special emphasis on nutritional quality) of the food served.
- ▶ Modifications, if any, in the food service units of the food FSPs visited in both the Rounds.
- ▶ The MDMP functioning at the schools in Round I with schools in Round II
- ▶ Functioning of MDMP at schools in Round II

## Plan of action

Periodic observations were made at Food FSPs and school level on the following assessment parameters:

### Assessment Parameters at FSP Level

- ▶ Infrastructural facilities.
- ▶ Organizational chart.
- ▶ Procurement and storage of raw material.
- ▶ Pre-preparation and preparation activities.
- ▶ Personal hygiene of the food handlers.
- ▶ Sanitary conditions of the cooking area.
- ▶ Kitchen waste disposal.
- ▶ Post-preparation handling and transportation of the cooked food .
- ▶ Management of the leftover food.

### Assessment Parameters at School Level

- ▶ Organizational setup.
- ▶ Receiving & distribution area.
- ▶ Personal hygiene of food handlers.
- ▶ Cleanliness of utensils.
- ▶ Evaluation of food quality.
- ▶ Drinking water facility.

## **Class Level**

- ▶ Quantity of food served per child.
- ▶ Children's response/ consumption pattern.
- ▶ Focus group discussion with children and teachers.

## **Focus Group Discussion**

- ▶ Children: These discussions were carried out to obtain a feedback on likes and dislikes of the children and the reasons for not consuming MDM, if any.
- ▶ Teachers: These discussions were carried out to obtain a feedback about the MDMP relating to the improvement of attention span, enrolment and attendance of the children at the schools.

## **Tools and Techniques**

Based on the plan of action, set of tools were formulated and the field investigators were oriented to the collection of data. These included:

- ▶ FSP level Checklist (Annexure V a)
- ▶ School Level Checklist (Annexure V b)
- ▶ Class Level Checklist (Annexure V c)
- ▶ Format for the focus group discussion (FGD) with teachers (Annexure V d).
- ▶ Format for the focus group discussion (FGD) with students / children (Annexure V d).

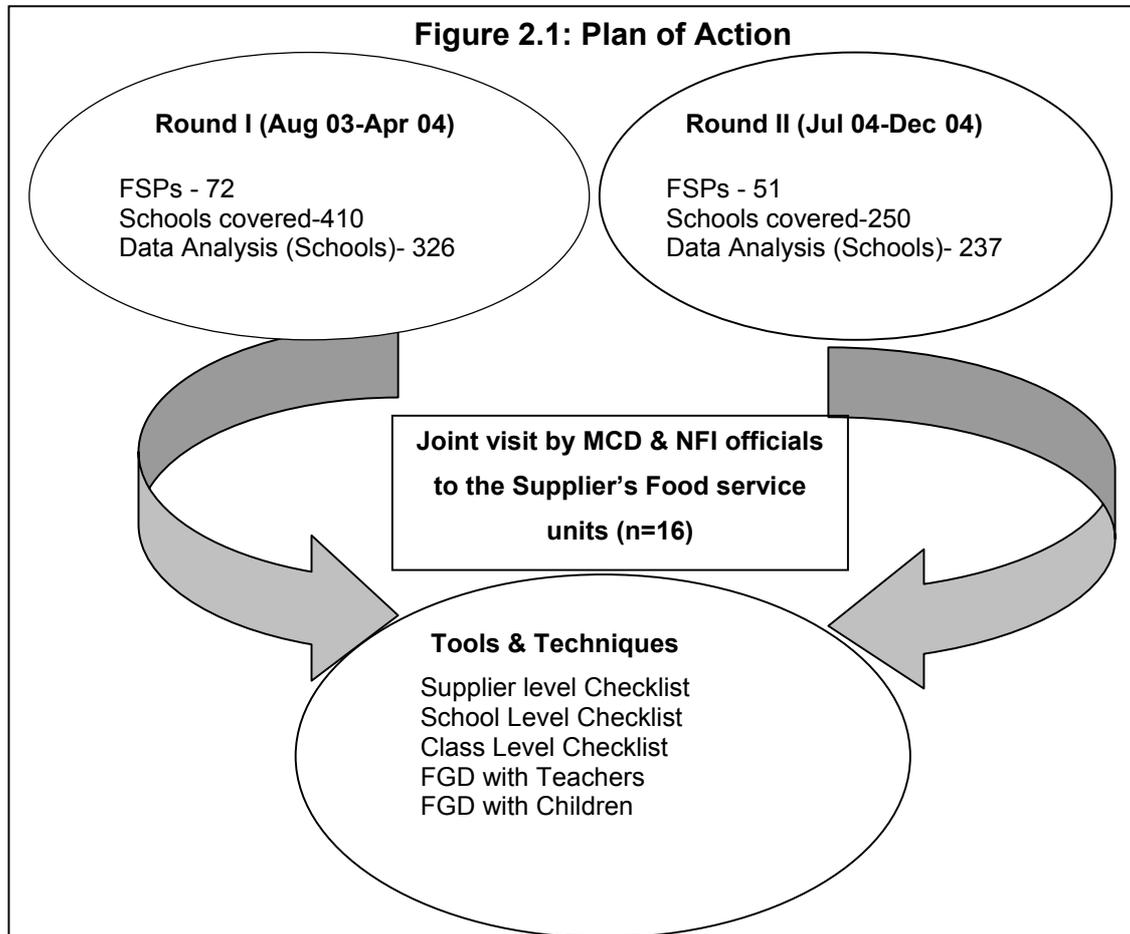
This was the basic premise for the protocol, however, since the evaluations were primarily qualitative in nature, the tools were modified as per the need, based on the observations of the investigators so as to make the evaluation more specific and accurate. Evaluations of the service units by the NFI has been based on the "**Code for Hygienic Conditions for Establishment and Maintenance of the Mid Day School Meal Programmes**" laid by the Indian Standards Institution, 1972 (Annexure VI).

**Round I:** In this round of evaluations the Director of Education Department (PE) provided the list of schools spread over 12 zones where the revised MDMP/ cooked meal was to be implemented and a list of the FSPs along with their addresses were also provided.

**Round II:** In this round of evaluations for the purpose of making comparison, 205 schools were randomly selected from the 410 schools evaluated in Round I. Another 200 schools were randomly selected from the list of 1354 new schools under MDMP, using random number tables. Care was taken to have adequate sampling from all the 12 zones of the MCD.

The criteria used for evaluation of the service units were based on the guidelines laid by the ISI (1972). The receiving, storage pre-preparation, cooking, assembly and washing areas of the service units supplying the meals were graded as

good, fair or poor based on the adequacy of space, cleanliness, lighting and ventilation.



Storage area was assessed for pest control measures and washing area for the availability / use of hot water and soap. Six areas i.e. the receiving, assembly, pre-preparation, cooking, storage, and washing area were graded based on qualitative assessment. Three other parameters included in the assessment were condition of the equipment used, personal hygiene of the cooks and management of kitchen waste and its disposal. The overall grading of the unit was carried out on the basis of the aforesaid criteria.

The schools were graded on the basis of their infrastructural facilities, availability of drinking water, toilets facilities, furniture and staff. The other key factors that were given emphasis were the cleanliness of the area where the meals were received and distributed as well as overall cleanliness of the schools. The personal hygiene of the students was also looked into. Involvement of the teachers and their sensitivity to the programme was also noted.

The whole process of the preparation of the mid day meal at the service units to the distribution at the school level was evaluated. Other aspects of what was

done with meals that had not been consumed or meals leftover by the students were also accounted for, to give the MCD a bird's eye view of the scenario of the Programme.

Though the evaluations were 'one-time' in nature, as and when the need arose a second round of evaluation during the same academic year were also made. There was a continuous feed back mechanism to the MCD Officials through constant reporting and meetings. This made the whole process of evaluation an ongoing one and helped in the mid course corrections in the programme that would improve the programme and enhance the working of both the stake holders-the government, the Food Service Providers (FSPs) and the beneficiaries.

**Major findings of the evaluation:**  
Evaluation of the food service units.

<b>Table 2.1: Number of service units visited</b>	
<b>Period</b>	<b>Number of Food service units/Visits</b>
(Aug-Oct 2003)	<b>24</b>
(December 2003)	<b>16</b>
(March-Apr 2004)	<b>39</b>
June-December 2004	<b>51</b>

Altogether NFI teams visited 72 service units in the first round and 51 in the second round of evaluations. The number of visits undertaken at the different time points is given in the Table 2.1.

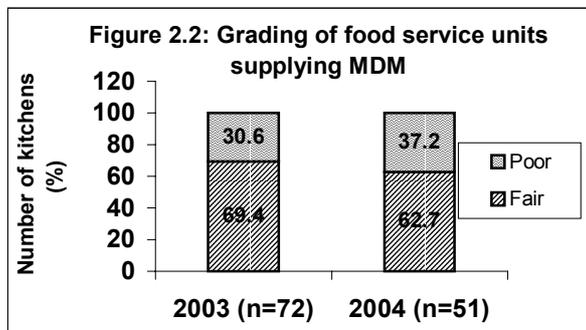
The service units spread over 12 zones of Delhi, were mostly located in interior areas and were not easily accessible. Some of the FSPs had the units in highly unhygienic environments, with open drains in front of the service units or the garbage dumps in close proximity. The choice of the unit site seems to have been made on the basis of space availability without giving due consideration to hygiene and sanitation of the location.

Most of the service units had the receiving and the assembly areas in one room; some of the service units had a big multipurpose room where all the activities were carried out. Only a few service units had well demarcated areas for different activities. There were wide variations in the infra structural facilities. A storage area was there in most of the service units but there were no shelves or platforms and cleanliness of the area was far from satisfactory. The dry ingredients (rice, *dal* etc.) were stored in gunny bags and were mostly kept on the floor. Although there were no special pest control measures, the risk of ingredients getting stale or damaged by the pests was low because the rations were stored for a very short period.

In most cases, the cooking area was partially covered and had natural light / ventilation. In case of the service units operating in courtyards, there were greater chances of the food getting exposed to dust and insects, especially considering the fact that cooking for the morning shift started before the daybreak, artificial lighting was inadequate. All of the service units visited used LPG gas as the cooking fuel; big burners were used to cook food in large vessels. Keeping two gas cylinders in close proximity to each other / hot oven

could be risky. Water supply was mainly from the Delhi Jal Board. Continuous water supply through out the day was not available in most areas; therefore, water was collected mostly once during the day and stored in covered containers.

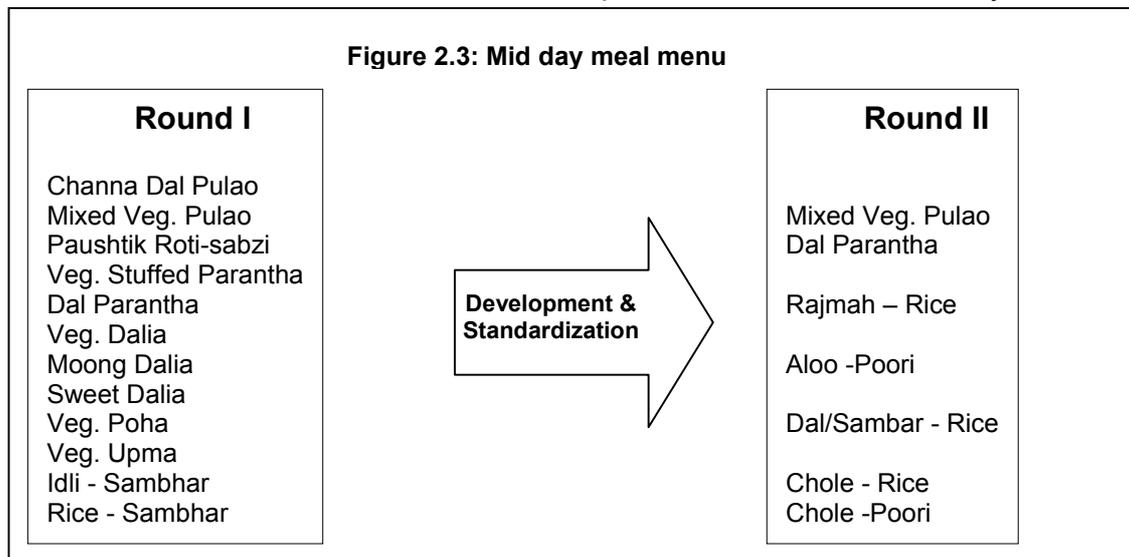
Personal hygiene of the cooks / food handlers was not up to the mark. In the service units visited in the initial rounds, food handlers did not wear aprons / headgears or cooking gloves. However, due to repeated instructions in the service units visited later on, most of the food handlers did wear aprons, headgears and in some cases even gloves. Though the FSPs followed the approved menu, they did not follow any standard recipe. Waste disposal in most service units was not well organized and the garbage was not cleared frequently; in some cases not even once in the day.



On the whole, most of the unit areas were graded as 'fair'. Overall grading of the service units in rounds 1& 2 is shown in Figure 2.2. None of the service units was graded 'good', majority were graded as 'fair'. About a third were graded as 'poor'. The lack of awareness among the FSPs about the need to prepare meals in hygienic

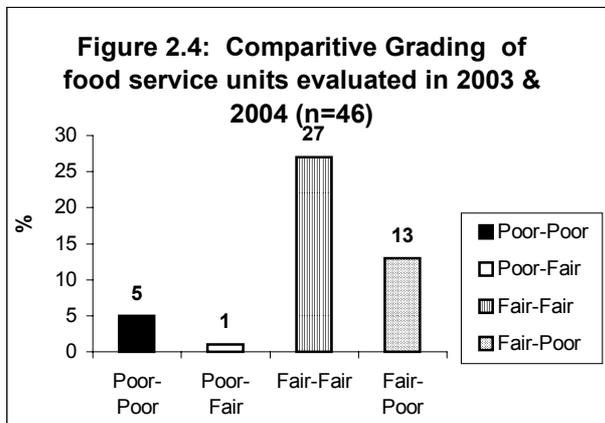
environments, taking basic precautions during mass scale preparations precipitated the need to streamline the number of food service providers.

Towards the end of the academic session out of the 18 menus initially planned by the MCD, only 8 were finalized for use in the MDMP on the basis of preferences of children and keeping quality of food in order to minimize the chances of contamination. Standardization process of the menus was carried out with the help of NFI by the MCD. Figure 2.3 depicts the Midday Meal Menu in Round I and Round II. Most food service providers followed a fixed cycle menu



for a particular school.

### Comparison of the food service units visited in Round I and Round II



A total of 72 service units in Round I and 51 service units in Round II were visited and evaluated. It was observed that there was not much change in the two rounds of evaluation (Figure 2.4). More than 30% of service units were graded as poor in both the Rounds. 46 service units visited in both the rounds were assessed for changes, if any. It was observed that in 70% cases there was no change in overall grading of service units

(Figure 2.4), 59% maintained their grading as 'fair' and 11% as poor. However in 28% cases there was deterioration (from fair to poor) while only 2% service units had registered improvement. The reported obstacles in timely supply of the meals to schools as reported by the FSPs were:

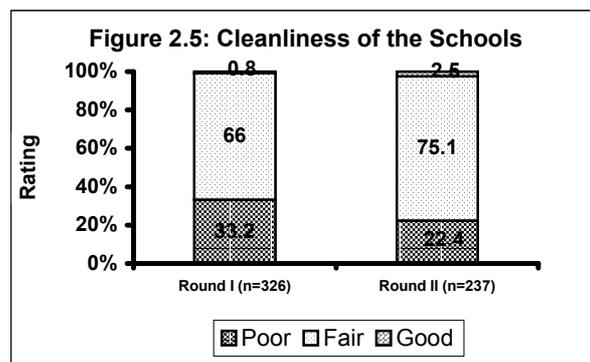
- ▶ Bad weather,
- ▶ Traffic jams,
- ▶ Logistics,
- ▶ Financial problems,
- ▶ Poor health of the cooks and
- ▶ Other eventualities.

In view of these observations all the stake holders concluded that there was a need for training the contracted FSPs to enable them not only to scale up their operations to semi-automated service units but also to improve the meals both hygienically and nutritionally.

### Visit to the Schools

The total number of schools visited during the first round of evaluations was 410 however data were analyzed for 326 schools. 250 schools were evaluated in the second round and the data were analyzed of 237 schools. 80-85% schools visited in the first and second round were of the morning shift.

Those schools that were graded as poor were functioning without proper buildings, had inadequate drinking water, toilet facilities and furniture. It was observed that even teaching



staff was not adequate in some cases however majority of schools were 'fairly' clean (Figure 2.5).

As compared to the afternoon shift schools, morning shift schools were cleaner. The toilet facilities provided were generally 'poor'. Drinking water had to be stored, in most schools. Some of the children brought their own water bottles.

Personal hygiene of the children was graded on the basis of cleanliness of their nails, hair, uniform and general appearance. Based on personal hygiene and cleanliness, more than 75% of the children were rated as 'fair' in both the rounds of evaluation (Figure 2.6).

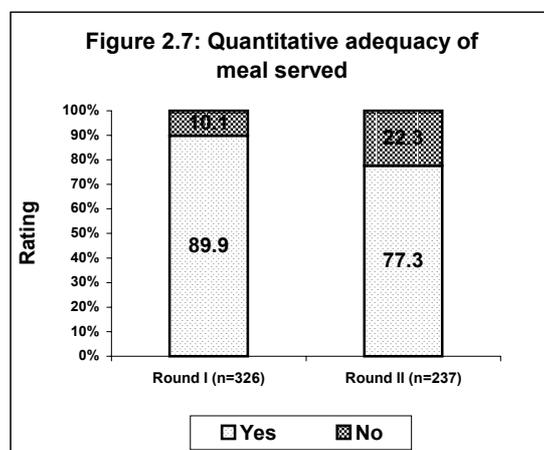
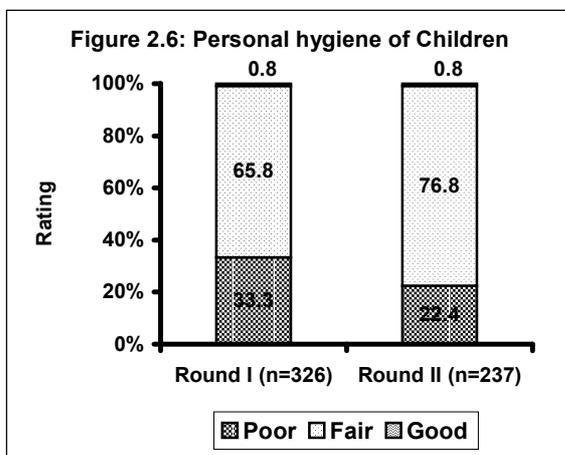
For receiving the MDM most of the children brought their own tiffin boxes /steel plates (and sometimes spoons). Majority of the children took their utensils home for washing, however, in a few cases where washing facility was available at the school, children did wash their utensils.

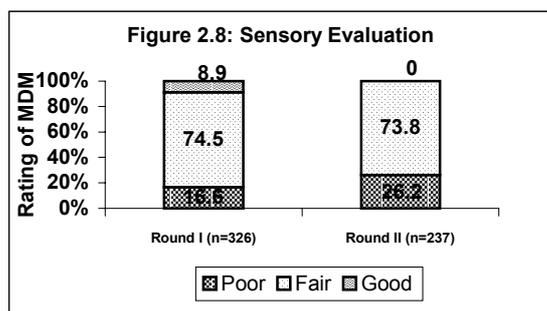
Over 80-85% of the children did not wash their hands before eating their meals, even though they were eating with their hands during the first year of evaluation but during the second year it was observed that only 35% of the children did not wash their hands before eating MDM, even though they used their hands to eat.

Quantity of meal served per child per day was found to be mostly between 150-200g, by and large being the same (Figure 2.7). Nutritional assessment of the MDM served suggests that quantity of cereal in the meal was as per recommendations i.e 300 kcals but the protein content was about 6-8g, which is low.

It was noted that the quantity of food provided to the child was lower if the amount of food brought by the FSPs was less or the child had brought a smaller tiffin box.

The focus group discussion with children indicated that they relished Rice *Sambar* and *Puri Aloo* / soybean while they did not relish: *Vegetable Dalia*,





*Sweet Dalia and Moong Dalia* during the first round of evaluation and hence these were immediately removed from the menu. About 76% of the school children consumed the meals during both rounds of evaluation. Sensory evaluations indicated that most of the food items were of fair quality as is evident in Figure 2.8.

For the purpose of simplicity, data of only the round II are being presented since variations between 1<sup>st</sup> and 2<sup>nd</sup> round are not much.

A total of 250 schools have been visited in round II. Of the 250 schools, in 8 schools MDM was not supplied and 5 schools were not cooperative on the day of the visit hence data of 237 schools have been analyzed and reported (Table 2.2).

	MDM provided	No MDM	Schools not cooperative	Total
Phase II	237	8	5	250

The number of afternoon shift schools evaluated was approximately 1/4<sup>th</sup> that of the morning shift schools (Table 2.3).

Shift	Frequency	Percent
Morning	196	82.7
Afternoon	41	17.3
<b>Total</b>	<b>237</b>	<b>100.0</b>

At the school level evaluation was carried out with regard to the time of arrival of the meals, time taken for the food distribution, existence or formulation of the MDM committee, likes and dislikes of the children, utensils used for receiving the

MDM, sanitation and various other parameters.

In almost 50% of the schools the MDM arrived between 9 a.m. and 10 a.m. and in 18% schools between 10 a.m. and 11 a.m. In the afternoon shifts MDM arrived mostly between 2 p.m. and 3 p.m. (Table 2.4).

In most of the schools the time taken for distribution of the meals was about 15-30 minutes. However, in 15.6% cases, the distribution took more than 45 minutes (Table 2.5). In schools

Time taken in minutes	Frequency	Percent
≤15	10	42.0
16-30	125	52.7
31-45	50	21.1
46-60	37	15.6
≥60	15	6.3
<b>Total</b>	<b>237</b>	<b>100</b>

Time in minutes	No. Of Schools	Percent
<b>Morning Shift</b>		
9.00-9.59a.m	131	55.3
10.00-10.59a.m	43	18.1
11.00-11.59a.m	5	2.1
<b>Afternoon Shift</b>		
2.00-2.59p.m	29	12.2
3.00-3.59p.m	7	3
<b>Morning / Afternoon Shift</b>		
No fixed time	22	9.3
<b>Total</b>	<b>237</b>	<b>100</b>

where time for food distribution was more it is possible that the schools had a greater number of children.

MDM was either received at the school corridor (48.5%) or in the courtyard (40.5%). All the school authorities maintained written records but had no record of the number of children not consuming the MDM despite being present in the class. In rest of the cases food was received in some other place e.g. HMs room.

With regard to FSP's punctuality and regularity, it was observed that the majorities were punctual (88.6%) and regular (89%). Observations regarding the frequency of delay in food supply, 69.6% school authorities reported that it was never delayed and in 21.5% schools, supply was rarely (1 or 2 times in a month) delayed and in rest of the cases the food was delayed more than 3 times in a month. It was also observed that in 58.1% cases, no prior information was given to the school officials regarding inability or delay of the supply.

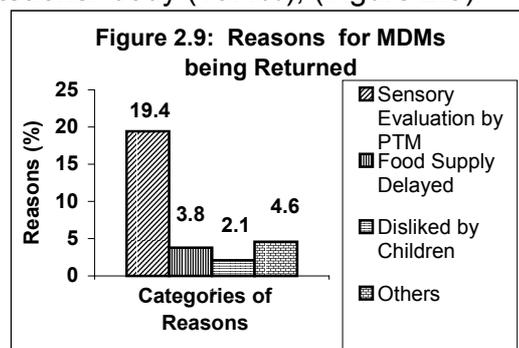
The menu on the day of the visit (Table 2.6) indicated that *Rajmah & Rice, Vegetable Pulao and Chole Rice* were served most often. In most cases-89.0% MDM was received in the schools by the teacher in-charge of MDM and in 5.9% schools by the Headmaster. The menus were rice based because of the logistics involved.

Menu	Frequency	Percent
Dal & Rice	33	13.9
<i>Rajmah &amp; Rice</i>	61	25.7
<i>Sambhar &amp; Rice</i>	7	3.0
<i>Puri -Aloo</i>	21	8.9
<i>Dal Parantha</i>	14	5.9
<i>Chole &amp; Rice</i>	42	17.7
<i>Mixed Veg. Pulao</i>	49	20.7
<i>Chole &amp; Puri</i>	10	4.2
<b>Total</b>	<b>237</b>	<b>100.0</b>

In 32% cases when MDM was not supplied the measures taken by the Headmasters were (1) non-action (17.7%), (2) inform the higher officials, regarding no supply (5.9%) and (3) contact the FSP (6.8%). When MDM was not supplied in some schools they distributed RTE / fruits (1.7% cases) and in 5.1% cases children were asked to bring lunch (Table 2.7).

Observations relating to whether food was ever returned back after it had reached the schools, indicated that in 65.4% cases the food had never been returned while in the rest of the schools during the second round of evaluations (34.6%) where food had been returned the reasons given were mainly on the basis of sensory evaluation by the Parent-teacher body (19.4%), (Figure 2.9).

Reason	Percent of Schools
RTE distributed	1.7
Children brought lunch from home	5.1
No Action	35



In about 81% schools, the teachers reported the food quantity to be adequate while in 19% reported that it was sometimes inadequate. The actions taken by the school authorities with regard to inadequate food supply were –

- ▶ FSPs asked to provide more from the unit – 18.6%
- ▶ FSPs provided biscuits/fruits – 1.7%
- ▶ Teachers contributed to provide food to children – 1.3%
- ▶ No action taken – 16.5%

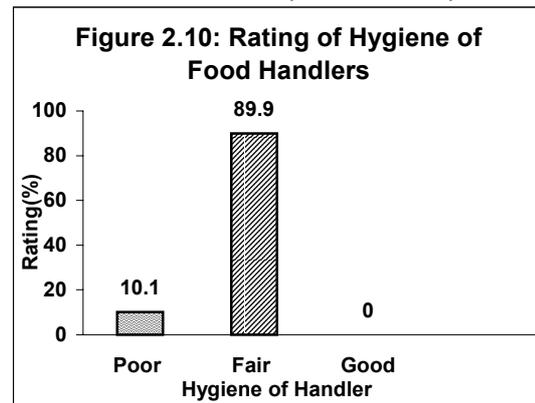
**Table 2.8: Organization chart of the MDMP at school level**

Committee	Parent Teacher Association	Senior Citizen	Health Worker
94.1%	78.9%	24.1%	13.9%

At the school level, for smooth functioning and effective management of MDM programme 94.1% of the schools had some form of MDM Committee; of these

78.9% had members from the parent-teacher body, 24.1% had an elderly citizen(s) and only 13.9% had a health worker on the committee (Table 2.8).

Food handling and distribution at the schools was done by personnel employed by the FSPs (70.5% cases). The cleanliness of these personnel was rated mostly as 'fair' in 89.9% (Figure 2.10). In the absence of food handlers (10% cases), the food was distributed by the teachers (13.9% cases), school attendant(s) (15.2% cases) or the children (6.8% cases).



**Table 2.9: Overall rating of hygiene and sanitation of the schools**

Overall rating	Poor (%)	Fair (%)	Good (%)
Receiving area	7.2	92.4	0.4
Distribution area	8.4	91.1	0.4

Hygiene and sanitation aspects of the receiving and distribution areas were rated on the basis of ventilation, pest infestation and overall cleanliness (Table 2.9). Although in majority of cases (90%) the receiving and distribution area of the schools were rated as 'fair', only 75% schools were graded as fairly clean on the basis of overall cleanliness of the entire the school, toilet facilities and drainage system.

Cleanliness of the utensils in which MDM was brought to the schools is given Table 2.10. The FSPs brought food mostly in aluminum or stainless steel drums or 'dols'. The utensils were observed for the basis of their condition (dented/pitted/cracked) and provision of well-fitted lids on each container and general cleanliness. In more than 90% cases the utensils were graded as 'fair'.

A sensory evaluation (based on appearance, taste, smell and texture) of the food item served in the school on the day of visit, indicated that the overall acceptability of the food item was “fair” in the majority (70.9%), and ‘poor’ (29.1%) in the rest (Table 2.11).

Cleanliness of the utensils	Percent
Good	0
Fair	91.1
Poor	8.9

Rating	Percent
Good	0
Fair	70.9
Poor	29.1

### **Evaluation at the Class level and focus group discussion with teachers and children**

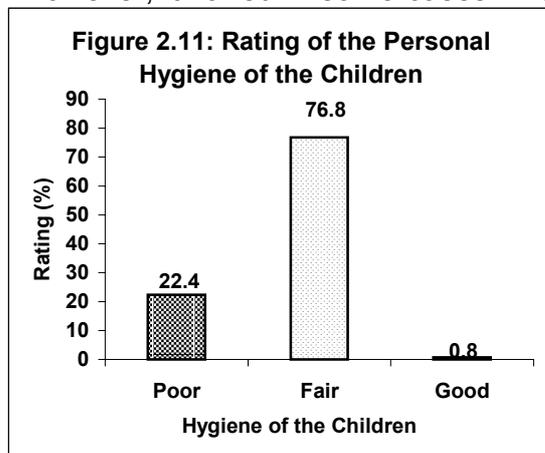
The total time taken for distribution of MDM in a class was found to vary; nearly 10 minutes in 83% cases and between 11 to 20 minutes in 16% cases (Table 2.12). Personal hygiene of the children graded on the basis of cleanliness of their nails, hair, uniform and general appearance; 76.8% children rated fair, 22.4% as poor, and only 0.8% as good (Figure 2.11).

Total time taken for Distribution (in minutes)	Percent
≤ 10	83.1
11-20	16.0

As mentioned before, it was observed that 35% of the children did not wash their hands before eating MDM, even though they used their hands to eat. The children availing the MDM in the schools were mostly bringing their own utensils from home (88.2% cases). About 35% of them did not wash their utensils at the school before receiving the MDM. However, 72.2% of the children washed their utensils regularly after eating the meals while 11.8% children did so sometimes. Steel plates were the most frequently used containers (35.8%) for receiving and eating MDM, followed by lunch boxes (21.1%). About 43.0% children used a combination of the above options for receiving MDM.

Quantity of meal served per child/day was found to be mainly between 150-200g (50.6%). The amount of food served per child was by and large the same. However, it varied in some cases when the amount of food brought by the FSPs

was itself less or the utensils for receiving the meals varied in size.



It was observed that nearly half the children consumed the whole meal provided to them and roughly the same number consumed the meal partially. Children not consuming the whole amount of the meal; were taking the leftover food home (24.5% cases), or disposing the food outside the school in the open (7.2% cases) or in dustbins (21.1% cases).

The washing area in most of the schools (54.4%) was rated as 'clean'. Drinking water facility was provided in most of the schools (91.6%) of which 73.4% cases had tap water. In majority of the cases water was stored and kept covered. It was also noted that some of the children were bringing their own water bottles.

The focus group discussion with children indicated their likes and dislikes with respect to dishes served to them. It was observed that children relished the following dishes:

- ▶ *Puri & Aloo* - 86.1%
- ▶ *Rajmah & Rice* - 4.6%
- ▶ *Chole & Rice* - 3.4%

The food items that were **not** relished by the children include:

- ▶ *Vegetable Pulao* -36.3%
- ▶ *Paranthas* -21.5%
- ▶ *Dal & Rice* -11.8%

The average number of children (in the class visited by the Investigator) consuming MDM on a regular basis was 75.5% as per head count. The reasons for the rest of the children not consuming MDM was mainly due to the food not being tasty, children not being allowed by their guardians/parents to eat MDM or not having brought their utensils on the day/(s) MDM was served. With regard to preference for cooked meal or ready-to eat food items, 73.0% of the children preferred cooked meals, 24.9% preferred the ready-to-eat food and 2.1% liked both cooked meal and RTE.

Focus group discussion with teachers was carried out to get their feedback about the MDM Programme. The focus was mainly on the issue of attendance, enrolment and attention span of the children. According to the teachers, 81.4% of children availed MDM at the schools. About 67.9% teachers opined that attendance had improved due to MDMP. Also 66.7% of the teachers felt that MDM Programme was cutting the study time. With respect to preference of MDM versus RTE, 74.7% teachers preferred cooked meal, 24.9% teachers preferred RTE and 0.4% of them had no specific preference

### Comparison of schools visited in Round I and Round II

In order to assess the changes that has occurred at school level with regard to the programme, a total of 125 schools out of the 410 schools were evaluated in round I were re-evaluated in round II, however only 88 schools could be compared due to several reasons as indicated in the Table 2.13

Reasons → ↓ Rounds	RTE Distributed	No MDM	Schools not cooperative	MDM provided	Total schools
Round I	7	22	0	96	125
Round II	0	5	3	117	125
Schools excluded	7	27	3	0	37

\*Schools analyzed -88

The schools were compared on the basis of school cleanliness, availability of drinking water, regularity and punctuality of MDM in the schools, quantitative adequacy of meal per child, sensory evaluation, cleanliness of utensils and personal hygiene of handlers.

This comparison has been carried out to evaluate if there has been any significant difference between the first and second year of the mid day meal implementation when maximum changes can be anticipated.

S.N.	Parameter	Difference (%)		No Difference (%)
		Improvement	Deterioration	
1.	Cleanliness of school	21.5	20.5	58
2.	Availability of water	20.4	2.2	77.4
3.	Personal hygiene of food handlers	21.5	3.4	75
4.	Punctuality of supplying MDM	11.4	4.5	84
5.	Regularity of supplying MDM	13.6	5.6	80.6
6.	Cleanliness of utensils	19.3	2.3	78.4
7.	Sensory evaluation	5.6	27.3	67.0
8.	Quantitative adequacy of meal served	19.3	11.4	69.3

It is evident from the table 2.14 that there was no perceptible difference in the quality of the MDMP in the two rounds of evaluations.

### **Schools visited both the Rounds vs. schools visited only Round II**

A total of 250 schools were visited between September 2004 - December 2004/ Round II. Data was analyzed for 237 schools. In 8 schools MDM was not supplied on the day of visit and 5 schools were not cooperative, hence 13 schools were excluded from the data analysis. Out of 237 schools, 117 schools (have also been evaluated in Round I) were compared with 120 schools visited only in Round II.

Here too there was no significant difference observed between the MDMP operating in schools evaluated in Rounds I and II (Table 2.15). The only positive point to be noted was the improvement in adequacy of the meal served/ child / day.

Focus Group discussions with the teachers indicated that many teachers were not very happy about the Programme and viewed it as burden and a waste of valuable school time and an extra load on them. Many male teachers were not comfortable with the idea of serving meals to schools children however, it was

also observed in some cases teachers took the initiative to give more helpings to particular children who were under privileged and malnourished.

**Table 2.15: Comparison of schools evaluated in both Rounds with schools evaluated in Round II only**

↓ % Grading → Parameters	Schools visited in both in Round (I & II) n=117			Schools visited only in Round II n=120		
	Good (%)	Fair/Yes (%)	Poor/No (%)	Good (%)	Fair/Yes (%)	Poor/No (%)
Regularity of supplying MDM	-	86.3	13.7	-	90.8	9.2
Punctuality of supplying MDM	-	88	12	-	89.2	10.8
Adequacy of meal served/child	-	65	35	-	75	25
Sensory evaluation	-	70.1	29.9	-	77.5	22.5
Personal Hygiene of handler	-	90.6	9.4	-	93.3	6.7
Cleanliness of utensils	-	94	6	-	88.3	11.7
Cleanliness of School	3.4	74.4	22.2	1.7	75.8	22.5
Availability of water at the school	-	90.6	9.4	-	92.5	7.5

The NFI has proposed a specific teacher-training programme to the MCD in order to sensitize and orient the teachers to the MDM Programme.

### **Role of NFI as an Evaluator**

The NFI's role as independent 3rd Party evaluator has been to augment the efforts of the MCD to run the programme successfully. The evaluation of the service units by independent party was specifically carried out to indicate to the FSPs that there was no ulterior motive of the Government in removing some of the FSPs and retaining some others. This led to the increased credibility of the Government and the NFI.

Proactive involvement of the evaluator (NFI) helped the MCD in qualitative improvement of the MDM with regard to better quality of food, training of the food service providers, streamlining of the FSPs gained during the two years of evaluation study-from initial 72 to current 13.

Observations at the school level have also helped the MCD in understanding the specific needs of the MCD schools, in terms of human resource and other basic infrastructure. Finally, last but not the very least, understand the needs of the beneficiaries for whom the programme has been instituted.

This evaluation of the NFI has helped the MCD to carry forth a Programme in a vast city, with a multi-cultural background during the initial teething period. These evaluations can stake a small claim to have helped in minimizing irregularities of

the supply in MDM to schools, food poisoning cases, as well as increased quantity servings through instantaneous action by reporting to the concerned authorities.

Hence the role by the NFI as Independent Evaluator has helped the Government to spread its tentacles over a big metro that it could not have controlled by just their own officers and make informed decisions about how the programme should be run to give the beneficiaries the maximum benefit.

There were several suggestions at the level of the FSPs and at school level, which emerged during the course of evaluation as listed below

For FSPs

- ▶ Service units should follow the standards given by the Indian Standards Institution (1972).
  - Management of storage space
  - Management of unit
  - Preparation of hygienic food
  - Safe transportation of the cooked meals
- ▶ Use of standardized recipes employing proper method(s) of cooking for preparing the food items.

For Schools

- ▶ Monitoring and ensuring the quality and quantity of food served.
- ▶ Maintenance of daily record of MDM.
- ▶ Inculcating good hygienic practices among the children.
- ▶ Safe drinking water and toilet facility.
- ▶ Orientation of headmasters and teachers of the schools to use MDMP:
  - As a tool for imparting nutrition and health education to the children,
  - Making them aware that MDM is a supplement not a substitute.

The evaluation also indicated that the FSPs were neither fully aware nor following BIS codes. It was also felt that for a more efficient system of the food production the MDM providers have to shift from manual to automated / semi-automated service units. Hence NFI proposed to the MCD to organize training of the MDM providers.

### **The Training programme of the Food service providers (FSPs)**

The training programme was conceptualized on the basis of the recommendation of the third party evaluation and evolved mainly based on the Code for Hygiene conditions for the establishment and maintenance of the mid day meal school programme.

The training programme was formulated more as a workshop and made effective by using –

- ▶ Focused Group Discussion
- ▶ Power Point Presentations and Lectures.
- ▶ Quiz, Rapid Fire Round.
- ▶ Slides and Visual show.
- ▶ Puppet show & Posters.
- ▶ Microbial Assay and Demonstration.

The training programme was conducted at Saroja Nutrition Studio at Lady Irwin College (University of Delhi) from 3<sup>rd</sup> October 2005 (Monday) - 7<sup>th</sup> October 2005 (Friday). The Workshop had three sessions for each group. One group comprising 26 managers and two batches of food handlers, 52 in number from 13 service units under took the training. It was followed by an on-site training at their units spread over a month.

The Training Programme commenced with a welcome address by Dr. Anupa Siddhu, Director, Lady Irwin College (LIC) who lauded the Municipal Commissioner for initiating a step in providing dialogue and partnership between the stakeholders. Mr. Rakesh Mehta, the Municipal Commissioner in his inaugural speech emphasized the need for the training programme and stated that the mission should be to make the mid day meal programme in Delhi so exemplary that it is cited to be the best and becomes the role model for the rest of the country.

The training session started with an exercise of ice breaking wherein the participants were grouped into four groups for different activities.

- ▶ Group activity and Focus Group Discussion  
Models of balanced meal, vegetables & fruits, a slide of mid day meal and collage of hygiene practices were given to each group respectively for discussion and each group presented their views. The objective being that they understand that:
  - ▶ It is important to provide a balanced meal to the children.
  - ▶ Inclusion of adequate amounts of fruits and vegetables in MDM to make them rich in protective nutrients.
  - ▶ Importance of MDMP in alleviating hunger and improving school enrolment and attendance.
  - ▶ Maintenance of clean environment and following good hygiene and sanitation practices for safe food production.
  - ▶ The concept of correct measures to ensure hygiene and sanitation in unit producing mid day meal was explained explicitly with illustrations through power point presentation which dealt on
    - Food Hygiene.
    - Personnel Hygiene.
    - Plant Hygiene, which was followed by discussions.
- ▶ Learning through play was executed through the quiz, which helped to assess their knowledge prior to the training and the rapid fire helped to evaluate the

knowledge gained. This exercise also brought about a competitive spirit for acquiring information.

- ▶ Puppet show was an innovative method using the story of Ramu who ate food from a vendor and fell sick. From the story they learnt methods to prevent food poisoning.
- ▶ The consequence was related to:
  - Food Hygiene.
  - Food colours.
  - Personnel Hygiene.
  - Environmental Hygiene.
- ▶ A film show was aired titled “**Food for all** -the spiritual dimension of food- in pursuit of a hunger free world developed by the MSSRF. The film revolved around the key message “**Anna Daan Maha Daan** ” emphasizing the fact as stated by Mahatma Gandhi: “**To those who are hungry, God is bread**”.
- ▶ Posters were designed and were critically evaluated and messages discerned from them as group activity. The posters were on
  - Do’s and Don’ts while preparing food
  - Discretion is the key to safety
  - One’s Safety lies in Food Safety
  - Progression of micro-organisms contamination with time
- ▶ The menus served by the MCD were critically assessed for their nutritional adequacy. An attempt was made to enhance its nutritional quality especially of micronutrients by incorporating vegetables. For this a seasonal calendar for vegetables was made. Vegetables were incorporated in the menu and additional items suggested to add variety The suggested menu is:

<i>Aloo Sabzi and Poori</i>	:	<i>Aloo Sabzi with Palak / Kasuri Methi / any other GLV / Pumpkin / Kala Chana</i>
<i>Rice and Chana Dal</i>	:	<i>Chana Dal with Ghiya</i>
<i>Rice and Moong Chilka</i>	:	<i>Moong Chilka with Palak</i>
<i>Rice and Chole</i>	:	<i>Chole with Kasuri Methi</i>
<i>Rice and Kadhi:</i>	:	<i>Kadhi with Palak / Sarson / Methi</i>
<i>Rice Sambhar:</i>	:	<i>Sambhar with Pumpkin / Brinjal / Ghiya /Carrot / Beans</i>

- ▶ Interactive demonstration was a do and learn technique used with food handlers to train them in correct sanitary measures
  - Items in the store shown and the participants asked to identify some of the good practices.
  - Participants were asked to demonstrate how to handle raw and cooked food
  - Some of the correct work habits such as holding glass, spoon, and use of protective wear were shown with participative demonstration.
  - Some of measures used in the lab to ensure sanitation and safety in unit were pointed out such as floor, counters, tiles, hood, exhaust, drains and RO system for water and fire extinguisher.
- ▶ The concept of microorganism was aptly demonstrated by microbial assay and demonstration. Swab test was shown where in they saw the microbial colonies and even viewed specific ones under the microscope.

- ▶ The participants were asked to list the concepts that they would reinforce in their unit as a part of the training. This exercise indicated their perception of change needed and also provided a checklist for on site evaluation.

Thus the training programme was greatly appreciated by the participants as they felt that it provided them an avenue to:

- To learn new concepts, also get to know the different ways to put it into practice.
- Group discussions and other modes of training techniques provided them opportunity: -
  - To learn from each other.
  - To discuss the problems and seek solutions.
  - Opportunity to do and learn
  - Provided a checklist for use in their respective units.

On site evaluation was undertaken after a gap of two weeks to assess the status of their unit and observe if any concepts have been enforced. A checklist was used and 8 of the 13 units satisfied most of the criteria. In others there was scope for improvement. Overall improvement in practices of food, personnel and plant hygiene was seen.

The following were the recommendations:

- On site training to include all food handlers.
- Reinforcement of training.
- Periodic monitoring to check adherence to standards.
- Maintenance of standards in unit as measure of efficiency.
- Strategy plan for better transportation of food.
- Orientation and better participation of Teachers in MDMP.
- Better facilities to be provided in school for distribution.
- Incentives for well maintained units.

The latter aspect is now taken care by regular testing of the MDM for microbiological content.

## **Conclusions**

- ▶ MCD must continue to put MDM Programme on top of their agenda.
- ▶ Stockholder's collaboration is a must.
- ▶ Simple monitoring and evaluation system required.
- ▶ Good management practices, forward planning and adequate flow of finances are essential.
- ▶ Educability must go hand in hand with education.
- ▶ Field Experience and capacity building from top down is most important.
- ▶ The state must take care of the health / nutrition of ~ 90% children in the classroom who are in need of additional support.