

# IMPACT ASSESSMENT STUDY OF MID-DAY MEAL

## Report (Revised)

Prepared For : Akshaya Patra Foundation

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## **EXECUTIVE SUMMARY**

### **Scope of the Study**

The overall objective of the present study commissioned by the Akshatapatra foundation is to understand the impact of Akshaya Patra's Mid-Day Meal programme. This study provides an understanding of the perception and satisfaction of children, their parents and the teachers towards the Mid-Day Meal programme. The study covered 10 schools covered under the Mid-Day Meal of Akshaya patra (Kandi and Narsingi kitchens ) and 10 schools covered by school-based kitchen. The study covered 400 students, 120 parents, 20 teachers, 2 Branch Managers, 12 cooks, 10 Self-Help group members, 1 Mandal Education Officer and 20 school observations. The field work was carried out during November 4- 16, 2019.

### **Characteristics of the Parents**

The fathers of children studying in both Akshaya Patra and Non-Akshaya Patra schools have been majorly engaged in cultivation or family farm. The mothers are either agricultural labourers (41% in case of Akshaya Patra schools) or housewives (30% in case of Non-Akshaya Patra schools).

### **Hygiene Practices Followed and Management of Stock by Food Handlers**

The food prepared in Akshaya Patra kitchens is under the direct supervision of Quality Control Department. The hygiene practices are followed and the management of stock is well-managed by the Akshaya Patra employees in case of Akshaya Patra schools. In case of non Akshayapatra schools, Headmasters and the teachers monitor the preparation of the food and there is no proper mechanism to keep the buffer stock.

In both Akshaya Patra and school-based kitchen schools, Mid-Day Meal is always covered with a lid once the food is cooked. The students reported to be receiving the Mid-Day Meal timely. The students, from Akshaya Patra and Non-Akshaya Patra schools, mostly bring their own utensils from home to eat the Mid-Day Meal. The students of the Akshaya Patra schools (61%) stated that they sometimes find irrelevant material in the served Mid-Day Meal which is 13% in case of school-based kitchens.

The Principal and Parents of both Akshaya Patra and Non-Akshaya Patra schools regularly monitor the served Mid-Day Meal. Almost all the students (98% in Akshaya Patra schools and 92% in non Akshaya patra schools) mentioned that the school authorities regularly monitor the hand washing practices of childrens.

### **Perceived Impact of Mid-Day Meal**

The perceived impact of MDM in terms of students regularity in attending schools after the introduction of Mid-Day Meals and reduction in drop-out rates was reported by the students (54% in Akshaya Patra schools and 64% in Non-Akshaya Patra schools) Mandal Education Officers mentioned about improvement in performance of the students after the initiation of Mid-Day Meals.

The Branch Manager of Kandi kitchen also mentioned about the impact of Mid-Day Meal in terms of increased enrolment in schools, regularity among students and active participation of students in sports and other activities. The parents of children studying in Akshaya Patra schools also stated that they are encouraged to send their children to schools since the Mid-Day Meal has brought about improvement in health of their children. Improvement in concentration of the students was also mentioned by the parents as one of the benefits of MDM (22% in case of APF and 41% in case of non APF schools).

More than 95% of the students in both Akshaya Patra and Non-Akshaya Patra schools have BMI<18.5 which indicates below normal weight of the students. The Branch Managers of Akshaya Patra kitchens are well-aware about the nutrition requirements of the children according to Mid-Day Meal norms. The lab results showed that fat contents are higher in the meals served by the school-based kitchens. The protein, fat and carbohydrate contents are poor in the meal served by Akshaya Patra kitchens. The salt, spice and water contents in the meals served by Akshaya Patra kitchens are below the required levels. The extent of satisfaction with the MDM of APF is moderate (50% and 44% of the students satisfied with quantity and taste of Mid-Day Meal served by Akshaya Patra kitchens against 93% and 94% in case of Non-Akshaya Patra schools). All the students of both Akshaya Patra and Non-Akshaya Patra students are satisfied with the sufficiency of the food

### **Other Aspects**

The decorum to get Mid-Day Meal is better followed in Akshaya Patra schools compared to Non-Akshaya Patra schools. The place of consumption of Mid-Day Meal is cleaned in both Akshaya Patra and Non-Akshaya Patra schools. There are no issues relating social equity as most of the students do not believe in social inequity (94% in case of Akshaya Patra schools and 85% in case of Non-Akshaya Patra schools). All the facilities like separate toilets, drinking water and hand washing stations are better in Akshaya Patra schools compared to Non-Akshaya Patra schools.

Most of the students (86% studying in schools served by Akshaya Patra) are in favour of the continued serving of Mid-Day Meal prepared by Kandi and Narsingi kitchens. All the students from Non-Akshaya Patra Mid-Day Meal schools want that the Mid-Day Meals to be continued.

### **Conclusion**

The parents of the children studying in the schools served Mid-Day Meal by Kandi and Narsingi kitchens are of the opinion that Mid-day Meal has helped in improving the health of the children. Mandal Education Officer opined that the Mid-Day Meal should continue in schools due to the fact that they reach out to all poor and needy students, and also the provision of Mid-day Meal ensures that the children are consuming meal atleast once a day. The Branch Manager of Kandi kitchen suggested that there should be some mechanism to spread awareness to the teachers regarding the importance of providing nutritious food to the students.

## **Suggestions**

There exists a scope of improvement in the execution of Akshaya Patra kitchens through :

- enhancing the variety of food items having nutrition values
- provision of proper sitting arrangements for Mid-Day Meal consumption in schools
- taking continued feedback from students, teachers, headmasters and parents about quality of the served meal
- regular checks and monitoring by the Akshaya Patra staff on provision of Mid-Day Meal in schools
- frequent conduct of Parent-Teacher Meetings to discuss performance and quality of Mid-Day Meal

Classroom performance can be assessed through the conduct of assessment tests in both Akshaya Patra and Non-Akshaya Patra schools.

Mandal Education Officers felt that efforts are required to improve the Mid-Day Meal served to the students in terms of taste and providing different food items

# **1 INTRODUCTION**

## **1.1 BACKGROUND**

In India, the Mid Day Meal Scheme covers all school children studying in Classes I to VIII in both government and government aided schools under Sarva Shiksha Abhiyan. It addresses two of the pressing problems for majority of children in India, namely hunger and education.

Mid-Day Meal initiative was conceived in June 2000 by The Akshaya Patra Foundation, a not-for-profit organization headquartered in Bangalore with a vision that “No child in India shall be deprived of education because of hunger.” Serving children safe, nutritious and hygienic food is the foremost priority of The Akshaya Patra Foundation in its endeavour to eliminate classroom hunger in India. After the success of the programme in Karnataka, it was expanded to other parts of the country as a public-private partnership. With the support from the Central and State Governments as well as individual and institutional funders, Akshaya Patra serves wholesome food to over 1.7 million children from 15,024 schools across 12 states in India.

With the responsibility of feeding children regularly, it is important to implement an impactful operation and evaluate its efficacy and outcome frequently. This will help the organization to examine areas of improvement and enhance the impact thereof.

## **1.2 SCOPE OF STUDY**

The proposed study aims at assessing the impact of the Akshaya Patra’s Mid-Day Meal Programme and present an impact report to the concerned stakeholders.

### **Objectives Of Study**

The specific objectives of the study are:

1. To understand the impact of Akshaya Patra’s Mid-Day Meal Programme on Education Outcome.
2. To understand the impact of Akshaya Patra’s Mid-Day Meal Programme on Classroom Performance.
3. To understand the extent of satisfaction of beneficiaries with Mid-Day Meal provided by Akshaya Patra.
4. To understand the impact of Akshaya Patra’s Mid-Day Meal Programme on beneficiary’s health.
5. To understand the impact of Akshaya Patra’s Mid-Day Meal Programme on Nutrition delivery to the beneficiary.



The task involves assessing the success of the programme according to various parameters and indicators. These parameters and indicators are decided according to the study requirement, mapping impact and outcome.

### **Education outcome**

This involves collection of information like trends in enrolment, retention, drop out, attendance etc. at the school level from the registers.

### Impact of programme on Classroom Performance

Impact on classroom performance of beneficiaries through Mid-Day Meal was done through observation and interviews with headmasters, teachers and parents.

### **Beneficiaries' satisfaction with Mid-Day Meal**

This will help us to understand the perception and satisfaction of children, their parents and the teachers towards food and services provided by Mid-Day Meal programme. Along with reviewing the role of school authority and teachers in ensuring effective implementation of the Mid-Day Meal programme in schools, hygiene conditions of food and water in schools and other related safety issues are also covered. Both quantitative as well as qualitative is conducted to capture the information. The satisfaction level from the Mid-Day Meal food is captured on a 5 point scale.

### Impact of programme on beneficiary's health and nutrition

This involves studying the impact of programme on beneficiary's health.

### **Nutrition delivery to the beneficiary**

The sample of food is collected from the 10 schools (5 from Akshaya Patra and 5 from Non-Akshaya Patra) and was sent to the laboratory for testing the nutritional components. The grinding procedure has been followed by the laboratories to assess the different nutrient values present in the served Mid-Day Meal. It has helped us to study the level of nutrition delivery and sufficiency of nutrients.

## **1.3 METHODOLOGY**

A mixed-method approach has been adopted for the study with quantitative and qualitative approaches of data collection.

### **Study Area**

Kandi and Narsingi kitchen covered under Akshaya Patra Foundation and providing Mid-Day Meals to the schools in the "Akshaya Patra" category as well as schools

having school based kitchens or getting Mid-Day Meals from self-help groups in the “Non-Akshaya Patra” category has been finalized as the study areas in consultation with Akshaya Patra Foundation.

### **Target Groups**

- Children of class III to VIII
- Parents or guardians of children from class I and II
- Teachers and Headmasters
- Branch Managers
- Kitchen-In-Charge of Akshaya Patra Schools and Cooks in Non-Akshaya Patra Schools
- Self-Help Group Members working for Non-Akshaya Patra Schools
- Mandal Education Officer

### **Sample Size**

To draw the sample size for quantitative study, we have used the formula given below:

$$ss = \frac{Z^2 * (p) * (1-p)}{c^2}$$

Where,

Z = Z value (e.g. 1.96 for 95% confidence level)

p = percentage picking a choice, expressed as decimal  
(.5 used for sample size needed)

c = confidence interval, expressed as decimal  
(e.g., .04 = ±4)

The sample size was 383. We have taken buffer to take care of non-response, and make it 400 for Hyderabad.

Multi-stage sampling has been followed with the following stages:

#### **Stage1: Selection of Study Location**

Kandi and Narsingi blocks in Hyderabad have been selected as the study locations.

#### **Stage 2: Selection of Schools**

The Non-Akshaya Patra schools were arranged in ascending order based on the number of students enrolled in each school. The schools having strength of students more than 20 has been considered. Since the total number of schools getting Mid-Day Meal is more from Kandi kitchen than Narsingi kitchen, more schools have been selected in Kandi than Narsingi. In total, 6 schools in Kandi and 4 in Narsingi have been selected that makes a total of 10 selected Non-Akshaya Patra schools. For both Kandi and Narsingi, the schools have been selected in the ratio of 67:33 for classes I to V and I to VIII respectively since the number of schools is more for classes I to V in both the locations. Proceeding by this ratio, 4 schools have been selected for classes

I to V, 2 schools for classes I to VIII in Kandi. Similarly, 3 schools for classes I to V and 1 school for class I to VIII have been selected for Narsingi. The selection of schools has been done with the help of systematic random sampling by generating sampling interval.

**Stage 3: Selection of Children and other respondents**

20 students from 20 schools (10 Akshaya Patra and 10 Non-Akshaya Patra) have been selected from class III to VIII with equal distribution of boys and girls.

**Table 1.1: Coverage By Target Group**

Type	S.No	Target Group	Akshaya Patra	Non-Akshaya Patra	Coverage
Quantitative	1	Children of class III to VIII	20 per school*10 schools=200 students	20 per school*10 schools=200 students	400 students
			(3-4 students per class)	(3-4 students per class)	
		Anthropometric assessment using height for age, weight for age and BMI as indicators of assessment	20 per school*10 schools=200 students	20 per school*10 schools=200 students	400 students
			(3-4 students per school)	(3-4 students per school)	
		<b>Respondents</b>			
Qualitative	2	Parents of children from class I and II	60 Semi-Structured interviews with the parents of children from class I and II	60 Semi-Structured interviews with the parents of children from class I and II	120 Semi-Structured Interviews
	3	Teacher and Headmaster	10 In-Depth Interviews	10 In-Depth Interviews	20 In-Depth Interviews
	4	Branch Manager	2 In-Depth Interviews	-	2 In-Depth Interviews
	5	Cook	2 In-Depth Interviews of Kitchen-In-Charge of Akshaya Patra kitchen	10 In-Depth Interviews of cook in Non-Akshaya Patra kitchens	12 In-Depth Interviews
	6	Self-Help Group Member working for Non-Akshaya Patra schools	-	10 In-Depth	10 In-Depth Interviews
	7	Mandal Education Officer (MEO)	1 In-Depth Interview		1 In-Depth Interview
	8	School observation	10 Observations	10 Observations	20 Observations

**Table 1.2 : Students Coverage by Class**

Classes	Akshaya Patra			Non-Akshaya Patra	Over all
	Type of Kitchen		Total	Type of kitchen	N
	Kandi	Narsingi	N	School-Based Kitchen	
	N	N		N	
III	18	20	38	64	102
IV	24	25	49	59	108
V	23	19	42	58	100
VI	17	21	38	7	45
VII	18	15	33	8	41
VIII	0	0	0	4	4
Total	100	100	200	200	400

Food sample was collected from 5 schools getting Mid-Day Meal from Akshaya Patra kitchens and 5 schools from Non-Akshaya Patra kitchens/school-based kitchens. Food samples were sent to the laboratory for testing. The following indicators have been tested by the laboratories:

- Moisture (in %)
- Fats (in %)
- Protein (in %)
- Fibre (in %)
- Acid Insoluble Ash (in %)
- Energy (in calories)
- Carbohydrates (in %)

#### **1.4 FIELD OPERATIONS**

The quantitative and qualitative data was collected by 2 teams consisting of 1 Supervisor and 8 interviewers (3 male, 3 female and 2 Health investigators) per team. One team covered 1 school in 1 day. The interviewers and supervisors recruited for conducting the interviews were given 3 days intensive training during November 01, 2019- November 03, 2019 including questionnaire briefing and field practice for one day by the core research team and survey executives. The field work was carried out during November 4- 16, 2019. The quantitative data collection was done using Tablets in CAPI mode.

#### **1.5 DATA PROCESSING**

The data processing team has carried out the analysis of the quantitative tools in order to generate tables for the study. The content analysis of the qualitative data has been carried out by the qualitative researcher.

## **1.6 LIMITATIONS OF STUDY**

Limitations of the study are listed below:

Though this is an impact assessment study, it is difficult to assess the impact due to non-availability of baseline data. Though comparison is done between Akshaya Patra and Non-Akshaya Patra Mid-Day Meal, the issues of getting proper control schools is an issue. The present study provides the results in terms of perceived benefits of the Mid-Day Meal programme.

## **1.7 THIS REPORT**

This report has 5 sections including this introduction section. Section 2 gives characteristics of the students and parents covered in the study. Section 3 gives Mid-Day Meal provision including hygiene practices followed and management of stock by food handlers; decision regarding menu; transportation of Mid-Day Meal; time of serving and adequacy of Mid-Day Meal; provision of utensils; irrelevant materials in Mid-Day Meal; Monitoring of Mid-Day Meal including the registration of complaints. Section 4 gives the perceived impact of Mid-Day Meal on attendance and performance; health and nutrition; satisfaction with Mid-Day Meal. Section 5 gives results in terms of other aspects such as fuel and water used for cooking, place of consumption of Mid-Day Meal; social equity during consumption; hygiene settings available and continuation of Mid-Day Meal.

## 2 PROFILE OF STUDENTS AND PARENTS

### 2.1 CHARACTERISTICS OF STUDENTS

**Table 2.1** gives the distance from home to school by source of Mid-Day Meal. In both Akshaya Patra and Non-Akshaya Patra schools, most (92-98%) of the students travel upto 2 kms to reach school from their homes.

**Table 2.1 : Distance from home to school by Source of Mid-Day Meal**

Distance in Kms	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Upto 2	98	98	96	96	194	97	184	92	378	95
2-4	2	2	2	2	4	2	12	6	16	4
More than 4	0	0	2	2	2	1	4	2	6	1
Total	100	100	100	100	200	100	200	100	400	100

Only 2-4% of the students cover 2-4 kms to reach the school in case of Akshaya Patra schools.

The mean number of years studied by the students in the school is 4 years and 5 years in case of Kandi kitchen and Narsingi kitchen schools respectively. The students have been studying for almost 4 years in schools getting Mid-Day Meal from Non-Akshaya Patra group.

***All the students have been regularly attending the school (i.e. more than 4 days a week) in both the Akshaya Patra and Non-Akshaya Patra group.***

***Some of the reasons stated by the students who are not regularly attending the school are: they do not feel like going as well as their poor health condition do not allow them to go to school.***

**70-80% students in schools getting Mid-Day Meal from Kandi or Narsingi kitchen mentioned that they like quality of education, sports and teachers in the school.**

## 2.2 CHARACTERISTICS OF PARENTS

**Table 2.2** gives the main occupation of fathers of the children getting Mid-Day Meal from Akshaya Patra and Non-Akshaya Patra. Main source of earning of fathers of the children for both Akshaya Patra and Non-Akshaya Patra group is cultivation or family farm. In case of Akshaya Patra group, 16% of the fathers are occupied in jobs.

**Table 2.2 : Main occupation of Father by Source of Mid-Day Meal**

Main Occupation	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Cultivation/Family farm	33	33	21	21	54	27	36	18	90	23
Agricultural labour	11	11	7	7	18	9	12	6	30	8
Non-Agricultural wage Labour	9	9	4	4	13	7	13	7	26	7
Business	9	9	12	12	21	11	33	17	54	14
Salaried	16	16	16	16	32	16	32	16	64	16
Others	22	22	39	39	61	31	73	37	134	34
Don't Know	0	0	1	1	1	1	1	1	2	1
Total	100	100	100	100	200	100	200	100	400	100

However, in case of Non-Akshaya Patra group, the fathers (17%) are working as entrepreneurs for their daily living.

**Table 2.3** gives the details of main occupation of mothers of the children getting Mid-Day Meal from Akshaya Patra and Non-Akshaya Patra group.

**Table 2.3 : Main occupation of Mother by Source of Mid-Day Meal**

Main Occupation	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Agricultural Labour	44	44	37	37	81	41	52	26	133	33
Non-Agricultural wage Labour	15	15	21	21	36	18	40	20	76	19
Business	2	2	1	1	3	2	8	4	11	3
Salaried	6	6	6	6	12	6	18	9	30	8
Housewife	27	27	28	28	55	28	60	30	115	29
Not working	0	0	0	0	0	0	1	1	1	0
Others	6	6	7	7	13	7	21	11	34	9
Total	100	100	100	100	200	100	200	100	400	100

Agricultural labourer and housewife are the major occupation categories of mothers of students receiving Mid-Day Meal from Akshaya Patra as well as Non-Akshaya Patra schools.



**Table 2.4** indicates low levels of education among fathers as well as mothers of students of Akshaya Patra and Non-Akshaya Patra schools. The proportion of illiterates and literates but below primary education is 30% - 34% in case of mothers and 13%- 17% in case of fathers.

**Table 2.4: Education of Parents**

Education		Source of Mid-Day Meal				All	
		Akshaya Patra		Non-Akshaya Patra		N	%
		N	%	N	%		
Mother	Illiterate	6	15	5	17	11	16
	Literate but below Primary	6	15	5	17	11	16
	Primary (1-8)	16	40	6	20	22	31
	Secondary (9-12)	12	30	14	47	26	37
Father	Illiterate	2	13	0	0	2	7
	Literate but below Primary	0	0	2	17	2	7
	Primary (1-8)	10	67	4	33	14	52
	Secondary (9-12)	2	13	5	42	7	26
	Graduation	1	7	1	8	2	7
Others	Illiterate	1	33	1	50	2	40
	Primary (1-8)	1	33	0	0	1	20
	Secondary (9-12)	1	33	1	50	2	40
Total N		58	100	44	100	102	100

### 3 MID-DAY MEAL PROVISION

#### 3.1 HYGIENE PRACTICES FOLLOWED AND MANAGEMENT OF STOCK BY FOOD HANDLERS

The Kitchen-In-Charge and Branch Managers of Akshaya Patra Foundation mentioned that the food handlers follow the following hygiene practices:

- Maintain Dress Code
- Clean kitchen everyday before and after Mid-Day Meal is prepared;
- Clean Utensils with soap and water everyday before and after Mid-Day Meal is prepared;
- Use RO water for cooking;
- Clean sticky utensils with detergent and hot water;
- Use stainless steel utensils for cooking;
- Housekeeping Audits

The different self-help group members working for Non-Akshaya Patra schools maintain hygiene practices such as taking bath every day, wearing clean clothes, washing vegetables and cleaning utensils. Headmasters and teachers of the Non-Akshaya Patra schools reported that Mid-Day Meal is prepared in their school and it is ensured that all health and hygiene practices are followed by cooks and students.

*“We need to wash vegetables before cooking, wear neat and clean clothes, take bath regularly and remove stones from rice” stated by a Self-Help Group member working for a Non-Akshaya Patra group.*

#### Monitoring the Preparation of Mid-Day Meal



The Kitchen-In-Charge and Branch Managers of Kandi and Narsingi kitchens stated that the cooking and cleaning practices are monitored by the Quality Control Department on a regular basis before they start preparing the Mid-Day Meal. The kitchen-in-charge of Kandi kitchen cooks food for 70000 students everyday and the kitchen-in-charge of Narsingi kitchen cooks food for 35000 students everyday.

#### Storage and Supply of Food Materials

In the Kandi and Narsingi kitchen, the food materials are stored in a store room which is the responsibility of the Store Department and they are storing the material as per ISO's Food Safety Norms. The kitchen departments reserve the buffer stock like rice, pulses, oil for 15-30 days. The food stock is never stored for more than a month. Generally, the food material is supplied on time in both the kitchens. Sometimes if the food material is not supplied on time, the cooks manage with the reserved stock. In case of kitchens of Non-Akshaya Patra group, the buffer stock is stored under the shed. The different self-help group members working for Non-Akshaya Patra schools

specified that the food materials are bought once a month and are stored in the school kitchen.

*“We want a proper kitchen shed, a cylinder to cook Mid-Day Meal and support from the government to provide better quality food. We are buying eggs ourselves” Self-Help Group member working for a Non-Akshaya Patra school.*

The “expiry date/best before/use by date” of the packaged raw material are checked before the purchase by the Purchase Department in both Narsingi and Kandi kitchen. In case, by chance the expired food material is purchased, it is sent back immediately to the vendor. The “expiry date/best before/use by date” of the packaged raw material is checked before purchase by the kitchen staff in only 50% of the kitchens covered under Non-Akshaya Patra schools. A regular record of the inventory is maintained everyday by the store department of Kandi and Narsingi kitchen.

The packed pulses, salt, spices, condiments and oil with AGMARK quality symbol are stored in both Kandi and Narsingi kitchen and also, there exists a separate space for the storage of food grains. The packaged raw materials are always kept away from the walls (about one feet) to avoid absorption of moisture. The double fortified salt, condiments, oil, soya bean, pulses etc. are always stored in air-tight containers. The cooks and helpers of both Kandi and Narsingi kitchens manually clean the cereals and pulses before cooking to remove the extraneous matter. The cooked Mid-Day Meal is inclusive of spouted pulses which usually have high nutrient value. The cooks and helpers wash the leafy vegetables before cutting since it should not be subjected to wash after cutting.

The cooking is always done with the lid on to avoid loss of nutrients and contamination. During the kitchen observation, it has been observed that the cooks and helpers of both Kandi and Narsingi kitchen wear proper gear (gloves, apron and caps etc.) during the preparation of Mid-Day Meal. The floor of kitchen and slabs are cleaned everyday before and after the cooking. There are no cracks, rough surfaces, open joints etc. near the cooking area in the kitchen. The cleaning accessories like cloths, mops and brushes are washed, cleaned and dried after use in both Kandi and Narsingi kitchens. The cooks and helpers maintain a high degree of personal hygiene and cleanliness. All the food handlers keep themselves clean, wear washed clothes, keep their finger nails trimmed, clean and wash their hands with soap/detergent and water before commencing work.

It is important to note that chewing, sneezing, smoking and spitting are prohibited during the preparation of food. The cooks and helpers wash their hands each time work is resumed after these actions including visiting toilet, scratching nose, rubbing eyes, running finger through hair etc. The wall of the kitchens are well-equipped with adequate arrangements like installed fire extinguisher to deal with incident of accidental fire. The utensils are always placed away from the walls. Both the kitchens have underground drainage system and installed bio-waste power plant. The kitchens have RO plant which is also used for cleaning the bore wells. The kitchens have been constructed according to the Mid-Day Meal norms. The kitchens have a display board with mentioned do's and don'ts for the understanding of the kitchen staff. The kitchens have well-constructed chimneys and dustbins with a lid.

Out of the 10 School-Based kitchens covered under the Non-Akshaya Patra group, only 6 kitchens maintain the stock of packed pulses, salt, spices, condiments and oil with AGMARK quality symbol in the kitchen. 90% of the School-Based kitchens have a separate space for the storage of food grains. It has been observed that none of the School-Based kitchens have the provision of keeping the packaged raw material away from the walls (about one feet) to avoid absorption of moisture.

Only in 50% of the School-Based kitchens, it has been observed that the double fortified salt, condiments, oil, soya bean, pulses etc. have been stored in air-tight containers. In almost all the schools covered under the Non-Akshaya Patra group, the cooks and the helpers of the School-Based kitchen manually clean the cereals and pulses before cooking to remove the extraneous matter. During the kitchen observation, it was observed that the meal prepared in the School-Based kitchen was not inclusive of the sprouted pulses which usually have more nutrient value. In majority of the schools, the cooks or helpers of the School-Based kitchen do not wash the leafy vegetables before cutting since it should not be subjected to the wash after cutting. The meals are prepared with the lid on to avoid loss of nutrients and contamination in most of the School-Based kitchens covered in Non-Akshaya Patra group. Almost 60% School-Based kitchens in the Non-Akshaya Patra schools have been keeping both vegetarian and non-vegetarian items including egg in the kitchen separately. None of the School-Based kitchens have the availability of the refrigerator.

The cooks or the helpers of the School-Based kitchens of the Non-Akshaya Patra group do not wear proper gear (gloves, apron and caps etc.) during the preparation of Mid-Day Meal. In 80% of the School-Based kitchens, it was observed that the floors and the slabs of the kitchens are cleaned everyday before and after the cooking of the Mid-Day Meal. In 20% of the School-Based kitchens, there are cracks, rough surfaces, open joints etc. near the cooking area. The School-Based kitchens do not follow the practice of washing, cleaning and drying the cleaning accessories like cloths, mops and brushes after use.

In 60% of the schools getting Mid-Day Meal from the kitchens located inside the school premises, the food handlers do not keep themselves clean, do not wear washed clothes, do not keep their finger nails trimmed, do not clean and wash their hands with soad/detergent and water before commencing work. In School-Based kitchens under the Non-Akshaya Patra group, chewing, sneezing and spitting are not prohibited during the preparation of food. It should be further added that the School-Based kitchens are not well-equipped with adequate arrangements like installed fire extinguisher to deal with incidents of accidental fire.

The cooks and helpers in the kitchens of the Non-Akshaya Patra schools are washing their hands each time work is resumed after the actions like visiting toilet, scratching nose, rubbing eyes, running finger through hair. The concerned staff of the School-Based kitchens place the utensils away from the walls. These kitchens do not have proper arrangement of drainage system and adequate provision of disposal of trash.

There is no provision of using clean water for the preparation of Mid-Day Meal in the category of Non-Akshaya Patra group. Moreover, the cooks are using tap water for preparing the meals.

It should be noted that there is no designated place of kitchen in the schools covered under Non-Akshaya Patra group. In 50% of the schools, the Mid-Day Meal is prepared under the shed. Henceforth, there is no provision of displaying the board with Do's and Don'ts for the understanding of the kitchen staff. Since there is no proper structure of the kitchens in the Non-Akshaya Patra group, therefore, these kitchens also do not have properly constructed chimneys and dustbin with a lid.

*“The Provision of Mid-Day Meal is considered to be the responsibility of Self-Help Groups, Cooks and Helpers. After the Akshaya Patra Foundation has taken up the charge of serving Mid-Day Meal to the students, now each and every school in the mandal has the provision of Mid-Day Meal” stated by Mandal Education Officer.*



Akshaya Patra Foundation has been solely serving the Mid-Day Meal to the students studying in the “Balanagar” block of Mehboob Nagar district in Hyderabad. Mandal Education Officer is well aware about the services provided by the Akshaya Patra Foundation to the students.

### 3.2 DECISIONS REGARDING MENU

The menu is decided on weekly basis by the government for the Kandi and Narsingi kitchen under Akshaya Patra Foundation as stated by the kitchen-in-charge. According to the headmaster, in some of the schools having School-Based kitchen, cooks follow menu given by the government like rice, dal, vegetables, pulses, and eggs are served. In the remaining schools, menu is decided by the headmasters and they also check the expiry date of food items.

*“There is a weekly food menu. On Monday, we give the children eggs and sambar. On Tuesday, eggs and dal, on Wednesday potato and tomato, on Thursday and Friday eggs and sambar, and on Saturday khichdi, tomato, and pickle”, stated by a cook of School-Based kitchen under Non-Akshaya Patra group.*

**Table 3.1** brings out the differentials in the food items served to the students everyday. Many of the students stated that they get different food items everyday as part of the Mid-Day Meal prepared by the Kandi kitchen (60%) and Narsingi kitchen(63%)

The kitchen-in-charge of Kandi mentioned that rice, dal/sambhar/rasam, veg curry is served to the students everyday and on special days, the students are served veg biryani. Similarly, the kitchen-in-charge of Narsingi confirmed that the students get rice, dal/sambhar/rasam, curd and pickle everyday.

*“Akshaya Patra gives rice, dal, carrot curry and curd. They give veg biryani and boiled sprouts twice a week” stated by a teacher of Akshaya Patra school.*

“Rice, potato, tomato and dal are served to the students. Eggs are boiled in the school and provided thrice a week” stated by a Self-Help Group member working for a Non-Akshaya Patra group.

**Table 3.1 : Differentials in Food Items(%)**

Whether Different Food Items are provided	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Yes	56	60	43	63	99	61	187	96	286	80
No	26	28	11	16	37	23	4	2	41	12
Sometimes	11	12	14	21	25	16	4	2	29	8
Total	93	100	68	100	161	100	195	100	356	100

“We serve rice, puntikurachetni, anapakaya, bendakaya, cabbage, potato, onion, cucumber, eggs and bananas if eggs are not available on Monday, Wednesday and Friday” stated by a Self-Help Group member working for a Non-Akshaya Patra group.

**Table 3.2** provides the list of the different food items served in the Mid-Day Meal to the students. In case of Mid-day Meal prepared by Kandi and Narsingi kitchens, students reported to be getting pulses, rice, and vegetables. Students also get fruits, curd and eggs.

**Table 3.2 : List of different Food Items served in Mid-day Meal (%)**

Different Food Items	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Pulses	92	99	68	100	160	99	195	100	355	100
Vegetables	62	67	59	87	121	75	192	98	313	88
Fruits	10	11	5	7	15	9	50	26	65	18
Rice	75	81	57	84	132	82	169	87	301	85
Roti	0	0	0	0	0	0	1	1	1	0
Curd	8	9	44	65	52	32	16	8	68	19
Paneer	1	1	0	0	1	1	0	0	1	0
Sprouted Pulses	0	0	36	53	36	22	2	1	38	11
Eggs	5	5	36	53	41	25	187	96	228	64
Others	36	39	20	29	56	35	68	35	124	35
Total	93	100	68	100	161	100	195	100	356	100

*Note : Total exceeds 100 due to ,multiple response*

In case of Non-Akshaya Patra group, almost all the students mentioned pulses and vegetables. It is important to note that students hardly get sprouted pulses and curd which contains good nutrient values.

Some of the common food items served by Kandi and Narsingi kitchens in schools are rice, dal, vegetables, curd and biryani as stated by the headmasters.

*“Children need more nutritious food which should also be tasty. They are only providing dal every day, but they need to provide different types of food everyday” stated by a parent of the child studying in Akshaya Patra school.*

*“Dal, rice, vegetables and eggs are served to the children on all six working days of the week” stated by a parent of the child studying in Non-Akshaya Patra school.*

### ***Likes and Dislikes of the Dishes in Mid-Day Meal***

The students were asked about likes and dislikes for particular dishes. In schools served by Akshaya Patra kitchens, students like eating potatoes, sambhar, dal, green leafy vegetables, items made with tomato, lady fingers, veg biryani and sweets. The students dislike brinjal, dal, bitter gourd, cucumber, bottle gourd, lady finger and rice. The students are not in favour of rice due to the poor quality of rice.

The students of Non-Akshaya Patra schools like sambhar, potato, dal, green leafy vegetables, sweets and items made with tomatoes and have dislikings for brinjal, bitter gourd, bottle gourd, cucumber, lady finger and dal.

### **3.3 TRANSPORTATION OF MID-DAY MEAL**



The Branch Managers of both Kandi and Narsingi kitchen mentioned that the Mid-day Meal is transported in hot containers and in closed vehicles to the schools everyday. The utensils/containers are always covered with a lid. In case of schools covered under Non-Akshaya Patra group also, the utensils are cleaned and covered with a lid or gauge net and is hot while serving as stated by the self-help group members. As stated by headmasters and teachers, fresh and hot Mid-Day Meal prepared by Kandi and Narsingi kitchens is transported to the schools by 11:00 a.m everyday. The Mid-day Meal reaches at the same time everyday to the schools. Kandi kitchen of Akshaya Patra Foundation has 38 vehicles that cover different routes to reach out to 700 schools everyday for the distribution of Mid-Day Meal .

The Mid-Day Meal delivered from Kandi kitchen is handed over to the teachers and helpers in the school. In case of food delivered from Narsingi kitchen, the meal is handed over to the teachers only.

**In 40% of the schools getting Mid-Day Meal from Kandi kitchen, meal is kept in the veranda and in the other 40%, the meal is kept outside the classroom. In case of Mid-Day Meal delivered by Narsingi kitchen, the food is kept in the veranda in 40% of the cases.**

### 3.4 TIME OF SERVING AND SUFFICIENCY OF MID-DAY MEAL

The students were asked whether they get the MDM on time (Table 3.3). In the schools covered by Akshaya Patra as well as Non-Akshaya Patra, Mid-Day Meal is delivered on time always or sometimes.

Not getting the MDM on time seems to be an issue in case of school base kitchens.

**Table 3.3: Whether Getting Mid-Day Meal on Time (%)**

Whether get Timely Mid-Day Meal	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%	N	%
Yes	31	33	9	13	40	25	37	19	77	22
No	22	24	30	44	52	32	125	64	177	50
Sometimes	40	43	29	43	69	43	32	16	101	28
Have to Wait	0	0	0	0	0	0	1	1	1	0
Total	93	100	68	100	161	100	195	100	356	100

*In the schools getting Mid-Day Meal from Kandi kitchen, the meal is served between 11:30 a.m - 12:00 p.m to the students everyday. In case of Narsingi kitchen, the meal is served at the same time. The Mid-Day Meal gets over by 13:15 p.m and the students finish the meal in approximately 40 minutes in all the Akshaya Patra schools. The students sit, talk and play for sometime after the Mid-Day Meal is over and before the classes resume.*

*In case of Non-Akshaya Patra group, the school authorities are serving meal between 11:30 a.m - 12:00 p.m to the students everyday and it gets over by 13:15 p.m. The students finish their Mid-Day Meal in approximately 30 minutes and then, sit, talk and play for sometime after the Mid-Day Meal is over and before the classes resume.*

*The teaching continues after the Mid-Day Meal break is over in both the Akshaya Patra and Non-Akshaya Patra schools.*



**Table 3.4** gives the results in terms of sufficiency of the Mid-day Meal served to the students. By and large, the MDM served is sufficient everyday in case of all the schools.

**Table 3.4: Sufficiency of Mid-Day Meal(%)**

Whether MDM is sufficient	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Yes, daily	89	96	62	91	151	94	192	98	343	96
Yes, but sometime	4	4	5	7	9	6	3	2	12	3
Other	0	0	1	1	1	1	0	0	1	0
Total	93	100	68	100	161	100	195	100	356	100

### 3.5 MID-DAY MEAL UTENSILS

**Table 3.5** gives the results about provision of eating utensils to the students by the schools for the consumption of Mid-Day Meal. In Akshaya Patra and Non-Akshaya Patra schools, Mid-day Meal utensils are provided by the school for consumption of the food. The students have to clean the utensils after consuming Mid-Day Meal. The utensils in which the students are served Mid-Day Meal is cleaned everyday.

**Table 3.5 : Provision of Mid-Day Meal utensils by schools(%)**

Categories			Akshaya Patra						Non-Akshaya Patra		Over all		
			Type of kitchen						Type of kitchen		N	%	
			Kandi Kitchen		Narsingi Kitchen		N	%	School-Based Kitchen				
			N	%	N	%			N	%			
Provision of Mid-Day Meal utensils by schools	Cleaning of utensils after consuming Mid-Day Meal	Yes	21	100	46	98	67	99	38	100	105	99	
		No	0	0	1	2	1	1	0	0	1	1	
	Mid-Day Meal is served in cleaned utensils	Yes	21	100	40	85	61	90	37	97	98	92	
		No	0	0	2	4	2	3	0	0	2	2	
		Sometimes	0	0	5	11	5	7	1	3	6	6	
	Fallen sick due to the served Mid-Day Meal immediately after consumption	Yes	1	5	3	6	4	6	0	0	4	4	
		No	19	90	38	81	57	84	38	100	95	90	
		Sometimes	1	5	6	13	7	10	0	0	7	7	
	Total			21	100	47	100	68	100	38	100	106	100



**There is no provision of Mid-Day Meal during summer vacation from Kandi and Narsingi kitchens as informed by the respective Branch Managers.**

**There is no provision of Mid-Day Meal during summer vacation in the Non-Akshaya Patra group.**

**Table 3.6** brings out if the students bring eating utensils from home for the consumption of Mid-Day Meal. Bringing utensils for having Mid-Day Meal is more common in School-Based Kitchens. 83% students bring eating utensils from home for the consumption of Mid-Day Meal prepared by Kandi kitchen and 43% students bring eating utensils from home to consume Mid-Day Meal prepared by the Narsingi kitchen.

The percentage is comparatively high in case of Non-Akshaya Patra group where almost 84% students are bringing their own eating utensils from home to consume Mid-Day Meal prepared by the kitchen located inside the school premises.

**Table 3.6: Students bring eating utensils from home to eat Mid-Day Meal**

Bring utensils	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Yes	77	83	29	43	106	66	164	84	270	76
No	14	15	38	56	52	32	27	14	79	22
Sometimes	2	2	1	1	3	2	4	2	7	2
Total	93	100	68	100	161	100	195	100	356	100



### 3.6 IRRELEVANT MATERIALS IN MID-DAY MEAL

**Table 3.7** provides information about the presence of irrelevant materials like stone, insect, dirt etc. in the served Mid-Day Meal. Finding irrelevant material in the MDM seems to be more common in the schools covered by the Akshaya Patra. This needs attention.

**Table 3.7: Irrelevant Materials in Mid-Day Meal (%)**

Whether find Irrelevant Material	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Yes, everyday	6	6	2	3	8	5	5	3	13	4
Yes, sometime	55	59	44	65	99	61	25	13	124	35
Never	31	33	22	32	53	33	164	84	217	61
Other	1	1	0	0	1	1	1	1	2	1
Total	93	100	68	100	161	100	195	100	356	100

### 3.7 MONITORING OF MID-DAY MEAL

**Table 3.8** gives the results about visit by the principal during the consumption of Mid-Day Meal as reported by the students. Most of the students mentioned that the principal of the school visit the place almost regularly where the students consume the Mid-Day Meal.

**Table 3.8: Visit by Principal during consumption of Mid-Day Meal(%)**

Visit by Principal	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Yes	86	92	60	88	146	91	180	92	326	92
No	4	4	2	3	6	4	2	1	8	2
Sometimes	3	3	6	9	9	6	13	7	22	6
Total	93	100	68	100	161	100	195	100	356	100

The **Table 3.9** gives the information about the visit by parents during consumption of Mid-Day Meal by their children. Visit by parents during consumption of MDM is not so common as only one fourth of the students mentioned so.

**Table 3.9: Visit by Parents during consumption of Mid-Day Meal(%)**

Visit by Parents	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Yes	7	8	8	12	15	9	19	10	34	10
No	76	82	47	69	123	76	143	73	266	75
Sometimes	10	11	13	19	23	15	33	17	56	16
Total	93	100	68	100	161	100	195	100	356	100

*60% students mentioned that the school authorities vigorously monitor/instruct students in the schools getting Mid-Day Meal from Kandi Kitchen to wash their hands before consumption of Mid-Day Meal which has been further confirmed by Mandal Education Officer.*

*Similarly, 50% students mentioned that the school authorities vigorously monitor/instruct students in the schools getting Mid-Day Meal from Narsingi Kitchen to wash their hands after consumption of Mid-Day Meal which has been further confirmed by Mandal Education Officer.*

*The Kandi and Narsingi kitchens are visited by Akshaya Patra officials, Mandal Education Officer, Block Education Officer, headmasters and teachers for monitoring the kitchen and food processing system. The Kandi kitchen is often visited by the donor.*

*The teachers continue monitoring the hand washing practices carried out by children even after the Mid-Day Meal in both Akshaya Patra and Non-Akshaya Patra schools*

*“Parents visit the school during Mid-Day Meal and complain about the taste of food. We have shared these complaints with Akshaya Patra officers” stated by a teacher of Akshaya*

The below **Table 3.10** gives results about monitoring of the Mid-Day Meal by the teacher in order to check the taste of the food before it is served to the students.

**Table 3.10: Checking of taste of food everyday by Teacher (%)**

Checked by Teacher	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Yes, everyday	44	48	14	21	58	36	88	45	146	41
Yes, few days	16	17	25	37	41	25	66	34	107	30
No	33	35	29	42	62	39	41	21	103	29
Total	93	100	68	100	161	100	195	100	356	100

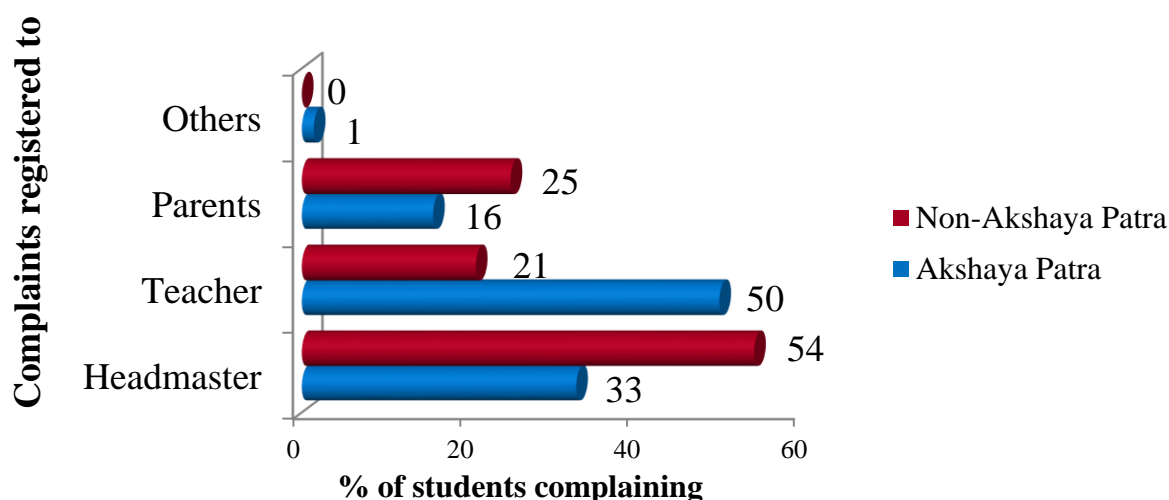
The practice of teachers checking the taste of Mid-Day Meal everyday is more commonly reported in Kandi kitchen schools followed by non Akshaya patra schools and Narsingi kitchen schools. In a considerable number of schools, this needs to be ensured.

*As stated by the headmasters teachers are maintaining regular record of the taste of the food after tasting as well as note the opinion of the students in a register .*

### **Registration of Complaints Regarding Mid-Day Meal**

**Figure 1.1** gives the information about registration of complaints by the students regarding the Mid-Day Meal to different concerned persons. Registering complaints regarding the Mid-Day Meal to the teachers is more common in in case of Akshaya Patra schools, while in non Akhaya Patra schools, the complaint are lodged with the Head master..

**Figure 1.1 : Registration of Compliants regarding Mid-Day Meal**



The concerned person being receptive to the complaints lodged is more common in the schools covered by Akshaya Patra (70%) compared to Non-Akshaya Patra schools (48%).

**In one case of the Mid-Day Meal prepared by Akshaya Patra kitchen, a student found insect in the served meal. His/her parents complained to the headmaster of the school, who then complained to the Mandal Education Officer regarding quality of the served food.**

**Mandal Education Officer stated that they have been receiving complaints from the students regarding the taste and the quality of the served Mid-Day Meal. Moreover, the students have complained that they get Pulses on a regular basis and that it should be minimized.**

**The mechanism adopted by them to sort out these issues is the flow of these complaints to the concerned kitchen staff during the meetings to provide high quality food to the students.**

*“Initially, the Mid-Day Meal provided by Akshaya Patra Foundation was very much satisfactory but gradually, there have been complaints/issues on the quality which needs a bit of improvisation” stated by Mandal Education Officer.*

## 4 IMPACT OF MID-DAY MEAL

### 4.1 ATTENDANCE AND PERFORMANCE

The students were asked about the perceived benefits of MDM and **Table 4.1** gives the responses regarding reduction in drop-out rate of students. The students by and large mentioned about reduction in drop out due to the MDM with variation by type of Mid-Day Meal.

**Table 4.1 : Reduction in Drop-Out Rate of Students (%)**

Reduction	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Yes	70	70	37	37	107	54	127	64	234	59
No	10	10	47	47	57	29	50	25	107	27
Don't know	17	17	15	15	32	16	23	12	55	14
Other	3	3	1	1	4	2	0	0	4	1
Total	100	100	100	100	200	100	200	100	400	100

**Table 4.2** presents the perceptions of students regarding changes in regularity of the students as a result of Mid-Day Meal. The student mentioned about the perceived benefit of Mid-Day Meal in terms of regular school attendance of the students due to the Mid-Day Meal. This was less pronounced in case of the schools served by Narsingi kitchen.

Mandal Education Officers added that the economically backward students get the benefit of MDM as their regularity of attending school has been maintained only after introduction of Mid-day Meal.

The students have been regularly attending the schools after introduction of Mid-Day Meals since the parents are encouraged to send their children to schools. Also, the teachers also mentioned that the regularity of students in schools after the introduction of Mid-Day Meals.

**Table 4.2 : Regularity of students as a result of Mid-Day Meal (%)**

Whether students are regular in attending school	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Yes	87	87	18	18	105	53	166	83	271	68
No	9	9	62	62	71	36	20	10	91	23
Don't know	2	2	19	19	21	11	14	7	35	9
Other	2	2	1	1	3	2	0	0	3	1
Total	100	100	100	100	200	100	200	100	400	100

39% and 12% students from schools getting Mid-Day Meal from Kandi kitchen and Narsingi kitchen respectively added that introduction of Mid-Day Meal has an impact on increase in the number of girls attending school

*“The girls’ count has increased after the introduction of Mid-Day Meal by Akshaya Patra Foundation”Teacher of Akshaya Patra School.*

Mandal Education Officer also added that performance of students has improved after the initiation of Mid-day Meal in schools.

The Branch Manager of Kandi kitchen is of the opinion that Mid-Day Meal has led to increased enrolment in schools, regularity among students and also active participation of the students in sports and other activities.



**During the school observation, it has been observed that there are no drop-outs of students from the schools covered under Akshaya Patra and Non-Akshaya Patra group after the consumption of Mid-Day Meal.**

**Table 4.3** gives if the Mid-Day Meal has encouraged students to attend school regularly. Almost 50% of the students in Akshaya Patra schools have conveyed that the served Mid-Day Meal has encouraged them to regularly attend the school. The same has been stated by 87% of the students in case on Non-Akshaya Patra schools.



**Table 4.3:Mid-Day Meal encourage students to attend school regularly**

Categories	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Yes	79	79	20	20	99	50	173	87	272	68
No	11	11	60	60	71	36	11	6	82	21
Don't know	5	5	18	18	23	12	16	8	39	10
Other (specify)	5	5	2	2	7	4	0	0	7	2
Total	100	100	100	100	200	100	200	100	400	100

**Table 4.4** gives the opinion of the students if their performance has improved in schools after the introduction of Mid-Day Meal. Almost 43% of the students of Akshaya Patra schools have stated the initiation of Mid-Day Meal has led to their improved performance. The response rate has quite higher in case of school-based kitchens where 82% students have stated that the introduction of Mid-Day Meal has led to the improved performance.

**Table 4.4: Performance of students has improved as a result of Mid-Day Meal**

Categories	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Yes	75	75	11	11	86	43	164	82	250	63
No	8	8	56	56	64	32	9	5	73	18
Don't know	17	17	32	32	49	25	27	14	76	19
Other (specify)	0	0	1	1	1	1	0	0	1	0
Total	100	100	100	100	200	100	200	100	400	100

The students have further stated that the Mid-Day Meal has encouraged parents to send the female students to school since there has been an upliftment in the number of girls attending the school and this has been confirmed by 25% of the students in case of Akshaya Patra schools and 53% of the students in case of Non-Akshaya Patra schools. The interview with the parents has further strengthened that the children are regularly attending the school after the initiation of Mid-Day Meal and has been confirmed by 82% of the parents in both Akshaya Patra and Non-Akshaya Patra schools respectively. Around 17% of the parents in case of Akshaya Patra kitchens have stated that they are encouraged to send their children to schools after the initiation of Mid-Day Meal whereas the same has been stated by almost 23% of the parents in case of school-based kitchens. The parents are of the opinion that along with their strong perception of sending children to schools because of Mid-Day Meal, the performance of the children has also been improved and the same has been conveyed by 48% of the parents in Akshaya Patra schools and 61% of the parents in case of school based kitchens.

The Mid-Day Meal has multifold impact on the students and their parents. The parents have stated that the Mid-Day Meal has led to improved health and better concentration of their children. In case of Akshaya Patra schools, 53% of the parents believe that the Mid-Day Meal improved the health of their children and 45% parents believe that the concentration level of the students has also improved. In case of school based kitchens, 80% parents have conveyed that the Mid-Day Meal improved the health of the children and 48% parents believe that it as led to the improve concentration level of the students.

## 4.2 NUTRITION STATUS

**Table 4.5** gives the Body Mass Index (BMI) of the students. More than 95% of the students in both Akshaya Patra and Non-Akshaya Patra schools have BMI<18.5 which indicates below normal weight. This means that there is a need to increase the uptake of essential nutrients in the diet of the students in order to increase their BMI. Perhaps there is need for nutrition intervention and MDM should focus on providing nutritious food. It would also be better to identify the malnourished children and track their nutrition status.

**Table 4.5: Body Mass Index (BMI) of students**

BMI	Intervention						Control		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
BMI < 18.5: Below normal weight	96	96	96	96	192	96	191	96	383	96
BMI >= 18.5 and < 25: Normal weight	4	4	4	4	8	4	9	5	17	4
Total	100	100	100	100	200	100	200	100	400	100

**Table 4.6** gives the health issues experienced by the students immediately after consumption of the Mid-Day Meal. Ever experiencing of some health problem immediately after the Mid-Day Meal consumption was 6%, and 7% in Akshaya Patra - schools and school-based kitchen schools. The health problems faced by the students include: stomachache, fever and dysentery.

*“My child fell ill after consumption of Mid-Day Meal as the kitchen staff used unfiltered water for cooking” stated by a parent of the child studying in Non-Akshaya Patra school.*

**Table 4.6 : Health issues faced immediately after Mid-Day Meal consumption (%)**

Health Issues	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Stomachache	13	86.6	9	81.8	22	84.6	11	73.3	33	80.4
Fever	6	40.0	2	18.2	8	0.7	4	26.6	12	29.2
Dysentery	1	6.6	5	45.5	6	23.1	1	6.6	7	17.0
Constipation	0	0.0	1	9.1	1	3.8	0	0.0	1	2.4
Others	0	0.0	0	0.0	0	0.0	2	13.3	2	4.8
<b>Total</b>	<b>15</b>	<b>100.0</b>	<b>11</b>	<b>100.0</b>	<b>26</b>	<b>100.0</b>	<b>15</b>	<b>100.0</b>	<b>41</b>	<b>100.0</b>

*Note: Total exceeds 100 due to multiple response*

### 4.3 NUTRITION VALUE OF MID-DAY MEAL

The Branch Manager of Kandi kitchen under Akshaya Patra Foundation mentioned that the students are served rice, pulses and one veg curry everyday which is fixed menu. In case of Narsingi kitchen, it has been understood that the students are served rice, pulses/sambhar, veg curry everyday, The students are served pickle and curd once a week.

The Branch Managers of Kandi and Narsingi kitchen are aware of the amount of calories and proteins required from the Mid-Day Meal to the primary level and upper primary level students. It has been communicated that the primary level students require 12 grams of protein and 450 grams of calories, 20 grams of protein and 700 grams of calories is required by the upper primary level students.

The Mid-Day Meal guidelines envisage to provide cooked mid-day meal with 450 calories and 12 g of protein to every child at primary level and 700 calories and 20 g of protein at upper primary level. This energy and protein requirement for a primary child comes from cooking 100 g of rice/flour, 20 g pulses and 50 g vegetables and 5 g oil, and for an upper primary child it comes from 150 g of rice/flour, 30 g of pulses and 75 g of vegetables and 7.5 g of oil.

For the study, random samples were drawn from 5 schools served by kitchen of Akshaya Patra Foundation and Non-Akshaya Patra Foundation respectively. From each school, a sample of 250 grams (approximately one portion size) was collected and sent to the laboratory for nutritional analysis. The laboratories have followed grinding procedure to calculate the available nutrients in the school specific Mid-Day Meal. The lab results of food samples collected from 5 schools served by Akshaya Patra and 5 schools having School-Based kitchen are given below:

**Table 4.7: Schools served by the kitchens of Akshaya Patra**

S.No	Parameters	Units	Values on Dry basis Per 100 gm				
			School 1	School 2	School 3	School 4	School 5
01	Moisture	%	89.1	85.3	88.3	70.6	88.2
02	Fat	%	0.58	0.66	0.41	0.46	0.58
03	Protein	%	3.8	4.1	2.6	2.5	2.9
04	Fiber	%	1.6	1.8	1.7	1.7	2.6
05	Acid insoluble ash	%	0.36	0.32	0.80	0.80	0.61
06	Energy	Cal	180	230	210	160	230
07	Carbohydrates	%	87.3	85.6	85.0	89.3	86.2

**Table 4.8: Schools served by the School-Based kitchens**

S.No	Parameters	Units	Values on Dry basis Per 100 gm				
			School 1	School 2	School 3	School 4	School 5
01	Moisture	%	91.5	83.7	89.9	61.7	75.9
02	Fat	%	0.41	0.36	0.69	0.91	1.1
03	Protein	%	2.9	3.3	2.5	4.4	3.0
04	Fiber	%	2.2	2.3	1.8	2.0	2.5
05	Acid insoluble ash	%	0.60	0.58	0.22	0.35	0.27
06	Energy	Cal	165	195	220	270	210
07	Carbohydrates	%	89.5	87.5	84.6	83.6	88.0

### Comparison of Nutritional Content of Mid-Day Meal Served by Akshaya Patra Kitchens and School Based kitchens of Non-Akshaya Patra

The results on dry weight basis are presented in **Table 4.9** which indicates that the mean content of carbohydrates and protein are comparable in the meals served by Akshaya Patra Foundation and school based kitchens. However, the mean fat and fibre content of meals served by school based kitchens is slightly higher whereas the moisture content of meals served by Akshaya Patra Foundation kitchens is higher.

**Table 4.9: Mean Value of nutrients in meal served by Akshaya Patra Kitchens and School Based Kitchens of Non-Akshaya Patra (on Dry basis Per 100 gram)**

Parameters	Meal served Akshaya Patra Foundation (No of Schools =5)	Meals served non- Akshaya Patra Foundation (No of Schools =5)
Moisture (%)	84.3 (70.6 – 89.1)	80.5 (61.7 -91.5)
Carbohydrates (%)	86.68 (85.00-89.30)	86.64 (83.6-89.5)
Protein (%)	3.18 (2.50-4.10)	3.22 (2.50-4.40)
Fat (%)	0.53 (0.41 – 0.66)	0.69 (0.36 -1.10)
Fiber (%)	1.88 (1.60-2.10)	2.16 (1.80-2.50)
Acid insoluble ash (%)	0.57 (0.32-0.80)	0.40 (0.22-0.60)

Note : Figure in the parenthesis indicate minimum and maximum values

These values are further computed to arrive at the nutritional content of the 250 grams meal (approximately one portion size) on a wet weight basis. The values presented in **Table 4.10** indicate that the energy, protein and carbohydrate content of the meals served by both Akshaya Patra kitchens and school based kitchens are almost similar. The fat content is slightly higher in the meals served by school based kitchens. In the

meals served by both the kitchens, most of the energy is being provided by carbohydrates, followed by proteins and fats. It is recommended that meals should contain 55- 60 per cent of the calories coming from carbohydrates, about 15-20 per cent coming from proteins and 20-25 per cent from fats. It can thus be concluded that meals served by kitchen of Akshaya Patra Foundation as well as school based kitchens have poor protein and fat content and high carbohydrate content.

**Table 4.10: Mean Value of nutrients in meal served by Akshaya Patra Kitchens and School Based Kitchens of Non-Akshaya Patra (In 250 grams of meal)**

Parameters	Akshaya Patra (No of Schools =5)	Non-Akshaya Patra (No of Schools =5)	Recommendati on for primary school children	Recommendati on for upper- primary school children
Energy (Kcal)	494	505	450	700
Carbohydrates (g)	117.8	119.6	-	-
Protein (g)	4.29	4.51	12	20
Fat (g)	0.71	0.97	-	-
Fiber (g)	2.54	2.99	-	-
Acid insoluble ash (g)	0.78	0.54	-	-

Further, it is assumed that the energy content of the meals is meeting the recommended norms for primary school children (450 grams of calories) but the protein content is much less than the recommended value of 12 grams. For children belonging to upper-primary school, the nutritional content of the meals is poor both in terms of energy and protein in both Akshaya Patra and Non-Akshaya Patra schools.

It is thus recommended that the overall nutritional quality of the meals provided by Akshaya Patra Foundation as well as school based kitchens should be improved.

Mandal Education Officers are of the opinion that the protein content in the served Mid-Day Meal is insufficient for the primary and upper-primary level students. However, there is no denying the fact that the served Mid-Day Meal are meeting the food requirements of the children through their approach of not excluding the poor students who can regularly attend the school without being much concerned about meeting their daily food requirements. It has been further added that the Mid-Day Meal do not contain the proper nutritional value which is insufficient for school going children since growing children require more nutritious food for their health.

The branch manager of Kandi kitchen opined that the provision of Mid-Day Meal fulfills the “Children’s Right to Food” since more than 50% of the students in government schools belong to the below poverty line and do not have access to atleast twice a day meal. All the cooks and helpers of School-Based kitchens of Non-Akshaya Patra schools have agreed that Mid-Day Meal is a right of every child and it should be continued so as to fill the stomach of children.

#### **4.4 SPICE, SALT AND WATER CONTENT AND SATISFACTION WITH MID-DAY MEAL**

The spice content in the served Mid-Day Meal is presented in **Table 4.11**. The food served by Akshaya Patra as well as school based kitchen is spicy as per the students with the former food being less spicy.

**Table 4.11 : Spice content in served Mid-Day Meal**

Spice content	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Very Spicy	6	6	5	7	11	7	20	10	31	9
Medium Spicy	43	46	12	18	55	34	140	72	195	55
Less Spicy	42	45	50	74	92	57	34	17	126	35
Don't Know	2	2	1	1	3	2	1	1	4	1
<b>Total</b>	<b>93</b>	<b>100</b>	<b>68</b>	<b>100</b>	<b>161</b>	<b>100</b>	<b>195</b>	<b>100</b>	<b>356</b>	<b>100</b>

The level of salt content stated by the students in the served Mid-Day Meal is presented in **Table 4.12**. By and large, the students considered the level of salt content in the Mid-Day Meal provided by Kandi kitchen as medium or low, and that of Narsingi kitchen to be low

**Table 4.12 : Level of salt content in Mid-Day Meal**

Salt content	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
High level	8	9	0	0	8	5	11	6	19	5
Medium level	44	47	16	24	60	37	130	67	190	53
Low level	39	42	51	75	90	56	53	27	143	40
Don't Know	2	2	1	1	3	2	1	1	4	1
<b>Total</b>	<b>93</b>	<b>100</b>	<b>68</b>	<b>100</b>	<b>161</b>	<b>100</b>	<b>195</b>	<b>100</b>	<b>356</b>	<b>100</b>

The water level in the cooked Mid-Day Meal is presented in **Table 4.13**. The issue of more water content than needed seems to be more common in the schools served by APF though it gets mentioned in case of school based kitchens also.

**Table 4.13 : Extent of Water content in Mid-Day Meal**

Level of Water content	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
More than required always	26	28	27	40	53	33	24	12	77	22
As much as required	52	56	15	22	67	42	154	79	221	62
More than required sometimes	15	16	26	38	41	25	17	9	58	16
<b>Total</b>	<b>93</b>	<b>100</b>	<b>68</b>	<b>100</b>	<b>161</b>	<b>100</b>	<b>195</b>	<b>100</b>	<b>356</b>	<b>100</b>

## 4.5 SATISFACTION WITH MID-DAY MEAL

**Table 4.14** gives the satisfaction level of the students with the quantity and taste of Mid-Day Meal. Extent of satisfaction with quantity as well as taste of Mid-Day Meal is higher in case of schools served by Kandi kitchen and school based kitchens. The satisfaction level is low in case of schools served by Narsingi kitchen.

**Table 4.14: Satisfaction Level with Mid-Day Meal (%)**

% students satisfied with	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
<b>Quantity</b>	58	62	23	34	81	50	183	93	264	74
<b>Taste</b>	53	57	18	26	71	44	183	94	254	71

*“In terms of vitamins, Akshaya Patra food is good but as per the taste, meal prepared by in-house kitchen is best. Akshaya Patra food is good for children” stated by a teacher of intervention school.*

Mandal Education Officer stated that the students are satisfied with the quantity of the served Mid-Day Meal. All the headmasters and teachers of schools having in-house kitchen within the school premises are satisfied with the quantity and taste of the food.

According to 50% headmasters and teachers of the schools served by Akshaya Patra Foundation the Mid-Day Meal served by Kandi and Narsingi kitchen is the best, whereas the other half believed that the schools with in-house kitchen serve the best meal especially in terms of taste.

Mandal Education Officer also added that the students are not very much satisfied with the taste of the Mid-Day Meal.

The parents of the students studying in the schools served by Kandi and Narsingi kitchens are satisfied with the quantity of food, although some of them are dissatisfied with the taste of food. They are even satisfied with the hygiene settings like drinking water arrangements, hand washing stations and toilet facilities provided by the intervention schools.

All the parents of children studying in schools with school based kitchens are satisfied with the quantity of served food, however, one of them showed dissatisfaction with the taste of food. The parents are also satisfied with the hygiene settings like clean drinking water arrangements, hand washing stations and toilet facilities provided by the schools.

The reasons of dissatisfaction of the parents with the Mid-Day Meals served in Akshaya Patra schools are the higher spice content, water content and low levels of salt content in the food.

## 5 OTHER ASPECTS

### 5.1 FUEL AND WATER USED FOR COOKING

The kitchens in both Akshaya Patra and Non-Akshaya Patra schools use sunflower oil to make Mid-Day Meal. The Branch Manager of Kandi kitchen specified that briquettes are used for cooking purpose which is a biofuel and is a substitute of coal and charcoal. In case of Narsingi kitchen, LPG is used for cooking purposes. The different self-help group members working for Non-Akshaya Patra schools stated that they use firewood instead of fuel for cooking Mid-Day Meal.

*“For cooking of rice, the cook has no cylinder and has to bring wooden sticks to light up fire by themselves”, stated by a cook and helper of School-Based kitchen under Non-Akshaya Patra group.*

The cooks of Kandi and Narsingi kitchen prepare fresh food everyday which is 60 degrees centigrade hot when served to the students. The branch manager of Kandi kitchen reported that the same amount of Mid-Day Meal is cooked everyday i.e. 10 tons of rice, 3 tons of pulses and 6 tons of vegetable curry.

In case of Narsingi kitchen, the meal is prepared as per the updates received from the headmasters of the schools. The branch managers have not faced any shortage in the supply of Mid-Day Meal to the students. The kitchens prepare extra meal based on the updates from the headmasters on the increase in the attendance of the students in the Akshaya Patra schools. The kitchens have RO plant and therefore, RO water is used for cooking purpose. The self-help group members mentioned that bore well water or tank water is used for cooking the Mid-Day Meal.

The pest control is done in Akshaya Patra kitchens once a week. In case of School-Based kitchens also, the pest control is done on a regular basis and is monitored by the headmasters and the teachers.

### 5.2 PLACE OF CONUMPTION OF MID-DAY MEAL

The **Table 5.1** gives the information on the decorum followed while collecting Mid-Day Meal in both Akshaya Patra and Non-Akshaya Patra schools. Mostly, the students stand in the queue and wait for their turn to collect the Mid-Day Meal prepared, while sitting in a que and waiting for the turn is also in practice.



**Table 5.1 : Decorum followed while taking Mid-Day Meal**

Categories	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Stand in the queue and wait for your turn	60	65	63	93	123	76	120	62	243	68
Sit in the queue and wait for your turn	33	35	5	7	38	24	75	38	113	32
Total	93	100	68	100	161	100	195	100	356	100

In most of the cases, the place of consumption of Mid-Day Meal is clean. According to the students, the school observation carried out by the Sigma team also corroborates this.

The area of the consumption of Mid-Day Meal is cleaned everyday before the school starts functioning in both Akshaya Patra and Non-Akshaya Patra groups.

The place of consumption of Mid-Day Meal is cleaned by the helpers in the schools getting Mid-Day Meal from Kandi and Narsingi kitchen after the Mid-Day Meal is over. In case of schools where Mid-Day Meal is prepared by school based kitchen, the area is cleaned by the cook himself/herself after the Mid-Day Meal is over.

The **Table 5.2** gives the details regarding the place of consumption of the served Mid-Day Meal. The children mostly sit in open on the cemented platform outside the classroom premises for consumption of the Mid-Day Meal. Sitting on floor in a separate room or in open place outside classroom were the other practices reported by the students.

**Table 5.2 : Place of consumption of Mid-Day Meal (in %)**

Place	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
In a separate room, on floor	17	18	0	0	17	11	51	26	68	19
In open, outside the classroom premises, on chair	0	0	0	0	0	0	6	3	6	2
In open, outside the classroom premises, on floor	7	8	8	12	15	9	12	6	27	8
In open, outside the classroom premises, on cemented platform	69	74	60	88	129	80	112	57	241	68
Other	0	0	0	0	0	0	14	7	14	4
Total	93	100	68	100	161	100	195	100	356	100

The parents of the children irrespective of the school mentioned that the place of consumption of Mid-Day Meal is well-ventilated, spacious and is cleaned.

*“The place where kids eat is cleaned properly and it is ventilated in a good way” stated by a parent of Akshaya Patra School.*

### 5.3 SOCIAL EQUITY

**Table 5.3** gives the attitude of the students in sitting with students of other social groups during Mid-Day Meal consumption.

The students by and large, are willing to sit with students of other social groups during consumption of Mid-Day Meal and this is a good sign indicating social equity. In case of schools covered by Narsingi kitchen and school based kitchens, considerable proportion of students are not willing to sit with students of other social groups.

**Table 5.3: Whether Like to sit with other Caste Students during Mid-Day Meal Consumption (%)**

Sitting with other Caste Students	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%	N	%
Yes	89	89	98	98	187	94	169	85	356	89
No	11	11	2	2	13	7	29	15	42	11
Sometimes	0	0	0	0	0	0	2	1	2	1
Total	100	100	100	100	200	100	200	100	400	100

*During the school observation, it has been observed that all the students sit together while Mid-Day Meal consumption irrespective of the caste in both Akshaya Patra and Non-Akshaya Patra groups.*

*Boys and girls sitting together while having the Mid-Day Meal is more common in the schools covered by the Akshaya Patra Foundation (80% Kandi and Narsingi kitchen), while this was reported by half of the students from Non-Akshaya Patra schools.*

Many of the students (92% in case of Kandi and 68% in case of Narsingi kitchens) mentioned that their parents do not object them to consume Mid-Day Meal at school.

*“There has not been any objection from the parents to their children not to consume the Mid-Day Meal with other case students, students sit together, moreover, there should not be a feeling of disparity among students and they should be cordial with each other” stated by Mandal Education officer.*

## 5.4 TOILETS, DRINKING WATER AND HAND WASHING STATIONS

Availability of toilet is an issue in the schools covered by Kandi kitchen and schools with school based kitchen. In the schools covered by Narsingi kitchen, availability of toilet was mentioned by all the students. In the schools covered by the Akshaya Patra Foundation, availability of separate toilets for boys and girls is more common. Availability of water in the toilets is an issue in some of the schools. These findings are corroborated by the Mandal Education Officer.

As **Table 5.4** indicates, availability and functioning of drinking water source in the school is not an issue covered by Narsingi kitchen, while in case of other two sets of schools, non-availability of drinking water is a problem to be addressed.

**Table 5.4 : Availability and Functionality of Drinking Water Facility (%)**

Drinking Water	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Available and functioning	55	55	99	99	154	77	117	59	271	68
Available but not functioning	1	1	0	0	1	1	5	3	6	2
Not available	44	44	1	1	45	23	78	39	123	31
Total	100	100	100	100	200	100	200	100	400	100

The **Table 5.5** gives the different sources of drinking water available in the schools. In the schools covered by Kandi kitchen, tap water is the major source of drinking water followed by bottled water and borewell. In case of schools served by Narsingi kitchen, bore well, bottled water and tap water are the sources in the order of mention. In case of schools with school based kitchen, bottled water, boiled water and tap water are the sources of drinking water. Perhaps there is a need to check the quality of water as this could be the source of illness reported by some of the students. This needs to be studied.

Further probing revealed that the students, by and large, drink the water available in the school. This was also confirmed by the Mandal Education officer.

**Table 5.5 : Source of Drinking Water in School (%)**

Source	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Tap water	36	64	22	22	58	37	11	9	69	25
Bottled water	11	20	45	45	56	36	72	59	128	46
Bore well	9	16	60	61	69	45	38	31	107	39
Others	4	7	1	1	5	3	5	4	10	4
Total	56	100	99	100	155	100	122	100	277	100

**Table 5.6** gives the information about availability and functionality of Hand Washing Stations in the schools. In all the schools served by Narsingi kitchen and almost all the schools served by Kandi kitchen, availability of functional hand washing stations got reported. In some of the schools having school based kitchens, this issue needs to be addressed.

**Table 5.6 : Availability and functionality of Hand Washing Stations(%)**

Hand Washing Stations	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
Available and Functional	79	98	100	100	179	99	137	88	316	94
Available but not Functional	0	0	0	0	0	0	10	6	10	3
Not available	2	2	0	0	2	1	8	5	10	3
Total	81	100	100	100	181	100	155	100	336	100

More than half (57%) of the students mentioned about availability of only 1 hand washing station in the schools getting Mid-Day Meal from Kandi Kitchen. In case of schools getting Mid-Day Meal from Narsingi kitchen, availability of 2 hand washing station was mentioned by about two fifth of the students (42%). Availability of 4 hand washing stations is low (mentioned by 16% in the schools getting Mid-Day Meal from Kandi and Narsingi kitchens and 5% in case of Non-Akshaya Patra group). The Mandal Education Officer also mentioned about availability and functional status of hand washing stations in the schools.

During the school observation in both Akshaya Patra and Non-Akshaya Patra groups, it has been observed that the schools have bottles containing hand wash liquid for the students near the hand washing stations and the students use them for hand washing practices.

#### Hygiene Practices Followed by Students

**Table 5.7** gives the results about Hand Washing Practices followed by the students before and after the consumption of Mid-Day Meal. Washing hands with water and soap before taking the Mid-Day Meal is universal in the schools served by Narsingi kitchen. In other schools, hand washing with soap is done by most of the students, but a sizeable proportion of students use only water for hand washing. This needs to be addressed in the communication to the students. Washing hands with soap and water after the Mid-Day Meal is less pronounced across all the schools. This needs to be addressed.

**Table 5.7: Hand Washing Practices before and after Mid-Day Meal Consumption(%)**

Hand Washing Practices	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School Based			
	N	%	N	%			N	%		
<b>Before MDM</b>										
Wash hands with soap and water	72	77	68	100	140	87	126	65	266	75
Wash hands with only with water	21	23	0	0	21	13	69	35	90	25
<b>After MDM</b>										
Wash hands with soap and water	12	13	33	49	45	28	32	16	77	22
Wash hands with only with water	81	87	35	51	116	72	163	84	279	78

The headmasters and teachers of the schools covered under Akshaya Patra group instruct children to wash their hands before eating and ensure that food is not wasted. When asked whether the meal is always hot when served, most of the students replied in affirmation- 84% and 65% in case of schools served by Kandi and Narsingi kitchen respectively.

*“During the school observation, it has been observed that the Mid-Day Meal is hot when it is served to the students in the schools getting Mid-Day Meal from Kandi and Narsingi kitchen as well as where the food is prepared by the School-Based kitchen.”*

## **5.5 CONTINUATION OF MID-DAY MEAL**

When asked whether Mid-Day Meal should continue, all the students from all three type of schools replied affirmatively. The figures of Mid-Day Meal in **Table 5.8** served by school-based kitchens are on a higher side in terms of the continuation of the Mid-Day Meal compared to the figures presented for the responses given by students consuming Mid-Day Meal served by Akshaya Patra kitchens.

**Table 5.8 : Continuation of Mid-Day Meal (%)**

Continue	Akshaya Patra						Non-Akshaya Patra		Over all	
	Type of kitchen				Total		Type of kitchen		N	%
	Kandi		Narsingi		N	%	School-Based Kitchen			
	N	%	N	%			N	%		
Yes	95	95	77	77	172	86	200	100	372	93
No	5	5	23	23	28	14	0	0	28	7
Total	100	100	100	100	200	100	200	100	400	100

*“Because of Mid-Day Meals served by Akshaya Patra Foundation, the expenses in our home got reduced so I wish it should continue” stated by a parent of Akshaya Patra School.*