

# Impact Assessment & Satisfaction Survey of the Akshaya Patra Mid-Day Meal Programme



**Submitted to  
The Akshaya Patra Foundation**

**Catalyst Management Services, Bangalore**

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# Introduction

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 1.6 million children from 13,210 schools across 11 states in India. To assess the impact of the work TAPF has been doing across the country, Catalyst Management Services conducted an impact assessment study in the South and West India.

Our role in the assignment specifically involved assessing the success of the program according to various parameters and indicators. This involved interaction with children, their parents and school teachers and map impact and outcomes.

In terms of the overall approach and design, a robust design was followed, and we also looked at different lenses to observe the impact of this highly important program. For a robust methodology, the program required a statistically significant result at each kitchen level for all its kitchens (both centralized and decentralized). This involved sample to be taken from each location which would considerably increase the sample required for the study.

The overall objective of the study is to assess the impact of The Akshaya Patra Foundation (TAPF) Mid-day Meal (MDM) programme on educational outcomes and nutrition levels of children and gauge the level of satisfaction of different stakeholders of The Akshaya Patra Foundation - Mid-Day Meal programme. The specific objectives are as follows:

1. To study the impact of MDM on enrolment, attendance and retention rate of the students in the schools
2. To measure the nutritional status of students covered under the programme
3. To understand the perception and satisfaction of children, their parents and the teachers towards food and services provided by The Akshaya Patra Mid-Day Meal programme.
4. To review the role of school authority and teachers in ensuring effective implementation of the Mid-Day Meal programme in school, hygiene conditions of food and water in school and other related safety issues.



# Research Design

CMS proposes to adopt a rigorous research design both for the assessment study. Based on our previous experiences of working with similar assignments and especially with nutritional status of children, we have defined the study framework and the methodology.

The design of the assessment was informed by the following key points related to the scope of the assignment. Further sections reflect these thinking in terms of methods and approaches.

The Basis for Assessment – The Theory of Change: The programme framework for TAPF is built on a well-tested Theory of Change, which captures the strategies, outputs, outcomes and impact. This was used to as the base for answering the areas under the evaluation. Building on the TOC, indicators for each area were developed and the same were used for assessment.

Rigorous Design to Address Attributability: For assessing the impact, it was important to use methodologies that can address the key question of ‘what is the impact of the programme’, along with critical question of “what is the attributability of the impact to the programme”. The scope of assessment here proposes to check whether higher exposure to project activities lead to better impact, etc.

Mixed-Methods to get Answers to both ‘why’ and ‘how’ of changes, apart from answering ‘what changes’: To get the best insights, it is important to get answers on ‘how’s’ and ‘whys’ of changes. For this a combination of quantitative and qualitative datasets were required. We proposed, therefore, a mixed-method design, with sequential implementation of quantitative surveys followed by qualitative surveys.

Combination of Technical Tools and Social Tools to get Answers: Assessment of the national and educational indicators is an important requirement to address the outcome and impact of the programme. At the same time, we also needed to have tools that capture children’ profiles, context, etc. Therefore, a combination of ‘Learning Assessment Methods’ and ‘Socio-Economic Surveys’ were conducted. Apart from this, group discussions (GDs) and In-depth interviews were also included to provide a good overview of the outcomes and impact.

Use of Technology for Data Collection and Analysis: There are many options for ensuring quick, cost effective and reliable data collection and analysis using software and communication technologies. We used of android based tablets for individual survey. For the analysis, we used SPSS 23, R and MS Excel 2016 for the quantitative analysis and NVIVO9 for qualitative analysis.

## **Study Framework**

Flowing from the objectives and our understanding of the assignment we followed the study framework. The framework gives a broad definition of the stakeholders that were captured in the study, the issues studied, the methods deployed for the study and the objectives the study addressed.

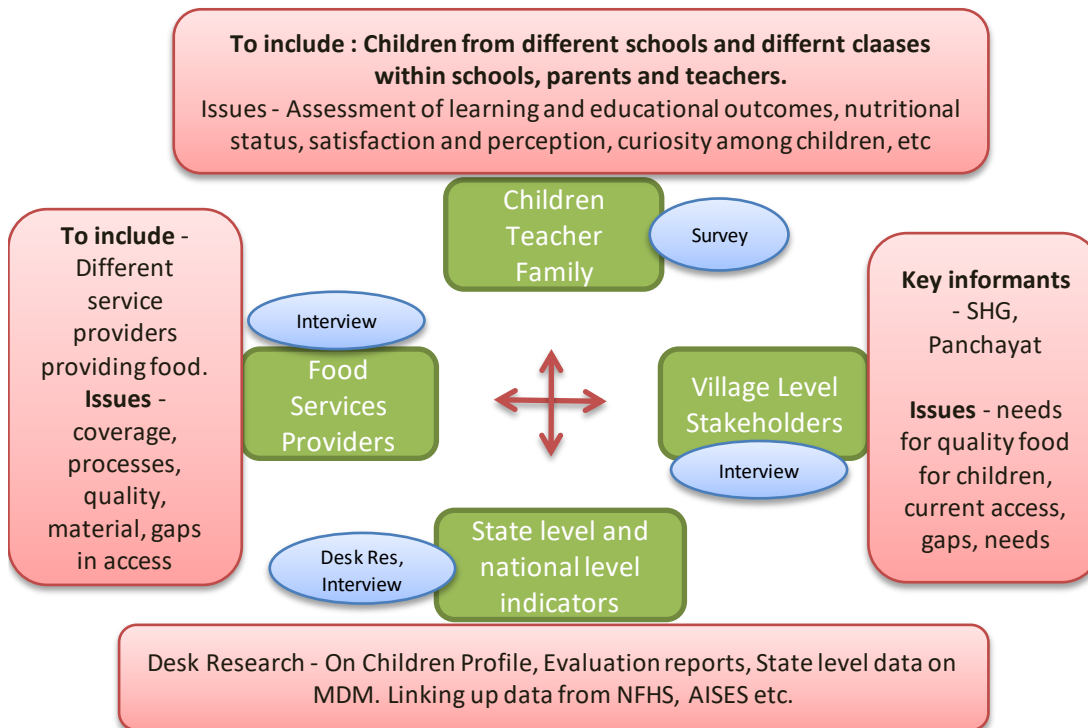
## Impact Assessment and a Satisfaction Survey of The Akshaya Patra Foundation (TAPF) Mid-day Meal Programme

### Objective of the Study:

1. To assess the impact of The Akshaya Patra Foundation (TAPF) Mid-day Meal (MDM) programme on educational outcomes and nutrition levels of children
2. To gauge the level of satisfaction of different stakeholders of The Akshaya Patra Foundation - Mid-day Meal programme.

### Respondents, Issues to be Studied, Methods and Tools

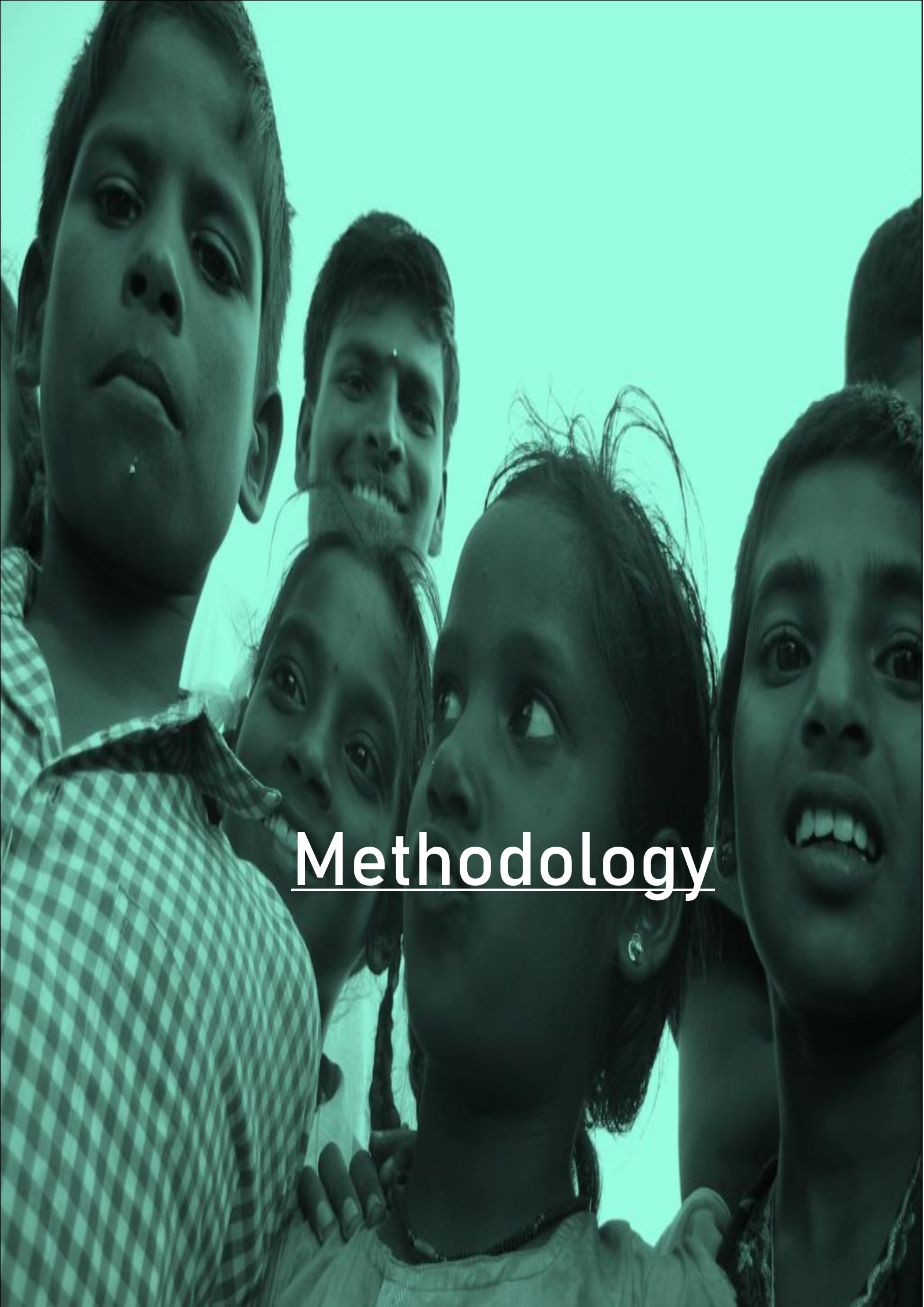
Data to be analysed over control and treatment groups



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We worked with TAPF to refine the current Theory of Change and come up with a finalised list of indicators at the impact and outcome level. This helped design the empirical and theoretical models which were then evaluated upon in the study.

<sup>1</sup> In the diagram, the green boxes indicate the stakeholder, the red boxes indicate the issues to be studied and the blue circles indicate the method being used to study the issues



# Methodology

The goal of the study was to answer the evaluation questions based on the objectives. To test the attributability of the impact to the programme it was necessary to have a robust counterfactual in the design, keeping resources and flexibility of the interventions in mind. We suggested that the overall framework to be used in measuring impact is using Standard and Current methods using General Linear Regression Model, building on a Quasi-Experimental Design to arrive at comparison groups.

As per this approach, the changes in impact indicators were assessed by using “with treatment-without treatment”. The change in impact indicators coming from the children data was calculated for both ‘treatment’ and ‘comparison’, and this difference between the treatment and comparison group was used to address the attributability of the impact to programme.

## Sampling

### Quantitative Sample

For the sample selection, statistical significance both at the programme level and at the individual kitchen level was desired. This allowed for consolidation of results at all the levels. To get statistically significant results at the programme level it was required to cover a) all the kitchens involved in the program (given the scale and variability of the kitchens) and b) to cover sufficient number of beneficiaries from within each kitchen area in the quantitative survey. This section presents the assumptions behind the final beneficiary and project sample sizes.

To increase the likelihood of observing differences at the desired level, a sample as large as resources allow produced the narrowest confidence interval width and hence the likelihood of observing statistically significant differences. It should be remembered that the resources required to reduce confidence interval widths limits from below +/- 5 percentage points significantly increases sample sizes, and thus resources. Similarly increasing the level of confidence (i.e. the probability of the confidence interval been observed) beyond 90% significantly increases the minimum required sample size. Therefore, in designing surveys, realism must be employed and often practical limitations of funds available for surveys ensures that a confidence limit of +/-5 percentage points 90% of the time is considered adequate. In the following sections options are presented for the sampling frame for the study using the criteria of 90% significance and +/- 5% margin of error for the selection of beneficiaries.

As discussed above, the impact assessment study capture all the 10 kitchens involved in the program. In the first phase where we look at South and West India, we looked at 5 kitchens. We understand that the operations and processes of these kitchens were the same, but given the variability and the reach of the kitchens in these areas, we suggested capturing all the kitchens for our study. This would also give us data across the cities and states and we can do the required analysis with a significance at a kitchen level.

### Beneficiary Sample

The following criteria are employed in this study for the selection of statistically significant samples at the zonal level.

- Significance level - 90%, Confidence interval - +/- 5%
- Design effect of 1.2
- Response distribution of 0.50

A higher design effect was employed here because the selection of beneficiaries (children) within each kitchen builds an additional layer of stratification into the sample frame. Based on the above criteria the beneficiary sample is calculated using the following formula:



$$n = \frac{K^2 * p(1 - p)}{D^2}$$

Where:

$n$  is the required sample size, in number of households to be sampled

$K$  is the required level of confidence (measured as the standard normal deviate, obtainable from standard statistical tables of the normal distribution)

$D$  represents the acceptable width of the confidence interval (in percentage points)

$p$  is the population variability under a binomial (either/or) distribution, where  $p$  = the proportion of positive responses with range  $0 < p < 1$

Based on these calculations, the overall sample size per district is 320. Therefore, the combined sample size for districts in phase 1 was 1600<sup>2</sup>. This included bifurcation of sample at control and treatment group.

After a matching exercise is completed, an exact sample of 800 was taken for comparison group for schools and children which are like the treatment group.

### Qualitative Sample

The sample for qualitative study involved the following stakeholders:

- 5 Focussed Group Discussions with parents at each location i.e. a total of 25 FGDs based on concept saturation
- Interviews with school teacher and headmasters: 5 per location i.e. total of 25 interviews
- KII with village head and main influencers: 6 per location i.e. total of 30 interviews

### Tools

For the study, we used a multiple number of tools to assess the outputs, outcomes and impact. The indicators finalised with TAPF were assessed using mixed methods. Following are the major tools used under quantitative and qualitative designs

### Quantitative Tools

1. Child level survey questionnaire and Paper based test
2. Food supplier level checklist
3. School level checklist
4. Child level learning assessment test

The child level survey questionnaire assessed the profile of the child and satisfaction of the child with various parameters like taste, satisfaction and perception

Checklist at the supplier level can include following points

- Infrastructural facilities.
- Procurement and storage of food items
- Source, availability and storage of water
- Processes during Pre-preparation of food
- Processes during preparation of food
- Management of leftover food

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<sup>2</sup> 5 locations

- Dishwashing
- Human resource availability
- Personal hygiene practices
- Kitchen waste disposal
- Food transportation
- Evaluation of quality of food

Checklist at the school level may include questions on following domains:

- Details of the program and the records at the school level
- MDM supply being regular and punctual
- Cleanliness
- Utensils for distribution
- Evaluation of food including factors like taste, smell, texture, whether hot and acceptance

Child level learning assessment to include following areas:

- Curiosity of children
- Assessment of different subject knowledge using learning outcomes

### Qualitative Tools

The quantitative tools give us numbers around answering research questions which involved 'what' questions. But to explain the 'why' and 'how' aspects of the intervention, we need to understand various behaviours, attitudes and depths of the variables affecting the indicators. This was possible by using qualitative tools. The qualitative methodologies give us insights probing into reasons of change. For this assignment, we used a variety of qualitative tools which complemented and supplemented the data collected from qualitative methods.

The different tools we propose are

- Focussed Group Discussion(FGDs) with parents of children studying in upper primary and primary school to understand their satisfaction and perception of the scheme as a consumer.
- Interviews with school teacher and headmaster
- KII with village head and main influencers
- School level observational checklist capturing points around:
  - Time taken to distribute food
  - Whether child eating food
  - Utensils
  - Drinking water
  - Satisfaction with the quality of food
  - Hygienic practices

CMS with its experience in the social development sector has developed methodologies and tools which can be used to assess the indicators mentioned above. Our experiences of working in child focussed interventions have also helped us mould the tools to match the requirement of this study.

# Findings

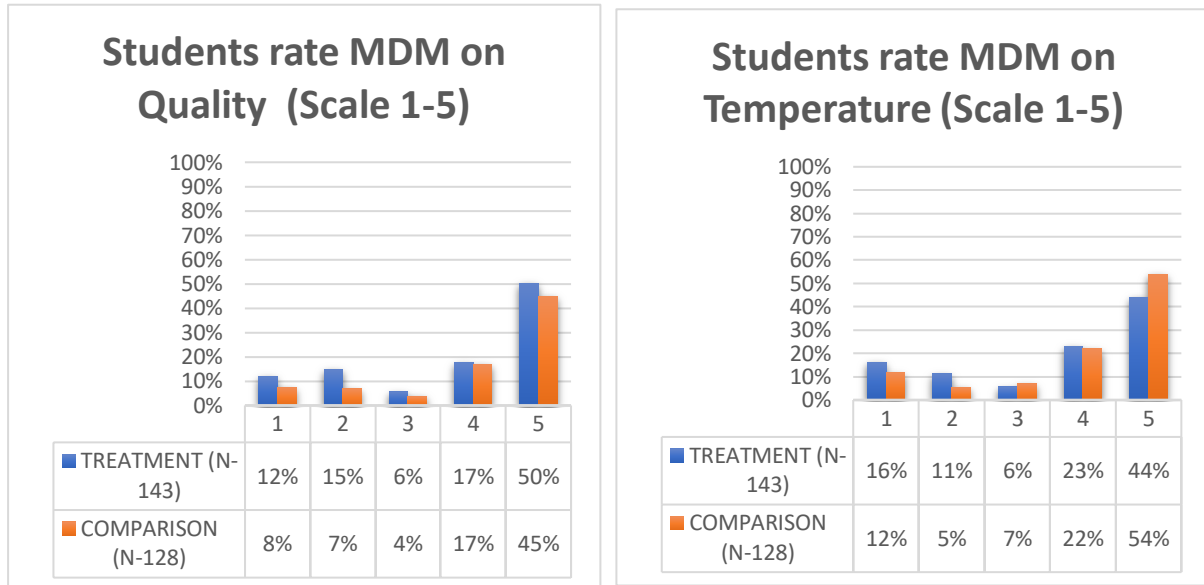




Ahmedabad

# Findings from the field

Almost half of the students from the treatment group rated the mid-day meal provided by TAPF to be excellent in terms of quality of food and temperature of food.

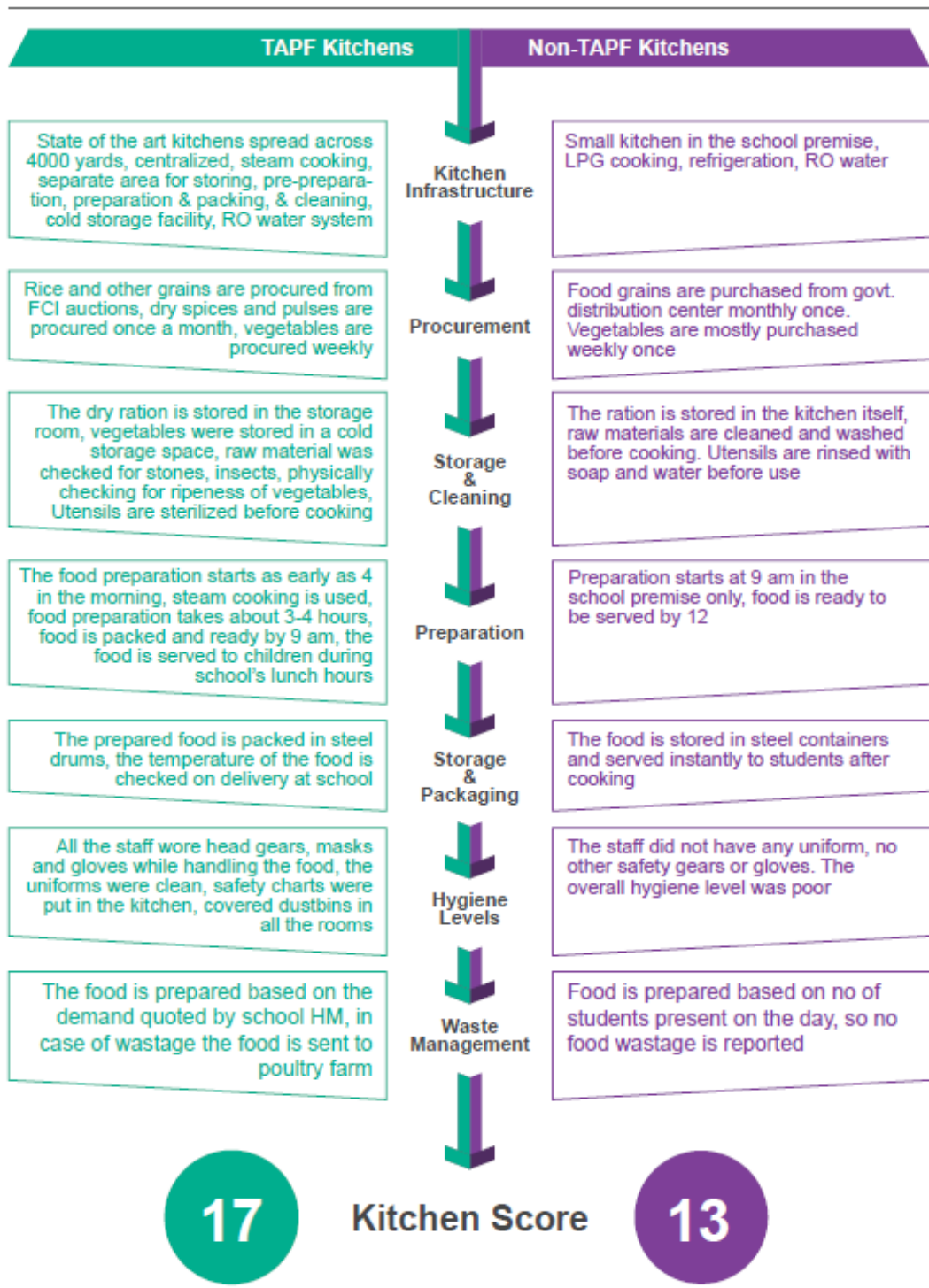


The table below shows the average ratings (scale 1-5) given by students in treatment and comparison on its attributes:

Attributes	TREATMENT (N-165)	COMPARISON (N-160)
Taste	3.27	3.29
Quality	3.80	4.06
Punctuality	3.85	4.19
Temperature	3.68	4.01
Quantity	3.18	3.23
Hygiene	3.12	3.21
Regularity	3.31	3.23
Variations in Menu	3.24	3.31

Through the qualitative discussions we on probing we found that the treatment students have rated TAPF meals higher on freshness and regularity. The students in comparison feel the menu is more varied in non TAPF schools and hence have scored the attributes accordingly.

# Highlights



The Akshaya Patra kitchen provides mid-day meals in around 515 schools in and around Ahmedabad catering to about 1,50,000 school children. The kitchen has centralized steam cooking facility, with assembly line process like other TAPF kitchens. The food preparation starts as early 4 in the morning, the total time taken to cook meals is 3-4 hours. By 9 am the meals are ready in the vans to be sent to the schools. The prepared food is packed in steel

drums, the temperature of the food is checked on delivery at school. The Ahmedabad TAPF kitchen was well maintained and every aspect under observation scored on the higher side. The parents and headmaster expressed satisfaction with the efficiency and regularity shown by TAPF. Almost all teachers and headmasters pointed out that TAPF had put an effective grievance redressal mechanism in place.

Automation of food preparation has a disadvantage that the kitchen cannot bring many variations in the menu. The parents in Ahmedabad are unaware of TAPF being the food provider for meals to their children. Parents have opted to not let children MDM at school because of the same taste of meals every day.

# Baran

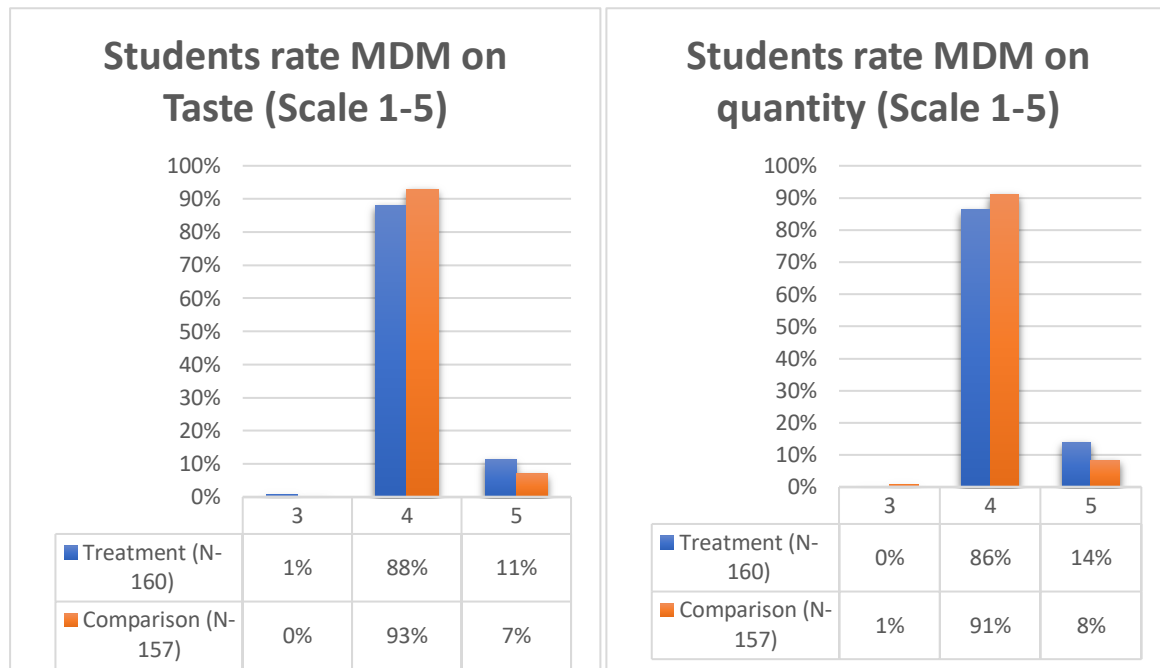




# Findings from the field

Kitchens in Baran are run by SHG members and managed by TAPF. TAPF provides support to the SHG in kitchen operations like procurement, storage, infrastructure and distribution.

The BMI for age was higher for students in TAPF than Non TAPF. With the average BMI greater 18 the upper primary students in TAPF had normal BMI.



Parents and headmasters also expressed being satisfied with the efficiency and regularity by TAPF. The table below shows the average ratings (scale 1-5) given by students in TAPF and Non TAPF on its attributes

Attributes	TAPF (N-165)	Non TAPF (N-160)
Quality	4.11	4.09
Temperature	4.14	4.08
Taste	3.98	4.02
Quantity	4.01	4.03
Hygiene	4.00	4.01
Regularity	4.03	4.04
Variations in Menu	3.99	3.97

We find that most students in TAPF schools give their meals a score of 4 out of 5. The TAPF students have rated TAPF meals higher on temperature and quality of the food.

# Highlights

The SHG kitchen served approximately 500 students and kitchen had two rooms (one kitchen area and a smaller storage room) and a toilet. They used LPG for cooking and used piped filter water for cooking purposes. The kitchen is modern and has adopted ecofriendly measures of cooking, the kitchen has its own bio gas plant. There is a RO plant and rice fortification set up in the kitchen.

The kitchen to school delivery process of food is well managed. The kitchen ensures that the meals reach the children fresh and hot. The parents reported that any issues/ grievances raised by parents and headmasters are immediately resolved and the service delivery and monitoring mechanisms are prompt and effective.

The teachers reported that taste of the food was also similar on most days which leads to boredom amongst children. The time gap between the time food reaches the kitchen and the time it is served to the students is of 2-3 hours, the food does not appeal to the students as the food was not steaming hot. The health of the students for both TAPF and non TAPF is concerning, with students reporting low BMI and high probability of anemia. Though some of these are not within the control of TAPF, however, these concerns should feed into the meals and their nutritional composition.

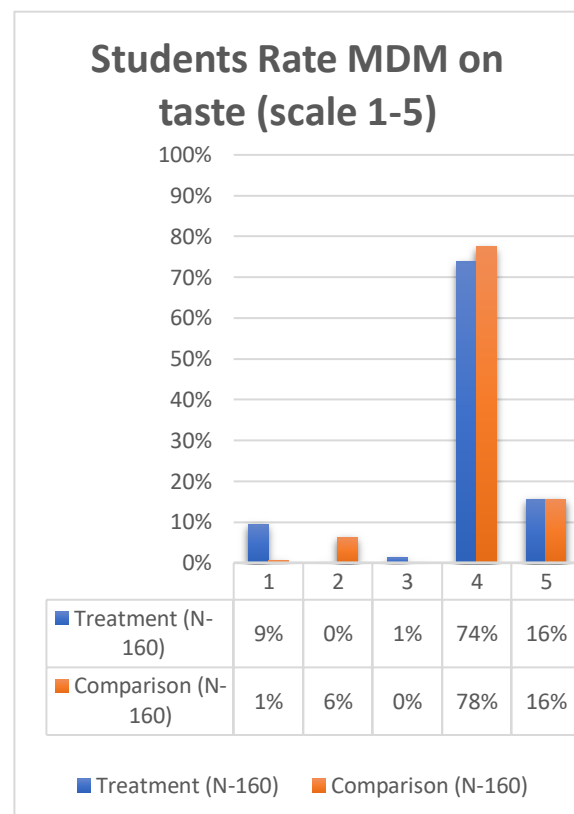
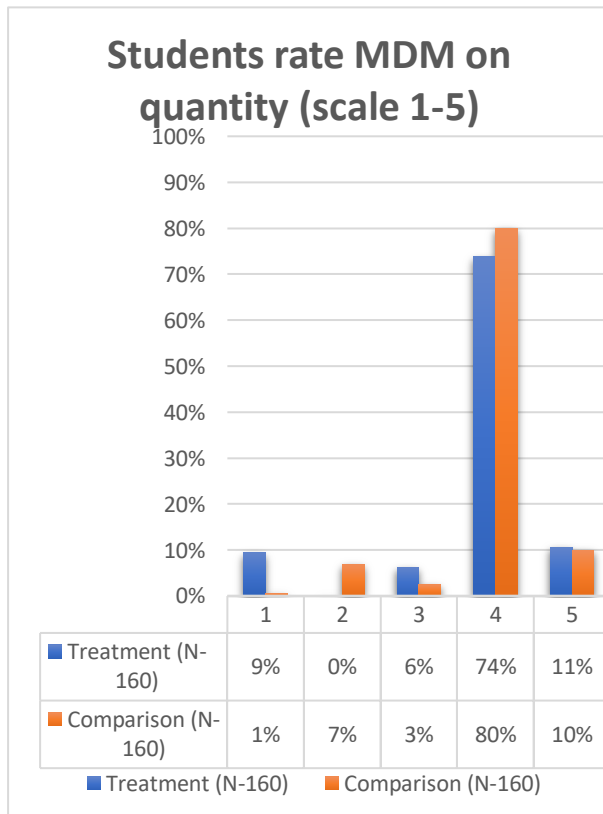
# Bellary



# Findings from the field

The average BMI and MUAC, waist and head circumference was higher for treatment students. However more than 70% of the sample did not have a healthy BMI for their age. We conducted a physical testing of 40 students in treatment and 55 in comparison who tested positively on the symptoms of anaemia.

- The students were highly satisfied with the meals from TAPF *Bhisibhille bath* and *pulao* were their favourite dishes
- Parents and headmasters expressed being satisfied with the efficiency and regularity by TAPF. The kitchens by TAPF are well functioned, fully automated with high end cooking technologies. This gives them an edge in preparing high quality meals in large quantities.

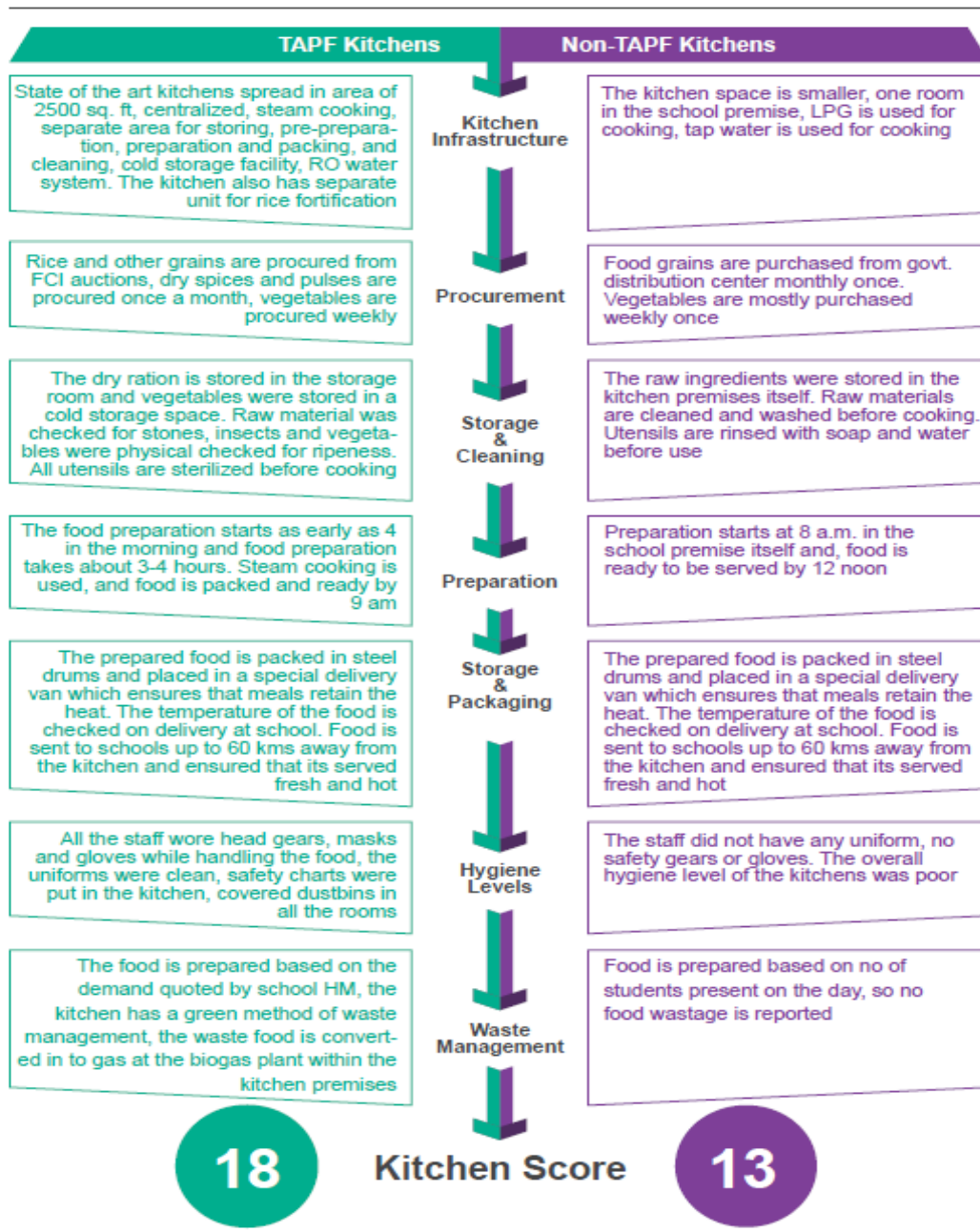


The table below shows the average ratings (scale 1-5) given by students in treatment and comparison on its attributes:

<b>Attributes</b>	<b>Treatment (N-160)</b>	<b>Comparison (N-160)</b>
TASTE	3.77	4.01
QUALITY	4.14	4.00
QUANTITY	3.67	3.91
HYGIENE	3.75	3.86
FRESHNESS	3.73	4.03
REGULARITY	3.77	4.13
TEMPERATURE	4.12	4.02
VARIATIONS IN MENU	3.38	3.54

The treatment students have rated TAPF meals higher on temperature and quality of the food. The students find the meals by TAPF similar in taste and hence have scored lesser for variation in the menu. 74% students in treatment have given TAPF meals a score of 4 out of 5.

# Highlights



The Akshaya Patra kitchen has state of the art cooking facilities. The kitchen is spread across an area of 2500 sq ft with separate facilities for storage, preparation and packaging. The kitchen serves fresh and hot meals to schools up to 60 kms away from the kitchen. The TAPF staff conduct regular monitoring of meal distribution at school.

The kitchen is modern and has adopted ecofriendly measures of cooking, the kitchen has its own bio gas plant. There is a RO plant and rice fortification set up in the kitchen which has helped in quality and timely delivery of food. The total quality management principles have led to a well-managed school delivery process. The kitchen ensures that the meals reach the children in time.

The teachers and helpers reported that the service delivery and monitoring mechanisms are prompt and effective and any issues/ grievances raised by parents and headmasters are immediately resolved.

Automation of food preparation has a disadvantage that the kitchen cannot bring many variations in the menu. The headmasters and students raised their concerns about the meal variety. The time gap between the time food reaches the kitchen and the time it is served to the students is of 2-3 hours, the food remains warm however not appealing to the students as the food was not steaming hot.

A photograph showing a group of women in a kitchen setting, likely preparing food. The women are wearing traditional Indian attire, including sarees and headscarves. They are gathered around a large, round, shallow cooking vessel (possibly a dholak) which is being used for cooking. The kitchen is equipped with various items, including a gas cylinder, a metal stand, and several bowls and plates containing ingredients. The overall scene suggests a communal or traditional food preparation activity. The word "Vadodara" is overlaid in white text in the center of the image.

# Vadodara

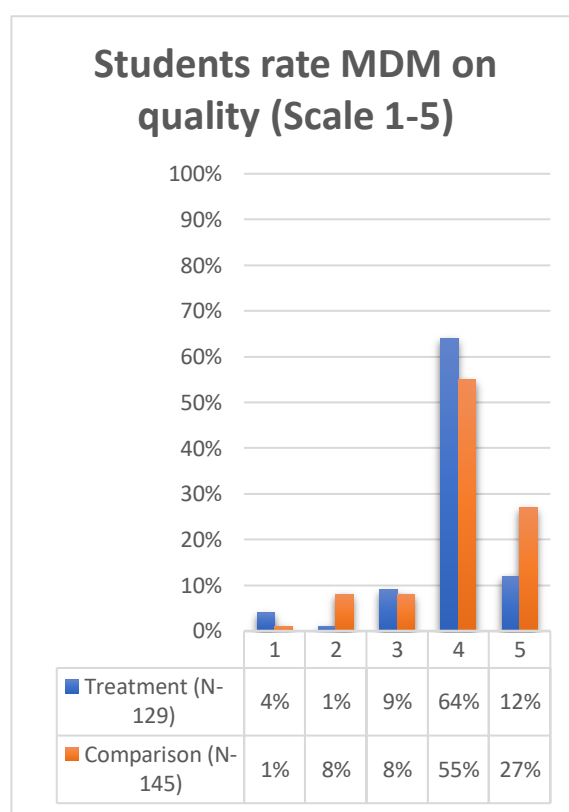
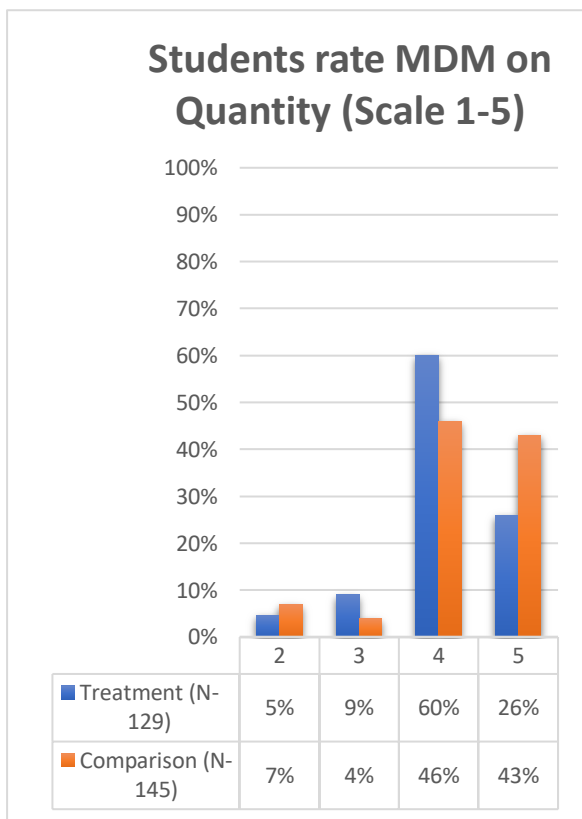


# Findings from the field

The average BMI and MUAC, waist and head circumference were found to be higher for TAPF students. When we compare this data against the benchmarks, we find that more than 70% of the sample did not have a healthy BMI for age.

The table shows the number of anaemic students is higher in Non TAPF. For both the groups, more students in upper primary classes were anaemic.

It was shared that the food helpers serving the MDM meal were given a round of training by TAPF. TAPF also provided them with uniforms, head gears, masks, gloves that are to be worn while handling food.



The table below shows the average ratings (scale 1-5) given by students in TAPF and Non TAPF on its attributes

Attributes	Non TAPF (N-159)	TAPF (N-160)
Taste	3.27	4.01
Quality	4.22	4.10
Punctuality	4.26	4.16
Temperature	4.22	4.18
Quantity	3.19	3.93
Hygiene	3.23	3.93
Freshness	3.25	3.96
Regularity	3.27	4.01
Variations in Menu	3.05	3.91

Overall, the children from the TAPF schools rated their meals higher than the non TAPF schools. The students in TAPF schools have rated MDM provided to them highly on taste, quantity and freshness than the students in non TAPF schools.

# Highlights

State of the art kitchens in an area of about 2000 yards, centralized, steam cooking, RO water plants, separate area for storing, pre preparation, preparation and packing, and cleaning. Various parameters considered for assessment include a kitchen with better storage facilities, cold storage, dustbins, cleaned surrounding and proper waste management etc. Similarly, hygiene levels were also assessed based on parameters like whether the items were washed before use, whether the food handlers were wearing head gears, masks, and gloves while handling food etc. The prepared food is packed in steel drums, the temperature of the food is checked on delivery at school. The TAPF staff conduct regular monitoring of meal distribution at school.

The kitchen to school delivery process of food is well managed. The kitchen ensures that the meals reach the children fresh and hot

The prepared food is packed in steel drums, the temperature of the food is checked on delivery at school.

The parents and headmaster expressed satisfaction with the efficiency and regularity shown by TAPF. Teachers and headmasters from 7 schools pointed out that TAPF had put an effective grievance redressal mechanism in place.



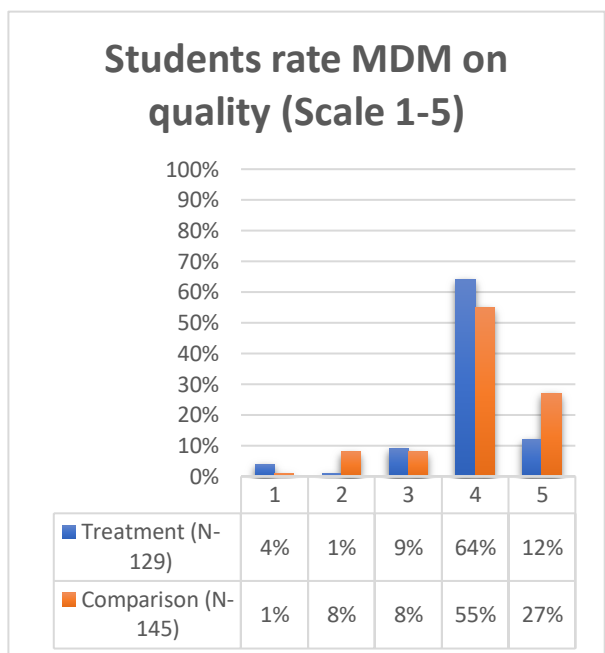
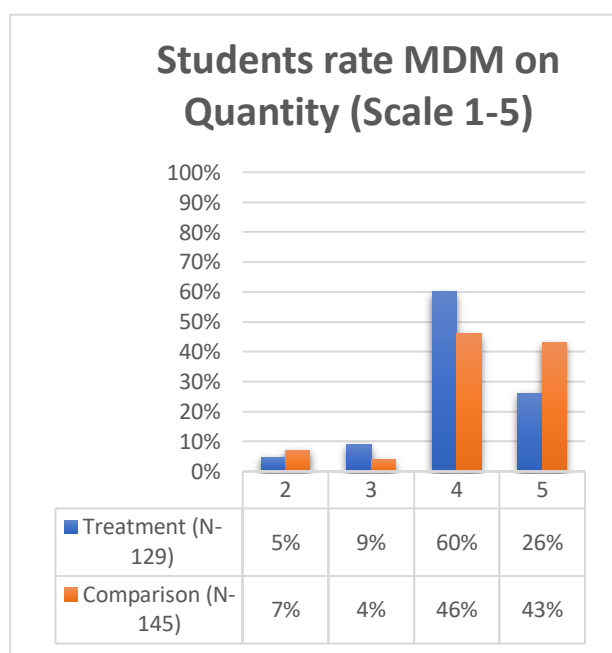
Vizag

# Findings from the field

The health outcomes in Vizag were found to show a considerable improvement in TAPF schools as compared to the non TAPF schools. The average BMI and MUAC, waist and head circumference were found to be higher for treatment students. However, if we compare this with the state data more than 70% of the sample did not have a healthy BMI for age.

We found that the TAPF kitchen in Vizag is comparatively smaller than other kitchens. As space was a constraint, operations like cold storage and waste management are outsourced. The space constraint is visibly challenging for the kitchen staff to maintain quality standards.

It was shared that the food helpers serving the MDM meal were given intense training by TAPF for upkeeping the quality of food. TAPF also provided them with uniforms, head gears, masks, gloves that are to be worn while handling food. The kitchen staff were satisfied with the facilities, but the constraint of space was a major challenge.

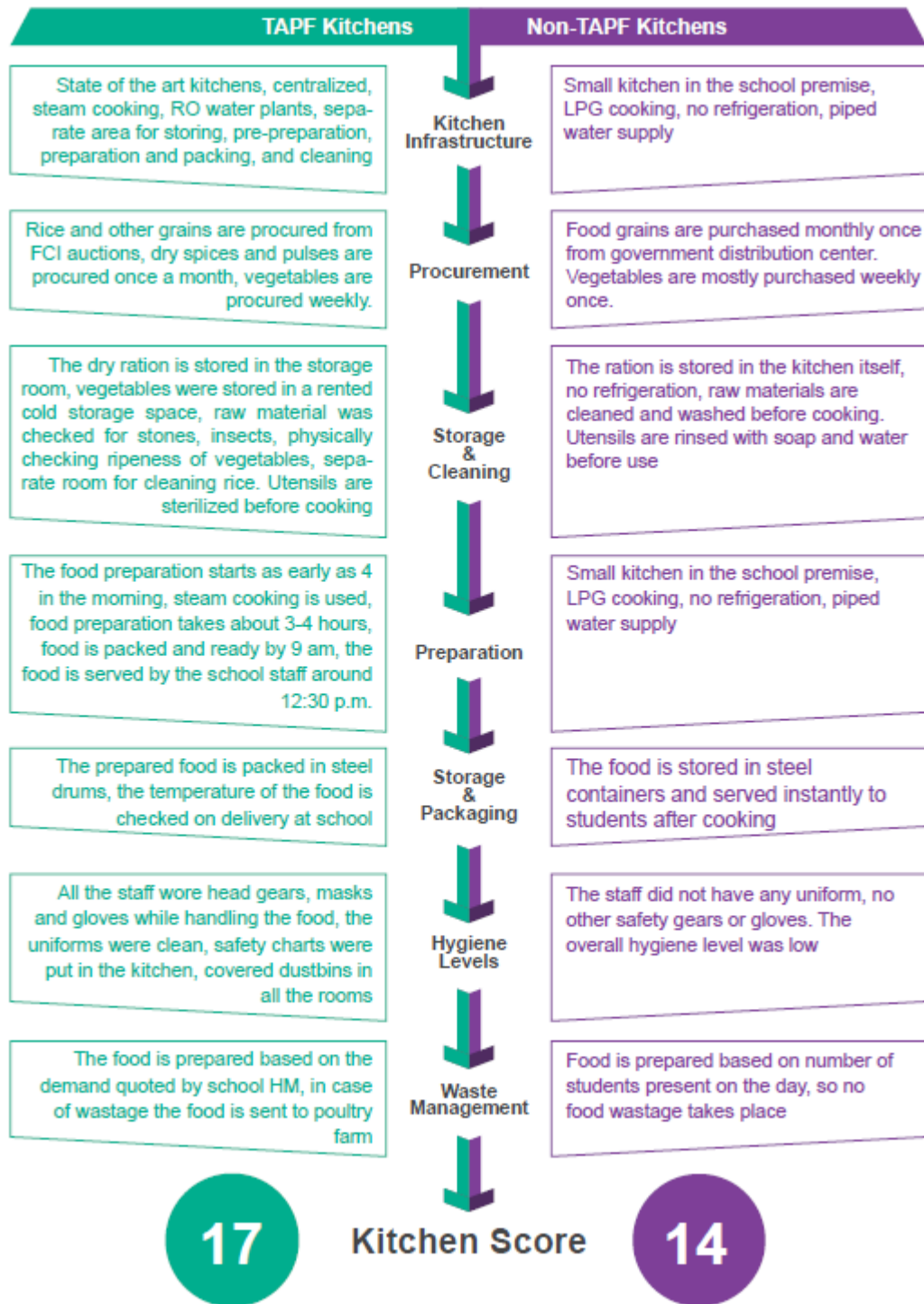


The table below shows the average ratings (scale 1-5) given by students in treatment and comparison on its attributes

<b>Attributes</b>	<b>Comparison (N-170)</b>	<b>Treatment (N-170)</b>
Taste	3.56	2.88
Quality	3.98	3.69
Punctuality	4.59	4.47
Temperature	3.90	3.71
Quantity	3.62	3.09
Hygiene	3.33	2.88
Freshness	3.76	3.24
Regularity	3.98	3.41
Variations in Menu	3.11	2.29

On an average the meals were rated higher in comparison schools. The main reason for the low rating for food in the TAPF schools was the same type of food being served every day. The children reported that the taste of food was similar everyday with the spices and vegetables variety also being the same.

# Highlights



TAPF kitchen outperforms the non-TAPF kitchens on the quality, infrastructure and hygiene parameters. All the stages of food preparation to waste management are conducted by

following defined processes in TAPF central kitchen whereas in non-TAPF, the processes are dependent on the in-charge and do not follow any guidelines. The staff in TAPF kitchens is professional and conducts this work with utmost rigor and routine whereas in non-TAPF kitchen; work is conducted basis human judgement and hence there are variations in kitchen operations.

The kitchen is modern and has adopted eco-friendly measures of cooking, the kitchen has its own bio gas plant. There is also an RO plant and rice fortification set up in the kitchen

Any issues/ grievances raised by parents and headmasters are immediately resolved. The service delivery and monitoring mechanisms are prompt and effective. The delivery staff are prompt and act on the various requests made.

The time gap between the time food reaches the kitchen and the time it is served to the students is of 2-3 hours, the food remains warm however not appealing to the students. The perception of food for students is mostly associated with the taste and temperature of the food. The meals by TAPF reach the schools as early as 9 a.m. and are served to students only during lunch hours by when the meal is not hot anymore hence the students do not enjoy the meal.

Automation of food preparation has a disadvantage that the kitchen cannot bring many variations in the menu. The headmasters also raised their concerns about the meal variety and students not interested in tasting the same food every day.