

Evaluation Study No. 19



MIDDAY MEALS PROGRAMME

An  
Evaluation Study

ISSUED BY  
BUREAU OF STATISTICS & EVALUATION  
GOVERNMENT OF PONDICHERRY

## INTRODUCTION

The Evaluation Report on Midday Meals Programme is the Nineteenth issue in the Evaluation series issued by the Bureau.

In this report an attempt has been made to evaluate whether the Midday Meals Programme has attracted more children of school-going age to school, whether the programme has helped to ward-off caste prejudices and to what extent, the programme has really satisfied the beneficiaries.

In bringing out this report, the co-operation extended by the Directorates of Education and Health and Family Planning is gratefully acknowledged.

It is hoped that this report will be a welcome addition to the Evaluation series of this Bureau.

Pondicherry,  
27-3-1973.

S. MUTHUBASAVAN,  
Director.

## EVALUATION REPORT ON MIDDAY MEALS PROGRAMME

### Introduction :

The concept of midday meals programme came into being on the assumption that parents of school-going age children, generally do not send their children to school because of economic reasons. In other words, parents, especially in rural areas prefer to send their children for odd jobs and thus add to their family income rather than educating them. In order to obviate this handicap it was decided to provide the children studying from I to V Standards with midday meals.

The system of providing midday meals to school children existed even during the French regime but on a small scale. Canteens were then functioning in the following schools (i) Ecole de Filles, Rue Dumas (ii) Ecole de la Rue Surcouf and (iii) Ecole de filles de la Rue des Missions. The expenditure on the scheme was met by a committee of donors called 'Comite de Bienfaisance'.

In the year 1938, the French Government provided regular provisions in the budget towards the expenditure of the school canteens. Since then, canteens were started in Government schools. After merger of Pondicherry with the Indian Union, efforts were taken to provide midday meals to poor children in all Government schools. At present, the scheme covers all children of Standard I to V in all the Government schools.

The scheme was extended to some private schools in November 1960 but was discontinued in February 1970 due to some administrative reasons. The matter is under correspondence with the Government of India for its revival. The extension of midday meals programme to private schools has been implemented by way of grants to the managements of private schools towards reimbursement of the cost of food supplied to the poor students or Rs. 41.25 per head per annum whichever is less, subject to the condition that the Government grant should not exceed 75% of the total cost incurred by the management for the supply of midday meals. The Government of India have stated that, for any scheme of grant-in-aid, the pattern of assistance should be separately approved by the Ministry of Finance. It has been reported that the scheme would be extended again to private schools after obtaining specific orders from the Ministry of Finance.

The number of canteens opened during the First, Second and Third Plan periods and thereafter is furnished in the following table :—

<i>Sl. No. and particulars</i>	<i>Pondicherry</i>	<i>Karaikal</i>	<i>Mahe</i>	<i>Yanam</i>	<i>Total</i>
(1)	(2)	(3)	(4)	(5)	(6)
1. No. of canteens functioning on 1-11-1954 .. .. .	14	5	4	7	30
2. Canteens opened during First Plan ..	6	3	2	—	11
3. Second Plan .. .. .	55	14	—	—	69
4. Third Plan .. .. .	59	35	—	4	98
5. 1966-67 .. .. .	5	3	—	—	8
6. 1967-68 .. .. .	—	—	—	—	—
7. 1968-69 .. .. .	—	—	—	—	—
8. 1969-70 .. .. .	3	7	—	—	10
9. 1970-71 .. .. .	—	—	—	—	—
Total ..	<u>142</u>	<u>67</u>	<u>6</u>	<u>11</u>	<u>226</u>

The number of children fed as on 31-3-1971 are furnished region-wise in the following table :—

<i>Sl. No. and Region</i>	<i>Number of schools</i>	<i>Number of students fed</i>
(1)	(2)	(3)
1. Pondicherry .. .. .	142	29,212
2. Karaikal .. .. .	67	10,160
3. Mahe .. .. .	6	1,182
4. Yanam .. .. .	11	700
Total .. .. .	<u>226</u>	<u>41,254</u>

The budget provision and actual expenditure under the scheme for the years 1966-67 to 1970-71 under Plan and Non-Plan is shown in the table below :—

<i>Sl. No. and Year</i>	<i>Plan</i>		<i>Non-plan</i>	
	<i>Provision</i>	<i>Actuals</i>	<i>Provision</i>	<i>Actuals</i>
(1)	(2)	(3)	(4)	(5)
	Rs.	Rs.	Rs.	Rs.
1. 1966-67 ..	58,400	53,814	7,10,000	6,25,171
2. 1967-68 ..	1,51,000	1,50,828	7,76,600	7,72,473
3. 1968-69 ..	1,75,000	1,52,335	8,50,000	8,18,750
4. 1969-70 ..	50,000	38,631	7,00,000	5,91,386
5. 1970-71 ..	56,000	56,000	7,57,700	7,50,578

#### Criteria for selection of schools for providing midday meals :

The following principles are observed while opening a new canteen centre :—

- (i) The feeding strength should be more than 50 students on its roll so as to run the canteen economically.

- (ii) Schools manned by single teachers will not be considered for opening new canteens as the maintenance of canteens requires proper supervision that involves clerical work, besides sparing time for procuring provision etc. The only teacher manning the single teacher school cannot pay much attention to academic side when he is burdened with maintenance etc.
- (iii) Pucca building should be available in the school to ensure the safety of utensils and provisions.

#### **Procurement of articles :**

Rice is supplied by the Civil Supplies Department at controlled rates to Pondicherry, Karaikal and Mahe regions on prepayment of cost.

In Pondicherry, utensils and grocery items such as chillies, coriander, cummin, turmeric etc., are purchased directly by the Directorate of Public Instruction by inviting tenders. Grinding the groceries is also effected by inviting tenders.

In Karaikal and Mahe regions, the District Educational Officer, Karaikal and the Gazetted Headmaster, Mahe, with the approval of the Directorate of Public Instruction, invite tenders for utensils and grocery items etc.

In all the above regions, if the rates of the private firms are not advantageous to Government, the purchase is made from the Co-operative Stores at the prevailing market rates.

In so far as Yanam region is concerned, cooked food is supplied to the school children on contract basis as the system of running canteen in the school itself by Government is felt very uneconomical. For the supply of cooked food also, tenders are invited by the Delegate to Directorate of Public Instruction, Yanam and the lowest tenders are approved by the Government.

#### **Menu :**

Midday meals are served on all the working days, except Thursdays which are half working days.

In Pondicherry and Karaikal, the CARE food is supplied for three days and rice food for two days in a week. The rice and CARE food are supplied on alternate days. The following are the food items provided under this programme :—



CARE feeding .. (1) Wheat with C.S.M. Sambar.

(2) C.S.M. Uppuma, Pongal, Vadai, Bajji etc.  
prepared from C.S.M. Powder.

RICE feeding .. Rice with sambar and vegetable porials.

### Objectives of the study :

The principal objectives of this evaluation study are to find out :

1. whether the midday meals programme has attracted more children of school-going age to school,
2. whether the programme has aided to shed caste prejudices,
3. the extent of satisfaction of the programme as revealed by the beneficiaries.

### Method of study :

The list of schools in which midday meals are served was obtained from the Directorate of Public Instruction, Pondicherry. Five schools were selected in Pondicherry region, and in each school, 15 beneficiaries and five non-beneficiaries were contacted. Three questionnaires were evolved for field study, one for the beneficiaries, another for the non-beneficiaries and the third for collecting particulars of strength of school, percentage of attendance and percentage of pass etc., from school head-masters.

### Finding of the study

#### PART I

#### *Family size of the beneficiaries :*

The size of family may, perhaps, be one of the important factors underlying the midday meals programme as may be corroborated by the table below :—

<i>Size of Family Beneficiaries</i>					
<i>Sl. No. and Number of family members</i>			<i>Number of beneficiaries</i>		<i>Percentage</i>
(1)			(2)		(3)
1. One	..	..	—		—
2. Two	..	..	—		—
3. Three	..	..	4		5.33

(1)	(2)	(3)	(4)
4. Four	.. .. .	7	9.33
5. Five	.. .. .	12	16.00
6. Above five	.. .. .	52	69.34
	Total ..	75	100.00

69.34% of the families of the selected beneficiaries have more than five members while 16.00% have five members in the family. In other words, 85.34% of the families of the beneficiaries are quite large.

*Occupation of the head of household of beneficiaries :*

The occupation of the head of household of the selected students has been analysed in the following table :—

*Occupation of parents*

<i>Sl. No. and Occupation</i>	<i>Number of beneficiaries</i>	<i>Percentage</i>
(1)	(2)	(3)
1. Agriculturists .. .. .	7	9.35
2. Agricultural labourers .. .. .	15	20.00
3. Government servants .. .. .	8	10.66
4. Petty shop owner .. .. .	2	2.66
5. Weaver .. .. .	2	2.66
6. Cooli .. .. .	4	5.34
7. Tapper .. .. .	2	2.66
8. Fishermen .. .. .	3	3.99
9. Tailor .. .. .	2	2.66
10. Coir-making .. .. .	1	1.34



(1)	(2)	(3)	(4)
11.	Dhoby .. .. .	3	3.99
12.	Driver .. .. .	1	1.34
13.	Mill worker .. .. .	8	10.66
14.	Contractor .. .. .	1	1.34
15.	Merchant .. .. .	5	6.67
16.	Mason .. .. .	4	5.34
17.	Milk vendor .. .. .	2	2.66
18.	Domestic work .. .. .	2	2.66
19.	Karnam .. .. .	1	1.34
20.	Sweet stall owner .. .. .	1	1.34
21.	No job .. .. .	1	1.34
	Total ..	75	100.00

Agriculturists and agricultural labourers constitute 29.35% while Government servants and mill workers form 21.32%. However, insofar as occupation is concerned, almost all categories of occupation in the rural area are reflected in the table.

*Monthly income of head of household of the beneficiaries :*

Perhaps, the important criterion for taking midday meals may be the income factor of the head of household of the beneficiaries.

*Monthly income of parents*

Sl. No. and Income Group (in rupees per month)	Number of beneficiaries	Percentage
(1)	(2)	(3)
1. 50 and below .. .. .	5	6.67
2. 51 to 75 .. .. .	17	22.67
3. 76 to 100 .. .. .	21	27.99

(1)	(2)	(3)	(4)
4.	101 to 125 .. .. .	8	10.67
5.	126 to 150 .. .. .	14	18.67
6.	151 to 200 .. .. .	7	9.34
7.	201 and above .. .. .	3	3.99
	Total ..	75	100.00

Only 3.99% of the head of household of the sample beneficiaries earn Rs. 201 and above per month.

*Caste of beneficiaries :*

In order to ascertain whether the midday meals programme has played any significant role in shedding caste prejudices, information on the caste particulars of the selected beneficiaries has been collected and summarised below :—

				<i>Caste</i>	
<i>Sl. No. and Caste</i>				<i>Number of beneficiaries</i>	<i>Percentage</i>
(1)				(2)	(2)
1.	Gramani .. .. .	4	5.34		
2.	Vanniyar .. .. .	38	50.67		
3.	Dhoby .. .. .	2	2.66		
4.	Fishermen .. .. .	5	6.67		
5.	Harijan .. .. .	8	10.67		
6.	Udayar .. .. .	1	1.34		
7.	Yadaval .. .. .	4	5.33		
8.	Christian .. .. .	4	5.33		

(1)	(2)	(3)	(4)
9. Pillai	.. .. .	2	2.66
10. Muslim	.. .. .	1	1.34
11. Kanakkapillai	.. .. .	3	3.99
12. Vellala	.. .. .	2	2.66
13. Naidu	.. .. .	1	1.34
14. Mudaliar	.. .. .	—	—
15. Chettiar	.. .. .	—	—
16. Brahmin	.. .. .	—	—
17. Reddiar	.. .. .	—	—
Total ..		75	100.00

As many as 50.67% of the beneficiaries belong to Vanniars. While, there are participants belonging to the various castes, none of the selected beneficiaries belongs to Mudaliar, Chettiar, Brahmin and Reddiar castes. The abovementioned categories are regarded as forward castes and hence their voluntary exclusion is a significant indicator of rural thinking on the programme. With a view to get this opinion confirmed, a further analysis of students taking midday meals in the sample schools has been attempted. In the table below, the strength of students according to caste in the sample schools is furnished.

*Percentage of students taking midday meals in the sample schools according to castes*

Sl. No. and caste	Total number of students in the first five standards	Number of students fed	Percentage of students fed
(1)	(2)	(3)	(4)
1. Naidu .. .. .	59	29	49.15
2. Chettiar .. .. .	23	8	34.78
3. Pillai, Kanakkapillai and Vellala .. .. .	132	95	71.97
4. Reddiar .. .. .	17	3	17.65
5. Udayar .. .. .	14	10	71.43

(1)	(2)	(3)	(4)
6. Harijan .. ..	81	75	92.59
7. Brahmin .. ..	15	3	20.00
8. Gramani .. ..	64	48	75.00
9. Nadar .. ..	1	1	100.00
10. Mason .. ..	1	1	100.00
11. Cavundar .. ..	377	310	82.23
12. Dhobi .. ..	8	4	50.00
13. Blacksmiths .. ..	3	1	33.33
14. Pathar .. ..	2	2	100.00
15. Asari .. ..	6	4	66.66
16. Kuyavar .. ..	1	1	100.00
17. Yadaval .. ..	20	20	100.00
18. Navidar .. ..	2	2	100.00
19. Muslim .. ..	3	3	100.00
20. Valluvar .. ..	4	4	100.00
21. Christian .. ..	14	8	57.14
22. Pattanavar (Fishermen) ..	77	75	97.40
23. Vadugar .. ..	1	1	100.00
24. Devar .. ..	5	5	100.00
Total ..	930	713	76.66

While the participation by the various caste students in the programme is about 76.00%, the percentage is as low as 17.65 in the case of Reddiar community and 20.00% for Brahmin student. The voluntary abstention of these castes from participation is an important indicator of the still prevalent caste complex.

*Views of the parents of beneficiaries on Midday Meals Programme :*

The parents of the beneficiaries were questioned on the general aspects of the midday meals programme. Their views are recorded in the following table :—

<i>Sl. No. and nature of survey</i>	<i>Number of beneficiaries reporting</i>			
	<i>Yes</i>	<i>No</i>	<i>No views</i>	<i>Total</i>
(1)	(2)	(3)	(4)	(5)
1. Whether the parents will send children to school if midday meals is discontinued .. .. .	65	5	5	75
2. Whether the menu served is good .. .. .	43	25	7	75
3. Whether wheat food served is good .. .. .	6	62	7	75
4. Whether rice food served is good .. .. .	55	13	7	75
5. Whether the preparation of food is good .. .. .	34	34	7	75
6. Whether drinking water served is clean .. .. .	55	13	7	75
7. Whether there is adequate dining facility .. .. .	—	68	7	75

Strangely 86.66% of the parents have stated that they would continue to send their children to school even if midday meals were to be stopped. Only 57.33% have remarked that the menu served in midday meals is good. 82.67% have opined that the wheat food is not good, while 73.33% have reported favourably about rice food. As regards preparation, only 45.33% have reported favourably. As much as 90.66% have regretted that the dining facilities are not good.

*Reasons for non-participation of non-beneficiaries :*

As stated at the outset, twenty non-beneficiaries were contacted to ascertain the reasons for non-participation in the programme. 8 of the non-beneficiaries have remarked that the wheat food supplied is not suitable to their health while 3 have stated that the food served is not clean and good. Only 9 of them have stated that they are able to feed their children themselves. The respective percentage is 40, 15 and 45.

## PART II

This part deals with the strength of students, percentage of passes and average attendance before and after introduction of midday meals and percentage of students taking midday meals.

In the table below, the strength of students in the sample schools before and after introduction of midday meals is furnished :—



*Strength of students in the sample schools before and after introduction of midday meals*

<i>Sl. No. and name of School</i>				<i>Strength of Students in I to V Standards</i>					
				<i>Before introduction of midday meals</i>			<i>After introduction of midday meals (1970-71)</i>		
				<i>Boys</i>	<i>Girls</i>	<i>Total</i>	<i>Boys</i>	<i>Girls</i>	<i>Total</i>
(1)	(2)	(3)	(4)	(5)	(6)	(7)			
1. Government Girls' Primary School, Villianur .. .. .	—	212	212	—	336	336			
2. Government Boys' Primary School, Madagadipet .. .. .	N.A.	N.A.	N.A.	69	26	95			
3. Government Boys' Primary School, Kattukuppam .. .. .	41	17	58	48	21	69			
4. Government Boys' Primary School, Ellapillachavadi .. .. .	103	66	169	131	86	217			
5. Government Boys' Primary School, Solaithandavankuppam .. .. .	79	50	129	138	75	213			
Total ..	223	345	568	386	544	930			

N.A.—Not available.

The table reveals that the increase in the average strength of students is 63.73%. In the case of girls the increase is 57.68% and in the case of boys the increase is 73.09%.

*Percentage of students taking midday meals :*

As a matter of fact, the number of students taking midday meals out of the total strength of the students will be the true indicator of the volume of participation of the programme. The above data have been collected and given in the table below :—

*Number of students taking midday meals in the sample schools during 1971-72*

<i>Sl. No. and name of school</i>	<i>Total students in the 5 standards</i>			<i>Number of students taking midday meals</i>		
	<i>Boys</i>	<i>Girls</i>	<i>Total</i>	<i>Boys</i>	<i>Girls</i>	<i>Total</i>
	(2)	(3)	(4)	(5)	(6)	(7)
1. Government Girls' Primary School, Villianur .. .. .	—	336	336	—	161	161
2. Government Primary School, Madagadipet .. .. .	69	26	95	60	18	78
3. Government Primary School, Kattukuppam .. .. .	48	21	69	48	19	67
4. Government Primary School, Ellapillaichavadi .. .. .	131	86	217	130	85	215
5. Government Primary School, Solaihandavankuppam.. .. .	138	75	213	127	65	192
Total ..	386	544	930	365	348	713

The overall percentage of students taking midday meals is 76.66% while the percentage of boys taking midday meals is 94.55% that for girls in only 63.97%.

*Average attendance in sample schools :*

It is found that, consequent on the introduction of midday meals, attendance in schools has slightly increased. The average attendance in the selected schools before and after introduction of midday meals are furnished in the following table :—

*Average attendance in sample schools*

<i>Sl. No. and name of schools</i>	<i>Average attendance in all the 5 standards</i>	
	<i>Before introduction of midday meals</i>	<i>After introduction of midday meals</i>
	(2)	(3)
1. Government Girls' Primary School, Villianur .. .. .	N.A.	84.37
2. Government Primary School, Madagadipet .. .. .	N.A.	89.31
3. Government Primary School, Kattukuppam .. .. .	88.57	88.18
4. Government Primary School, Ellapillaichavadi .. .. .	70.68	84.03
5. Government Primary School, Solaithandavankuppam .. .. .	83.85	85.45

*Percentage of passes before and after introduction of midday meals :*

Yet another point whether the midday meals programme has contributed to the increase in number of passes has been analysed. In the table below, the percentage of passes in the sample schools before and after introduction of midday meals as found in the records of the sample schools is reproduced below :—



<i>Sl. No. and name of school</i>	<i>Before introduction of midday meals</i>		<i>After introduction of midday meals (1970-71)</i>	
	<i>Students appeared</i>	<i>Students passed</i>	<i>Students appeared</i>	<i>Students passed</i>
(1)	(2)	(3)	(4)	(5)
1. Government Girls' Primary School, Villianur ..	N.A.	N.A.	279	239
2. Government Boys' Primary School, Madagadipet ..	90	62	89	75
3. Government Boys' Primary School, Kattukuppam ..	50	26	58	41
4. Government Boys' Primary School, Ellapillaichavadi.	169	130	223	174
5. Government Boys' Primary School, Solaithandavan- kuppam .. .. .	138	118	159	112
Total ..	447	336 (75.16)	808	641 (72.84)

Though, it is seen from the above table that there has been actually decline in the percentage of passes after introduction of midday meals, it cannot be concluded that the midday meals has had any visible impact of the percentage of passes in the selected schools.

### Summary of findings

1. 85.34% of the beneficiaries' families have five members and more.
2. 29.35% of the heads of households are agriculturists and agricultural coolies while 21.32% are either Government servants or mill workers. However, it is note worthy that almost all categories of occupation are enjoying the benefit of midday meals.
3. 57.33% of the heads of families covered under the survey earn Rs. 100 and less per month. Only 3.99% of the heads of households have an income of Rs. 201 and above.
4. The predominant caste that partakes in the midday meals programme is Vanniars with a percentage of 50.67. The next important category is Harijans, the percentage being 10.67. However, a finding of significance is the non-participation of students belonging to Mudaliar, Chettiar, Brahmin and Reddiar Castes in the selected schools. The voluntary abstention of these forward castes from participation is an important pointer to the still prevalent notion on caste prejudices. In other words, the midday meals programme has not helped to shed caste prejudices to any significant extent.
5. Another important finding is that 86.67% of the parents have stated that they will continue to send their children to schools, even if midday meals were to be discontinued. Such an attitude reflects the strong opinion on the conviction of the parents on the importance of educating their children.
6. 57.33% of the parents of beneficiaries have stated favourably about the menu in general. However, 82.67% have remarked that wheat food is not relished by their children, while 73.33% are satisfied about the supply of rice food to their children. Only 45.33% have agreed that the preparation is good.
7. 90.66% have regretted that the dining facilities are very poor and need improvement.
8. 40% of the non-beneficiaries have stated that the meals served under the programme are not suitable from the health point of view.

9. There has been an over-all increase in the strength of students in the sample schools after introduction of midday meals, the percentage increase being 63.73%. It will, however, be illusory to attribute this increase to the introduction of midday meals alone.

10. The percentage of students taking midday meals in the sample schools during 1971-72 is 76.66% which means that 23.34% are staying away from midday meals.

11. There is a slight decline in the percentage of passes in the sample schools after introduction of midday meals. However, as pointed out earlier, this decline may have no correlation to the midday meals scheme. There is, however, slight increase in the attendance in the sample schools after introduction of midday meals.

#### **General findings :**

1. It has been observed during the survey that the kitchens are not maintained clean. In most of the selected schools, cooking is done in open air and hence the exposure to dust etc. is very great. This is a bad state of affairs and the contamination of food will defeat the basic objective of the entire programme. Urgent steps should be taken to see that cooking is done in a hygienic atmosphere.

2. While regular inspection from the CARE organisation is reported, no proper inspection seems to have been exercised by the Directorate of Public Instruction, in respect of food supplied under midday meals programme.

#### **Recommendation :**

1. The feasibility of opening a central kitchen in each commune headquarters may be examined. The food prepared may be transported to schools in the respective commune at the appointed hour daily. This system will eventually ease the unnecessary burden of headmasters in the implementation of this scheme at the cost of regular duties.

2. The municipalities may be asked to provide space for central kitchen and necessary transport facilities. A sense of participation by municipalities in this important scheme should be inculcated.

#### **Note on the Nutrient content of the Midday Meal Sample**

For the purpose of assessing the nutritional value of the menu of the midday meals, samples of (1) Bulgar wheat, (2) Rice, (3) C.S.M. powder and (4) Salad oil, were obtained from the District Educational Officer, Pondicherry and were tested at the Public Health Laboratory, Pondicherry. The result is furnished below :—

<i>Nature of constituent</i>						<i>Bulgar wheat</i>	<i>Rice</i>	<i>C.S.M. food</i>	<i>Salad oil</i>	<i>Remarks</i>
Moisture	..	..	..	..	%	9.2	11.4	8.7	0.2	
Fat	..	..	..	..	%	1.7	0.9	5.3	99.7	
Protein	..	..	..	..	%	10.3	6.7	18.6	—	
Mineral Matter	..	..	..	..	%	1.3	0.5	3.9	0.1	
Crude fibre	..	..	..	..	%	1.6	0.4	1.2	—	
Carbohydrate	..	..	..	..	%	75.6	80.1	62.3	—	
Average Calorific value of 100 grams	..	..	..	..		342	336	359	927	



The calorific value of the midday meals menu provided to the students as per the menu chart furnished is evaluated hereunder :—

<i>Sl. No. and name of the article</i>	<i>Quantity per day per child</i>	<i>Calorific value</i>	<i>Number of days</i>	<i>Net Calorific value</i>	<i>Average Calorific value per day per student</i>
1. Bulgar Wheat .. .. .	100 gms.	342	3	1,026	} 525 calories.
2. C.S.M. Powder .. .. .	30 gms.	107.7	3	323	
3. Salad oil .. .. .	8 gms.	74.2	3	223	
4. Rice .. .. .	165 gms.	554.4	2	1,226	} 610 calories.
5. Vegetables .. .. .	(Details not furnished Approximate).	50.0	—	100	

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*Results :* The average calorific value of the midday meal of a single student per day on days with wheat and C.S.M. Food .. .. .

525 calories.

The average calorific value of the midday meal of a single student on rice feeding day..

610 calories.

A further analysis has been made based on the above findings. In this analysis, the extent of nutrition supply of the midday meals to each student per day has been pointed out.

In the table below, the required nutritional value per student per day is furnished :—

Sl. No. and Age-group	Nutrient content			
	Protein (Grams.)	Calcium (Mg.)	Iron (Mg.)	Calories
1. 5—6 ..	45	800	10	1,200
2. 7—8 ..	50	900	12	1,400
3. 9—10 ..	60	1,000	12	1,700

In the following table the approximate nutrient content per meal of the different types of midday meal is furnished :—

Sl. No. and nature of diet	Nutrient content			
	Protein (Grams)	Calcium (Mg.)	Iron (Mg.)	Calories
1. Diet consisting of Bulgar wheat, C.S.M. Powder and Salad oil* .. .. .	16	41	5	525
2. Rice 165 grams and vegetables .. ..	11	16	7	610
3. Rice 200 grams and vegetables .. ..	13	18	8	672

\* Data for C.S.M. Powder and Salad Oil are not available.

The adequacy/inadequacy of the midday meals with reference to the nutrient content is indicated in the following three tables. It is pointed out that the lunch is expected to provide one third of the total nutrient content required per day.



### Adequacy/Inadequacy of Nutrient Content

#### I. Diet consisting of Bulgar wheat, C.S.M. Powder and Salad oil

Sl. No. and Age-group	Protein	Calcium	Iron	Calories
1. 5—6 .. .. .	Adequate	Not adequate.	Adequate	Adequate.
2. 7—8 .. .. .	Not adequate.	Not adequate.	Adequate	Adequate.
3. 9—10 .. .. .	Not adequate.	Not adequate.	Adequate	Not adequate.

### Adequacy/Inadequacy of Nutrient Content

#### II. Diet consisting of Raw Rice (165 grams) and vegetables

Sl. No. and Age-group	Protein	Calcium	Iron	Calories
1. 5—6 .. .. .	Not adequate.	Not adequate.	Adequate	Adequate.
2. 7—8 .. .. .	Not adequate.	Not adequate.	Adequate	Adequate.
3. 9—10 .. .. .	Not adequate.	Not adequate.	Adequate	Adequate.

### Adequacy/Inadequacy of Nutrient Content

#### III. Diet consisting of Raw Rice (200 grams) and vegetables

Sl. No. and Age-group	Protein	Calcium	Iron	Calories
1. 5—6 .. .. .	Not adequate.	Not adequate.	Adequate	Adequate.
2. 7—8 .. .. .	Not adequate.	Not adequate.	Adequate	Adequate.
3. 9—10 .. .. .	Not adequate.	Not adequate.	Adequate	Adequate.

It will be noticed from the above three tables that protein and calcium are in-adequate in all the three categories of food served except in the case of the age-group 5-6 of the diet consisting of Bulgar wheat, C.S.M. Powder and Salad oil in which protein alone is sufficient. In respect of age-group 9-10, calorific value is also not sufficient. However, iron and calorific values are adequate in respect of all the categories of food for all the age-groups, save the exception pointed out.

### Results of medical check-up

As a necessary part of the evaluation study, medical check-up of the sample students was carried out in order to find out whether the students participating in midday meals programme were free from deficiency diseases and whether they are normal with regard to nutritional health status. In other words, the object of the medical check-up was to assess the impact of the midday meals on the health of the selected students. For this purpose the services of a medical officer from the Directorate of Health and Family Planning Services, Pondicherry were requisitioned. A suitable proforma was also designed in this connection. Medical check-up was carried out on the 50 students taking midday meals and 16 students not taking midday meals in the selected schools.

#### Sample students taking midday meals according to deficiencies :

In the table below the number of sample students taking midday meals according to the deficiencies detected is furnished :—

*Number of sample students taking midday meals according to deficiencies*

<i>Sl. No. and nature of deficiency</i>	<i>Number of students</i>	<i>Percentage</i>
(1)	(2)	(3)
1. Vitamin-A .. .. .	—	—
2. B Complex .. .. .	—	—
3. Calcium .. .. .	—	—
4. Caries .. .. .	—	—
5. Iron .. .. .	1	1.69
6. Helmenthiasis .. .. .	—	—
7. More than one of the above ..	31	52.54
8. No deficiency .. .. .	27	45.77
Total ..	59	100.00

A perusal of the above table reveals that 54.23% of the sample students are affected with deficiency diseases. In other words, only 45.77% of the students participating in the midday meals programme are free from deficiency diseases. The common deficiencies noted are Vitamin A, B Complex, Calcium, Caries, and Iron and Helmenthiasis. The most significant finding is that, irrespective of the nature of deficiency, it is important to note that the majority of those participating in the programme do possess deficiency diseases.

### Nutritional Health status of the participants :

In the following table, the nutritional health status of the sample students participating in the midday meals programme are indicated.

#### *Nutritional Health of Participants*

<i>Sl. No. and details</i>	<i>Number of sample students</i>	<i>Calories</i>
(1)	(2)	(3)
1. Normal .. .. .	37	62.71
2. Below normal .. .. .	22	37.29
Total ..	59	100.00

It will be evident from the table above that only 62.71% of the sample students taking midday meals are normal with regard to their nutritional status. In other words, 37.29% of them are below normal.

### Sample students not taking midday meals according to deficiencies :

In the table below, the particulars of the sample students not taking midday meals according to deficiencies is indicated.

#### *Number of sample students not taking midday meals according to deficiencies*

<i>Sl. No. and nature of deficiency</i>	<i>Number of students</i>	<i>Percentage</i>
(1)	(2)	(3)
1. Vitamin A .. .. .	—	—
2. B Complex .. .. .	—	—
3. Calcium .. .. .	—	—
4. Caries .. .. .	—	—



(1)	(2)	(3)
5. Iron .. .. .	3	18.75
6. Helmenthiasis .. .. .	—	—
7. More than one of the above .. .. .	5	31.25
8. No deficiency .. .. .	8	50.00
Total .. .. .	16	100.00

This table reveals that exactly 50.00% of those not taking midday meals do possess deficiency diseases. While 18.75% of them have 'Iron' deficiency, 31.25% are having more than one kind of deficiencies such as Vitamin A, B Complex, Calcium, Caries and Helmenthiasis. However, it is important to note that, while the percentage of deficiencies is 54.23% among those who are participating, it is only 50.00% among those students who are not participating.

#### Nutritional Health status of students not participating :

Another important aspect viz. the nutritional health status of the sample students not participating is indicated in the table below :—

#### *Nutritional Health of Non-participants*

<i>Sl. No. and details</i>	<i>Number of sample students</i>	<i>Percentage</i>
(1)	(2)	(3)
1. Normal .. .. .	8	50.00
2. Below normal .. .. .	8	50.00
Total .. .. .	16	100.00

The above table reveals that exactly 50.00% of the sample students not participating in the midday meals programme are normal in so far as nutritional health status is concerned. The percentage is 62.71 in respect of those taking midday meals, as already indicated.

#### Summary of finding :

1. That there has been no significant absence of deficiency diseases among the students who are taking midday meals. The percentage of sample students affected with deficiency diseases is 54.23.

2. Similarly, only 62.71% of those taking midday meals are normal with regard to their nutritional health status.