

**IMPACT OF MID-DAY MEAL PROGRAMME ON
ACADEMIC PERFORMANCE OF STUDENTS: EVIDENCE
FROM FEW UPPER PRIMARY SCHOOLS OF BURDWAN
DISTRICT IN WEST BENGAL**

P.K. Paul*

N. K. Mondal**

Abstract

This paper attempts to analyze the nature and impact of mid-day meal programme on academic achievement of students in some selected upper primary level schools of Burdwan district in West Bengal. The study covers three hundred students (N = 300) both in urban and rural areas encompassing 'Below Poverty Line' (BPL) and 'Above Poverty Line' (APL). The results of Chi-square-test revealed that mid-day meal program has had a significant positive impact in academic achievement of students. A multiple regression model has been used to determine the extent of relationship between mid-day meal programme (via the factors- attendance, enrolment, retention and drop out) and academic achievement of students. Again, students'- t test has been used to examine the assumed hypothesis whether any variation of effect of mid-day meal among economic status of students (i.e., among BPL and APL) or area (i.e., among village and town) and enrolment, attendance, retention or dropout among rural and urban students exists or not.

Key Words: - Education, mid-day meal, multiple regression, below poverty line, economic status

* Research Scholar, Dept. of Environmental Science, The University of Burdwan, Burdwan – 713103, West Bengal, India.

** Associate Professor in Environment Science (Chemistry), Dept. of Environmental Science, The University of Burdwan, Burdwan – 713103, West Bengal, India.

Introduction

The Midday Meal Scheme is the well known name for school meal programme in India which started in the 1960s. It includes provision of lunch free of cost to school-children on all working days. According to current statistics, 42.5% of the children under 5 are underweight (Livemint.com, 2012). This is due to simple reasons such as not using iodized salt. "India is home to the world's largest food insecure population, with more than 200 million people who are hungry," India State Hunger Index (ISHI) said, adding that the country's poor performance is driven by its high levels of child under-nutrition and poor calorie count. It is further noted that "The child malnutrition of India is higher than most countries in Sub-Saharan Africa" (World Bank, 2003). A report released as part of the 2009 Global hunger Index ranks India at 65 out of 84 countries. The 2008 report says that India has more people suffering hunger – a figure above 200 million – than any other country in the world, it says. The report also says "improving child nutrition is of utmost urgency in most Indian states" (UNDP, 1999). So, mid-day meal program (MDP) is a right solution in this respect. The key objectives of the programme are: protecting children from classroom hunger, increasing school enrolment and attendance, improved socialization among children belonging to all castes, addressing malnutrition, and social empowerment through provision of employment to women. The scheme has a long history, especially in the state of Tamil Nadu introduced statewide by the policy makers and later expanded by the Tamil Nadu government in 1982. There after adopted by most of the states in India after a landmark direction by the Supreme Court of India on November 28, 2001. The success of this scheme is illustrated by the tremendous increase in the school participation and enrolment rates in Tamil Nadu (Sengupta, 2012). Various studies have been conducted in India about mid-day meal scheme and students' achievement in schools (Dreze & Goyal, 2003; Dreze & Kingdon, 2001; Khera, 2002; Mondal et al, 2007 etc.). Most of the studies revealed that there exist a positive relationship between mid-day meal program and enrolment and attendance of students in schools including education and health outcomes of students. Though attempts have also been made to examine the impact of mid-day meal on students' academic achievement but no systematic effort has yet been made to look into the role of factors on which impact of mid-day meal is associated in academic achievement with a comprehensive manner. This article tries to investigate the impact of factors allied with mid-day meal scheme in achieving academic

performance of students and its associated linkages to teaching-learning process in Burdwan district in the state of West Bengal.

Objectives

The key objectives of the study are as follows:

- To assess the role of mid-day meal in academic achievement of students.
- To examine the relative effect of mid-day meal among the students belongs to high and low economic status (i.e., APL & BPL).
- To compare the effect of mid-day meal on students residing in urban and rural areas.
- To find out the nature of relationship between mid-day meal programme and selected factors (i.e., enrolment, attendance, retention and drop out of students) associated with academic achievement of students in urban and rural areas.
- To estimate the extent or magnitude of effect of factors associated with MDM programme on academic achievement of students.

Hypothesis

The null hypotheses are the following -

H₀₁: Is there any significant association between mid-day meal program and students' academic performance in school?

H₀₂: There is no significant difference exists between MDP and enrolment of students in urban and rural schools.

H₀₃: There is no significant difference exists between MDP and attendance of students in urban and rural schools.

H₀₄: There is no significant difference exists between MDP and retention of students in urban and rural schools.

H₀₅: There is no significant difference exists between MDP and dropout of students in urban and rural schools.

H₀₆: There is no variation of effect of mid-day meal between BPL and APL students.

H₀₇: There is no variation of effect of mid-day meal on students' living in urban and rural areas.

The alternative hypotheses are –

H₁₁: There is significant association between mid-day meal Program and students' academic performance in school.

H₁₂: Rural students are more benefited than urban students in terms of effect of MDP on enhancement of enrolment of students.

H₁₃: Rural students are more benefited than urban students in terms of effect of MDP on enhancement of attendance of students.

H₁₄: Rural students are more benefited than urban students in terms of effect of MDP on diminishing retention of students.

H₁₅: Rural students are more benefited than urban students in terms of effect of MDP on diminishing drop out of students.

H₁₆: BPL level students have more benefited than the APL level students by mid-day meal program.

H₁₇: Rural students have more benefited than the urban students by mid-day meal program.

Data Source and Methodology

The primary data has been collected during 2010-2011 from 300 students and 150 guardians, teachers and authorities in upper primary level schools both in urban and in rural areas in Burdwan district in West Bengal. A self made structured questionnaire was used by considering different anxiety dimension like economic background, educational background, nature of curriculum and teaching strategy. Chi-square test has been used to examine the relationship

between mid-day meal and academic achievement of students. Again, students' t-test has been used to test the selected hypotheses. The following factors have been selected to analyze the effect of mid-day meal (MDP) programme on academic performance of students.

- Enrolment of students (ES)
- Attendance(A)
- Retention (R)
- Drop out (D)

Again, multiple regression model has been used in order to analyze the effect of the above selected factors on academic achievement of the students.

Results & Discussion

Mid-day Meal Programme and Academic Achievement of Students: A Non-Parametric Analysis

The present study has attempted to make an assessment of perceptions of the guardians of students, teachers and school authorities about the role of mid-day meal program in academic performance of upper primary level school's students in terms of non-parametric 'Chi-square' analysis. The opinions of the respondents collected from the field survey can be expressed in the following table (vide table- 1).

Table No – 1: Opinions of different Respondents selected for the study

Respondents	Yes	Uncertain	No	Total
Guardians	25	10	15	50
Teachers and Authorities	30	10	10	50
Total	55	20	25	150

Source: Field Survey, 2010-11

The calculated value and the observed value of 'Chi-square' are shown in the table below (vide table 2).

Table No - 2: Testing of the Hypotheses

Variables compared	Calculated value (χ^2)	Critical value (5% level)	Critical value (1% level)	Remark
Mid-day Meal program. and student's academic achievement	1.46	P < 0.05	P < 0.01	Significant

Source: Authors' calculation based on field survey, 2010-11

It should be noted (Vide table- 2) that the observed value of Chi-square (χ^2) i.e., 1.46 is less than the critical values both at 5 % and 1 % level of significance, therefore the null hypothesis is accepted. So, we can conclude that there exists no doubt about significant association between mid-day meal program and academic performance of students. This view is similar to the study of Dreze & Goyal (2003) which indicate that there is strong association between mid-day meal program and academic achievement of students.

Mid-day Meal Programme and School's enrolment of Students: Students' t-test Analysis

Table-3: Attitudes of students on school's enrolment in terms of calculated mean, S.D., t values and level of statistical significances

Students	N	Mean	S.D.	't' Value	Significant level	
					5 %	1%
Urban	150	31.48	9.41	2.84	P>0.05	P>0.01
Rural	150	29.47	8.63			

Source: Author's calculation based on field survey, 2010-2011

Total number of observations = 300

The above table (vide table 3) indicates that although there exists little variation regarding mean and S.D. of urban and rural students, but in respect of t-test the calculated value of t (i.e., 2.84) is still larger than the tabulated values both at 5 % and 1% level of significance. Therefore, the rural students have been benefitted more than the urban students in terms of effect of MDP on enrolment taken into consideration all the surveyed upper primary schools in Burdwan district in West Bengal.

Mid-day Meal Programme and Daily School's attendance of Students: Students' t-test Analysis

Table- 4: Attitudes of students on daily school's attendance in terms of calculated mean, S.D., t values and level of statistical significances

Students	N	Mean	S.D.	't' Value	Significant level	
					5 %	1%

Urban	150	33.26	11.23	2.91	P>0.05	P>0.01
Rural	150	31.21	9.48			

Source: Author's calculation based on field survey, 2010-2011

Total number of observations = 300

The above table (vide table 4) indicate that although there exists little variation regarding mean and S.D. of urban and rural girls, but in respect of t test the calculated value of t (i.e., 2.91) is still larger than the tabulated value at 5 % and 1% level of significance. Therefore, the incremental benefit of mid-day meal scheme in terms of daily attendance is more in case of rural students than urban students of the surveyed upper primary schools in Burdwan district in West Bengal. This findings is consistent with the study of Mondal et al (2007) in West Bengal.

Mid-day Meal Programme and Retention of Students: Students' t-test Analysis

The students at every stage of education are expected to pass the examination after finishing the whole course. But it has been found that in general practice many students are not able to pass the examinations in one class or in more than one class within the prescribed period. Thus, they fail and remain in the same class. These failed students repeat the same class and course whereas their other colleagues pass that class and study in the next upper class. This process has been called the process of retention. Thus by retention or stagnation it is meant the stay of students in a particular class for more than one year on account of his unsatisfactory progress. According to the Hartog Committee reports, "By stagnation we mean the retention in a lower class of a child for a period of more than one year. Of course stagnation always means wastage". Let us now examine the effect of MDM program on stagnation or retention of students in the same class for more than one year.

Table-5: Attitudes of students on retention in class in terms of calculated mean, S.D., t values and level of statistical significances

Students	N	Mean	S.D.	't' Value	Significant level	
					5 %	1%
Urban	150	30.59	7.28	2.74	P>0.05	P>0.01
Rural	150	29.18	6.52			

Source: Author's calculation based on field survey, 2010-2011

Total number of observations = 300

The above table (vide table 5) indicate that there is no significant difference of average values of retention i.e., mean and S.D. of urban and rural students, but in respect of t test the calculated value of t (i.e., 2.74) is still larger than the tabulated value at 5 % and 1% level of significance. Therefore, the urban students have less benefitted than rural students in terms of diminishing retention in the studied schools of Burdwan district in West Bengal.

Mid-day Meal Programme and Drop out of Students: Students' t-test Analysis

Drop out plays a crucial role in hampering the whole education system in India. It actually indicates wastage in time, money and effort in learner and country as a whole. While clarifying the meaning of the word in education Hartog Committee remarked the following: "By wastage we mean premature withdrawal of children from schools at any stage before completion of the primary courses". This statement does not mean there is no wastage in the Secondary Course and Higher Course. Any student, who receives education at any stage, is expected to complete his education with the prescribed period. If one withdraws from the course before completion, then that individual or individuals are deemed to be wastage to the course. MDM program has an important role to play in reducing the drop out rate in the school. The following table (vide table 6) explains the attitude of students on drop out as beneficiaries of MDM program.

Table-6: Attitudes of students on drop out from school in terms of calculated mean, S.D., t values and level of statistical significances

Students	N	Mean	S.D.	t' Value	Significant level	
					5 %	1%
Urban	150	31.25	8.26	2.78	P>0.05	P>0.01
Rural	150	29.19	7.12			

Source: Author's calculation based on field survey, 2010-2011

Total number of observations = 300

Table 6 depicts the calculated values of mean, S.D. and t-values of drop out of urban and rural students. This means that although there exists little variation regarding mean and S.D. of urban and rural girls, but in respect of t value (i.e., 2.78), the estimated value is larger than the tabular values both at 5 % and 1% level of significance. Therefore, there is no doubt to say that rural students is benefited more in case of diminishing drop out by MDM, taken into consideration all the surveyed schools in Burdwan district in West Bengal.

Mid-day Meal Programme and Attitude of Urban and Rural Students: Students' t-test Analysis

Table-7: Attitudes of urban students and rural students regarding effect of MDP on academic achievement in terms of calculated mean, S.D., t values and level of statistical significances

Students					

	N	Mean	S.D.	't' Value	Significant level	
					5 %	1%
Urban	150	32.18	9.13	2.96	P> 0.05	P> 0.01
Rural	150	30.42	8.27			

Source: Author's calculation based on field survey, 2010-2011

Total number of observations = 300

It is evident from table-7 that the calculated value of t (i.e., 2.96) is greater than the tabulated values at 5 % and 1 % level of significance. Therefore the alternative hypothesis is accepted indicating that MDM program is more beneficial in academic level of rural students than urban students since it leads to more enrolment, attendance and less retention and drop out as compared to urban students. A good example is provided here (vide Box 1).

Box: 1

Mid-day Meal: 'A Friend in Need'

Mohan lives in a remote village at Kulti in Burdwan district. Majority of their land was sterile. His father was a daily wage labourer. One day he passed away due to an acute illness. This incident came to Mohan's life as a bolt from the blue. There was no option in front of his mother to go to the town for searching a job with her only thirteen years son, Mohan for the sustenance of her family. But the members of a school gave her a new hope to work as a cook in the mid-day meal program. So mohan's mother has to go out for work in the early in the morning. Her only son is now going to school almost in empty stomach. Now, mid-day meal program acts to

remove hunger and attentive in classroom lessons.

Mid-day Meal Programme and Attitude of APL & BPL level Students: Students' t-test Analysis

Table-8: Attitudes of APL and BPL level students regarding effect of MDP on academic achievement in terms of calculated mean, S.D., t values and level of statistical significances

Students	N	Mean	S.D.	't' Value	Significant level	
					5 %	1%
APL	90	29.41	7.15	2.72	P> 0.05	P> 0.01
BPL	210	27.52	5.36			

Source: Author's calculation based on field survey, 2010-2011

Total number of observations = 300

The above table (vide table 8) indicates that the calculated value of t (i.e., 2.72) is still larger than the tabulated value at 5 % and 1% level of significance. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, it can be concluded that BPL level students are more benefited than the APL level students due to mid-day meal program in the studied upper primary schools in Burdwan district in West Bengal. This happens because hungry acts as a constraint to learning. Moreover, many children reach school on an empty stomach in the morning, either because they are not hungry at that time or because their parents are too busy to arrange an early breakfast, as they are just poor (Sengupta, 2012). During field survey, we observed that the children started with their blink eyes at the time of mid-day meal operation. Here is an vivid example of it (vide Box 2).

Box: 2

Mid-day Meal: 'The Great Escape'

12 years old Akash coming from a poor tribal family who is enrolled in class six, says the mid-day meal program makes him happy. His mother works a 12 hour shift in a nursing home nearby, while his 10 years old sister looks after the house. The cooked meal is a great help for Akash and his sister and mother also since it feeds and reduces the work they have to do.

Mid-day Meal Programme and Academic Achievement of Students: Multiple Regression Analysis

The regression results of academic achievement of students depending on selected variables is shown in table- 9 below:

Table- 9: Regression results: Determinates of academic performance of students as impact assessment of MDP

Dependent	Academic Performance of Students	
	Co-efficient	't' value

Independent		
Constant	3181.428	2.234
ES	0.044	2.123
A	0.084	2.196
R	-0.021	-0.246
D	-0.059	-0.923

Source: Author's calculation based on field survey, 2010-2011

Total number of observations = 300

$R^2 = 0.504$

$F = 9.304$

Note: ES = Enrolment of students, A = Attendance, R = Retention, D = Drop out among students.

It is clear from table-9 that the coefficients of enrolment and attendance of students are found to be positively associated while the other two co-efficients i.e., retention and drop out of students, are negatively correlated to the academic achievement of students due to MDP. That means that the more the success of MDP, greater would be enrolment and attendance potentiality and lower will be the retention and drop out of students which again leads to greater achievement of students in upper primary level of schools and so on. The latter is due to the increase of attentiveness of students of study in the classrooms which affects their performance. On the other hand, the availability of cooked food for students is found to exert positive influence on their academic achievements. This is so because, most of the poor students come school in almost empty stomach as their parents' goes out for work in the morning and mid-day meal helps as

strong substitute for want of home food for children and they can actively do their lessons in the schools (Dreze et al, 2001).

Conclusion

Thus we can conclude that mid-day meal programme (MDM) has had a positive impact in some selective cases (e.g., enhancing enrolment, attendance and lowering retention and drop out of students) which are essential for achieving the higher level of academic performance of students particularly belongs to BPL level students residing in the rural areas of upper primary schools of Burdwan district in the state of West Bengal. The result of chi-square test revealed a significant association between mid-day meal program and academic achievement of students.. The results of multiple regression model further indicated that there has been significant positive influence on academic achievement of students by taking into consideration the factors – enrolment, attendance, retention and drop out of students. Furthermore, mid-day meal program has some other benefits like removal of classroom hunger, social and gender equality and formation of good habits of students (like washing their own hands and utensils before meal) other than academic achievement in school. But in order to get satisfactory outcomes, mid-day meal program should be incorporated with the on going health awareness programs of Government.

Bibliography

Dreze, Jean and Geetha Gandhi Kingdon (2001), 'School Participation in Rural India', Review of Development Studies -5

Dreze, Jean and Aparajita Goyal (2003), 'Future of Mid-Day Meals', Economic and Political Weekly, November 1

Khera, Reetika (2002), 'Mid-Day Meals in Rajasthan', The Hindu, Nov, 13

Livemint.com (2012), Child Malnutrition Problem in India, Retrieved on 2012-02-18.

Mondal, Naba Kumar, Tuhin Kumar Samanta and Sirshendu Mandal (2007), 'Effect of Mid-day Meal in Primary Education', Anwesa, Vol 2.: 28-32, April.

Sengupta, Somini. (2012) Malnutrition of children in India continues. Nytimes.com. Retrieved on 2012-02-18.

UNDP (1999), Human Development Report, Oxford University Press, New York

World Bank (2003), Development in Practice: Primary Education in India, Allied Publishing, New Delhi