

The Performance of the Mid-Day Meal Scheme on the Nutritional and Educational Status of Rural School Children in Bihar

ABSTRACT

In India, in particular in rural regions, the Mid-Day Meal Scheme (MDMS) has been crucial in treating malnutrition and improving access to education for schoolchildren. The Mid-Day Meal Scheme's implementation and efficacy in the Bihar district of Arwal are both investigated in this study. **this** study highlights how significantly the Mid-Day Meal Scheme has improved the nutritional and academic outcomes of rural schoolchildren in Bihar while also **highlighting** areas that need more focus for programme improvement.

A **representative sample** of rural schools was used to gather data using a quantitative methodology. By using many sorts of indicators, including attendance, dropout rates, and academic achievement, the study evaluated the nutritional and educational status of children.

The result **illustrate** the benefits of the programme by showing improvements in height, weight, classroom hunger, enrollment, retention, attendance, and a decrease in dropout rates. On the other hand, assessments regarding academic ability and attention span were less favourable. When parents and instructors were asked about their opinions of the classroom hunger and attendance, both groups of people said that things had much improved. On the subject of academic achievement and attention span, **differences were identified**. The report highlights the need for additional study to fully comprehend the Mid-Day Meal Scheme's long-term **effect**.

Keywords: Mid-Day Meal Scheme, Educational indicators, Rural school children, Malnutrition

Comment [u1]: Review the whole content and capitalize the first letter of every sentence.

Comment [u2]: Grammatical error

Comment [u3]: Mention sample size and sampling strategy.

Comment [u4]: Grammatical error

Comment [u5]: The phrase "differences were identified" is vague. It would be useful to specify what the differences were and between which groups they were observed.

Comment [u6]: Also write the implications of the study in one line.

INTRODUCTION

One of the most important programmes the Indian government has implemented to address the problems of undernutrition and lack of access to education among schoolchildren, especially in rural regions, is the Mid-Day Meal Scheme (MDMS). The elementary school

Comment [u7]: Organize your content into clearly defined paragraphs, each focusing on a single idea or aspect of the scheme.

Comment [u8]: Make sure the sentences flow smoothly from one idea to the next. For example, you could introduce the concept of the Mid-Day Meal Scheme and its goals before delving into specific studies or regions.

lunch programme in India is commonly referred to as the mid-day meal programme. On August 15, 1995, P.V. Narasimha Rao, a former Indian prime minister, introduced the Mid-day Meal Scheme (MDM) for the first time in India to combat school hunger and enhance the nutritional quality of primary school students (Saini, S. K 2016). On all working days, children in elementary schools between the ages of 4 and 14 will receive a free lunch as part of the programme. The main goal of the programme is to promote primary school enrollment and attendance by eliminating hunger in the classroom, fostering better socialisation among kids from all castes and religions, and tackling malnutrition (Nangia, A., & Poonam, 2011). For individuals with the lowest socioeconomic levels and parents with the least education, the MDM Program's effects were more noticeable.

Comment [u9]: Correct the abbreviation. It's not MDM but MDMS.

The programme increased enrollment, helped students stay in school longer, and reduced dropout rates. To be more successful, however, the plan still needs to be standardised in terms of management, rudimentary infrastructures, materials and grains, fuel, utensils, kitchen stores, serving locations, health and hygiene, security, and safety, according to Taranam (2014). In terms of child malnutrition as well as access to high-quality education, Bihar, a state in eastern India, confronts major difficulties. Due to a number of socioeconomic problems, including poverty, ignorance, and restricted access to nutrient-rich food, the state has a sizable population of rural schoolchildren who are at risk for malnutrition. The analytical study uses a quantitative methodology and data gathered from a representative sample of rural schools.

Comment [u10]: Ensure consistent usage of terms and proper noun formatting, such as "Mid-Day Meal Scheme" instead of alternating with "mid-day meal programme."

Comment [u11]: Provide reference.

Through several types of indicators, including school attendance, dropout rates, weight, height and academic achievement, the study's design includes evaluating the nutritional and educational status of children. However, despite pertinent material on various parts of the Mid-Day Meal Scheme all across the country, there was very little information on the Mid-Day Meal Scheme's carrying out in Bihar, specifically the Arwal region. The current study thus focuses on how the Mid-Day Meal Scheme is implemented and operates in the Arwal district.

Comment [u12]: Strengthen your arguments by providing more details or examples where necessary. For instance, mentioning specific statistics or findings from studies can make your content more compelling.

Comment [u13]: Provide reference.

MATERIALS AND METHODS

It was considered that the variable manifestations had already occurred and that no variable could be modified; hence, an ex-post facto research methodology was adopted in this study. Inferences about the relationships between variables are made based on the simultaneous changes of the independent and dependent variables, without any direct involvement. The

Comment [u14]: The section could benefit from clearer organization and structure. Subheadings for different parts of the methodology (e.g., "Sampling", "Indicators", "Scoring System") would improve readability.

Comment [u15]: Also Write the procedure of the study and the ethical considerations.

Comment [u16]: Explicitly define independent and dependent variables to enhance clarity.

district consisted of five blocks. Three blocks were chosen at random. A group of rural schools was chosen at random from each block. Thus, out of a total of 270 subjects, 120 were from rural schools, 30 were instructors, 90 were parents, and 30 were anganwadi volunteers. Under these two facets, the MDM programme's performance was evaluated. The two main components of the MDM Programme's effect were assessed using the nutritional and educational status of rural schoolchildren.

The overall number of indicators was eleven, with six coming from the second aspect and five from the first. There were signs of the two negatives (classroom hunger, morbidity) and the three positives (height, weight, and morbidity) in the first component. Enrollment, retention, attendance, academic performance, and span of attention were the five positive indicators for the second component, while dropout was the one negative sign. Three continuums—increase, no change, and decrease—were used to categorise the answers. Scores of 3, 2, and 1 were given to the replies Increase, No Change, and Decrease for positive indications, and 1, 2, and 3 were given in the opposite order for negative indicators. In order to gain a comprehensive understanding of the various indicators, the total score and mean score were computed.

RESULTS AND DISCUSSION

Responses from parents were used to gauge how the MDM programme was believed to affect the nutritional and educational status of rural schoolchildren. The reported changes in several metrics, as well as the overall score, mean score, and ranking for each category, are all summarised in Table 1.

Table:1 Perceived Effect of MDM Programme on Nutritional and Educational Status of Rural School Children Reported by the Parents

S.no	Parameter	Response Categories			Total score	Mean score	Rank
		Increase	No change	Decrease			
I.		Nutritional status					
1	Height	80 (88.88%)	10	0	260	2.88	II
2	Weight	60 (66.66%)	20	10	220	2.44	IV

Comment [u17]: Mention inclusion and exclusion criteria

Comment [u18]: Capitalize the first letter.

Comment [u19]: Provide a rationale for the chosen sample size and its representativeness.

Comment [u20]: Also write the sampling strategy you have used to recruit the sample, whether it's probability sampling or non-probability sampling. Also mention the type.

Comment [u21]: While the indicators are listed, it's not clear how the data for these indicators were collected. Providing information on the specific tools or instruments used for data collection would enhance transparency and reproducibility.

Comment [u22]: The description of the negative and positive indicators can be confusing. Clearly differentiate which indicators belong to which component (nutritional or educational). For example: "For the nutritional component, the indicators were classroom hunger and morbidity (negative), and height, weight, and morbidity (positive). For the educational component, the positive indicators were enrollment, retention, attendance, academic performance, and span of attention, while dropout was the negative indicator."

Comment [u23]: The scoring explanation could benefit from a more explicit description of how the scores were applied to each indicator. For example: "Responses were categorized into three continuums—increase, no change, and decrease. For positive indicators, scores were assigned as 3 for increase, 2 for no change, and 1 for decrease. Conversely, for negative indicators, scores were reversed: 1 for increase, 2 for no change, and 3 for decrease."

Comment [u24]: Provide reference.

Comment [u25]: Include a brief mention of the statistical methods used to analyze the data.

Comment [u26]: Explain how these scores are calculated.

Comment [u27]: Remove the unnecessary cells from the table.

Comment [u28]: Report sample as (N= 90)

Comment [u29]: Merge the cells.

Comment [u30]: Why is there empty cells?

Comment [u31]: Nutritional status is a parameter, so write it under the column of that. You may also merge these two cells to enhance the readability.

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3	Classroom hunger		0	7	83 (92.22%)	263	2.92	I
4	Morbidity		9	36	45 (50%)	216	2.40	V
5	Recovery from disease		50 (55.55%)	35	5	225	2.50	III
II.		Educational status						
1	Enrolment		73 (81.11%)	9	8	245	2.72	II
2	Retention		61 (67.77%)	20	9	233	2.58	IV
3	Attendance		80 (88.88%)	5	5	255	2.83	I
4	Drop outs		0	27	63 (70%)	243	2.7	III
5	Academic performance		10	73 (81.11%)	7	183	2.03	VI
6	Span of attention		15	64 (71.11%)	11	184	2.04	V

Comment [u33]: Remove the unnecessary cells from the table.

Comment [u34]: Write it in the column of parameter, Or merge the cells.

Nutritional Status:

The majority of parents claimed that the MDM programme had caused their children's weight (66.66%) and height (88.88%) to grow, which reflects the nutritional status of the children. Parents reported seeing a favourable effect in the classroom, with 92.22% reporting a considerable decrease in hunger. A more evenly distributed response was seen for morbidity, with 50% of parents reporting no change. 55.55 percent of parents said that the ailment has recovered.

The results of this study illustrate how parents in rural Bihar felt that the Mid-Day Meal Programme had improved their children's nutritional and academic performance. The MDM Programme appears to have had a big impact on these factors based on the favourable

Comment [u35]: Also relate the results with the previous studies and report whether the results are consistent with the previous studies or not. Also provide reference of the studies you'll quote.

Comment [u36]: When any paragraph starts with numerical value, it'd preferred to write the number in alphabetical form, like fifty five point fifty five percent

changes seen in measures including height, weight, classroom hunger, enrollment, retention, attendance, and dropout rate reduction.

Educational Status:

A sizable portion of parents felt that the MDM programme had a positive influence on their kids' educational condition. 81.11% of parents believed that enrollment rates had grown, while 67.77% said that retention rates had improved. Parents reported good changes in attendance, which substantially improved, according to 88.88% of them. 70% of parents reported a decrease in the dropout rate. However, only 81.11% of parents commented positively on its effect on academic performance, and only 71.11% of parents positively commented on the span of attention. They obtained enough food for growth and development owing to the substantial reduction in classroom hunger. Based on the stated rise in enrollment and retention rates, offering midday meals to students serves as a financial incentive for parents to register them in school and keeps them there.

Comment [u37]: Correct the spellings.

Comment [u38]: Write it in alphabetical form.

Regular attendance is necessary for good learning and educational advancement; hence, an improvement in attendance rates is a crucial outcome. The decline in dropouts indicates that the MDM Programme may help lessen the likelihood that young students will leave school early. It is noticeable that academic performance and attention span garnered relatively fewer positive reactions from parents, despite the positive effects perceived in most parameters being promising.

Comment [u39]: Write whether the results are supported by the previous literature or not.

According to teachers' reports, Table 2 shows how the Mid-Day Meal (MDM) Programme has affected the nutritional and academic levels of rural schoolchildren.

Table:2 Perceived Effect of MDM Programme on Nutritional and Educational Status of Rural School Children Reported by the Teachers (N=30)

Comment [u40]: Remove extra cells from the table.

S.no	Parameter	Response Categories			Total score	Mean score	Rank
		Increase	No change	Decrease			
I.	Nutritional status						
1	Height	26 (86.66%)	4	0	86	2.86	II
2	Weight	25 (83.33%)	5	0	85	2.83	III

3	Classroom hunger	0	1	29 (96.66%)	89	2.96	I
4	Morbidity	0	14	16 (53.33%)	76	2.53	IV
5	Recovery from disease	15 (50%)	15	0	75	2.5	V
II.	Educational status						
1	Enrolment	28 (93.33%)	2	0	86	2.86	III
2	Retention	27 (90%)	3	0	87	2.90	II
3	Attendance	29 (96.66%)	1	0	89	2.96	I
4	Drop outs	0	13	17 (56.66%)	77	2.56	IV
5	Academic performance	3	2	25 (83.33%)	38	1.26	V
6	Span of attention	3		27 (90.0%)	36	1.20	VI

Comment [u41]: Ensure consistent use of percentage formatting, such as "90%" instead of "90.0%".

Nutritional Status:

The MDM Programme improved the nutritional status of rural schoolchildren, in the opinion of the teachers. The majority of educators saw a rise in the kids' weight (83.33%) and height (86.66%). These results were in line with Naik's (2005) research in Karnataka, which discovered that the stakeholders perceived the MDM programme was responsible for the children's weight gain and other health improvements. 96.66% of instructors reported seeing improvements, and there was a considerable drop in classroom hunger.

Comment [u42]: Write it in alphabetical form.

Responses to morbidity were conflicting, with 53.33% of the teachers reporting no change. 50% of teachers said that their health had recovered. The MDM program's performance in these areas is demonstrated by the positive changes seen in indicators including height, weight, classroom hunger, enrollment, retention, and attendance that are in line with the program's goals.

Comment [u43]: Write it in alphabetical form.

Comment [u44]: Correct spellings.

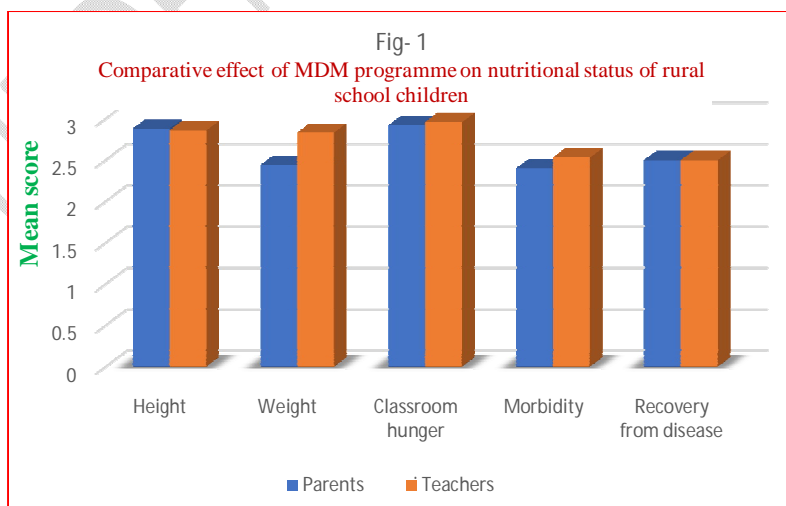
Educational Status:

Teachers reported beneficial effects of the MDM programme in terms of the children's educational condition. 90% of teachers reported greater retention rates, while 93.33% reported higher enrollment rates. Teachers reported good changes in attendance, which significantly improved, according to 96.66% of them. 56.66% of teachers reported a decrease in the percentage of dropouts. However, only 83.33% and 90% of teachers, respectively, reported that the effects had a beneficial effect on students' academic performance and attention span.

High percentages of teachers who reported experiencing less hunger in the classroom indicate that midday meals are meeting the children's nutritional needs, lowering hunger, and improving their general wellbeing. However, the teachers' generally less favourable comments about students' academic performance and attention span raise important concerns. Academic performance and attention span were also influenced by other socioeconomic characteristics, such as teaching quality, facilities, involvement of parents, and other factors.

Comparison of Effect Reported by Mothers and Teachers:

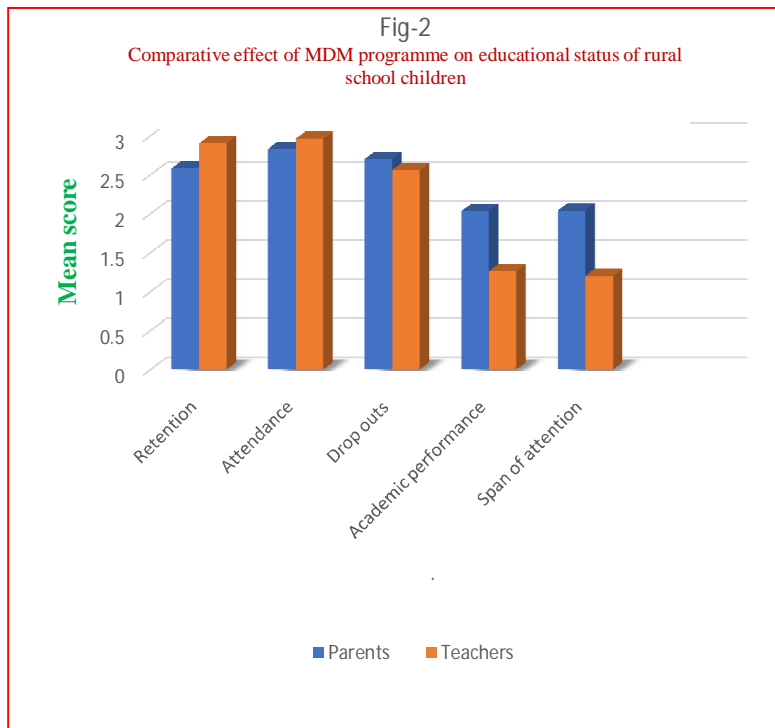
A comparison of the responses of mothers and teachers was done in order to compare their responses and better understand how the MDM Programme was speculated to affect the nutritional and educational status of rural schoolchildren. The mean scores for various nutrition-related characteristics as reported by mothers and teachers are shown in Figure (1), whereas the mean scores for educational status are shown in Figure (2).



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Nutritional Status:

Figure (1) shows that both mothers and teachers reported a significant reduction in classroom hunger (2.92 for mothers and 2.96 for teachers), proving that the MDM Programme was successful in reducing childhood hunger. Afridi et al. (2010) reported similar results, concluding that the MDM initiative considerably reduced student hunger.

Comment [u48]: Clearly differentiate between findings reported by mothers and teachers. You've done this well with hunger reduction, but ensure this clarity is maintained throughout all comparisons.

Educational Status:

Figure (2) shows that parents and teachers both believed that there was an enormous effect on attendance (2.83 for parents and 2.96 for instructors). This shows that both participants believed the MDM Programme had a good effect on rural schoolchildren's attendance rates. Numerous multifaceted investigations conducted across the nation and in different regions of the world have shown similar findings (Bellary, 2009; Mathur, 2005; Blue, 2005; Dreze and Goyal, 2003; Laxmaiah et al., 1999).

Comment [u49]: Ensure that the references you choose are recent (preferably within the last 5-10 years) to reflect current practices and findings.

However, there were some differences in the views of parents and teachers about academic performance and attention span. Parents noticed a moderate improvement in their children's

academic performance and attention span, which they reported as having a medium extent of effect (2.03 and 2.04, respectively). Teachers, on the other hand, reported a smaller extent of effect for academic performance (1.26) and span of attention (1.20), indicating that they thought the improvement was less pronounced than what parents saw. Mothers and teachers understood children differently when it comes to academic achievement and attention spans depending on a number of factors, such as subjective interpretations, different expectations, or different assessment methodologies used by each stakeholder.

CONCLUSION

The Mid-Day Meal Scheme's effects on the nutritional and academic status of rural schoolchildren in Bihar were the subject of an analytical study. It is clear from a thorough examination of several factors that the Mid-Day Meal Scheme significantly improved the general wellbeing of rural schoolchildren. The Mid-Day Meal Programme has had beneficial effects on the academic standing of rural schoolchildren. Free meals have served as a significant incentive for kids to attend school frequently, lowering absence rates. Since more students are in class, they are more motivated and focused to participate in the learning process, which has a direct impact on academic success. Additionally, the programme has helped lower rural schoolchildren's dropout rates. The provision of free meals has inspired parents to send their kids to school and further their education by easing the financial load on families. It is crucial to remember that the current study concentrated on rural Bihar, so it is possible that the findings do not pertain to other locations. It is necessary to do additional research with a wider geographic scope to examine the long-term impacts of the Mid-Day Meal Scheme on the dietary and academic status of schoolchildren.

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Comment [u50]: It's better to divide this section into sub-sections as Implications of the study, Limitations and Suggestions.

Comment [u51]: Write its plural form, i.e., References.

Comment [u52]: Formatting error.

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Comment [u53]: Add space.

Comment [u54]: In other references, you have written the year of the study after the authors' names. But this reference is not in line with that formatting. Follow a same formatting system in your manuscript.

Comment [u55]: It's better to maintain alphabetical order in the references.

Comment [u56]: Add space between these two words.

Comment [u57]: Spellings mistake.

Comment [u58]: Add space between two words.

Comment [u59]: Use any recent reference.