ARTICLE

Critical Journal of Social Sciences (CJSS)
Volume 1, No. 2 | 2025
pp. 95 – 106

NUTRITIONAL OUTCOMES AND SOCIO-ECONOMIC DIMENSIONS OF THE MID DAY MEAL SCHEME: A STUDY IN MAPUSA, GOA-INDIA

RESULTADOS NUTRICIONALES Y DIMENSIONES SOCIOECONÓMICAS DEL PLAN DE COMIDAS DEL MEDIODÍA: UN ESTUDIO EN MAPUSA, GOA-INDIA

Ms. Pooja Keni
Government College of Arts, Science and Commerce (India)

Dr. Neethu Naik
Government College of Arts, Science and Commerce (India)
Neethu.naik@khandolacollege.edu.in
ORCID iD: https://orcid.org/ 0000-0002-5062-647X

Critical Journal of Social Sciences (CJSS)

ISSN: 3101-0415

Volume 1, No. 2 | 2025
pp. 95 - 106

Received: October 7, 2025 · Accepted: November 17, 2025

Abstract

The Mid-Day Meal (MDM) Scheme is a government initiative in India that provides one free meal to students during school hours. It aims to improve nutritional outcomes, reduce dropout rates, and enhance school attendance. The school-age period represents a stage of rapid growth and development, during which adequate nutrition is essential. Students from low socio-economic families, in particular, require focused nutritional support. This study examines the nutritional and educational impact of the MDM Scheme on students. Fieldwork was conducted in two schools in Mapusa, Goa, involving a total of 122 students. Anthropometric data (height and weight) were recorded, and additional information on students' demographic, educational, behavioural, socio-economic, and dietary characteristics was analyzed to understand the scheme's impact. The results indicate that most daily consumers of MDM fall within the normal BMI range. However, the persistence of underweight students even among regular consumers suggests that the program does not fully meet students' nutritional requirements. Socio-economic background also influences nutritional outcomes. The study highlights the need for greater menu diversity, as dissatisfaction with repetitive meals often leads to skipped lunches.

Keywords

Mid-Day Meal, BMI, Socio-economic status, Menu satisfaction, Nutrition

1. INTRODUCTION

A child's nutritional status is widely regarded as a fundamental measure of overall health and is central to both physical growth and developmental progress. The years of formal schooling represent a vital stage in childhood, characterized by accelerated physical changes and critical advances in cognitive abilities. . This period is characterized by dynamic changes that shape a child's overall well-being and future potential (Souza et al., 2021). The World Bank (2014) reports that children in good health are more likely to maintain regular school attendance and achieve better academic outcomes than peers who face illness or malnutrition (The World Bank Annual Report 2014 (Vol. 1 of 3) : Main Report).

In South Asia, wasting among children is still above the danger level of 15 per cent. After children turn five, nutrition often gets less attention, leaving many without proper support (Gyawali, 2024). The National Family Health Survey-5 (NFHS-5) reports 35.5% of children less than five years in India are stunted, while 19.3% are wasted. Malnutrition is particularly prevalent among children from economically disadvantaged households, affecting both their health and increasing the risk of school dropout. To solve this problem, India started the Mid-Day Meal (MDM) Scheme to give schoolchildren meals that improve their health and nutrition (*A Desk Review of the Mid-Day Meals Programme July 2007*). The scheme was first introduced in Madras in 1925, later expanding to a nationwide program by 1997-98. Today, the Mid-Day Meal is one of the biggest school meal programs in the world. It has helped children stat in school, attend more regularly, and eat better. In 2013-14, the program reached about 10.45 crore children in 11.58 lakh schools (*Pradhan Mantri Poshan Shakti Nirman (PM POSHAN) in India*). Now the scheme provides more pulses and vegetables, giving around 700 calories and 20 gm. of protein per meal for upper primary children.

Body Mass Index (BMI) is widely used to evaluate the nutritional status of children and adolescents. According to WHO standards, a BMI z-score below -2 SD indicates underweight status. In 2016, India had the highest occurrence of underweight children and adolescents, with 22.7% among girls and 30.7% of boys affected. This rate has seen little significant decline over the past three decades (Bentham et al., 2017). The Comprehensive National Nutrition Survey (CNNS) India 2016–18 report indicates that 10% of school-aged children (5–9 years) and 47% of late adolescent girls (15–19 years) in India were underweight (*Comprehensive National Nutrition Survey, 2016-18*).

In Goa, the Mid-Day Meal (MDM) scheme benefits approximately 1.6 lakh students each year through a decentralized system managed by Self-Help Groups and women's cooperatives (The Goan Network, 2018). The state has also experienced a steady rise in its migrant population, with many children from low-income households relying heavily on school-based nutrition programs. This makes it essential to examine not only the reach of the scheme but also the sufficiency, quality, and acceptability of the meals in order to assess its real impact.

2. METHODOLOGY

The study examines how the Mid-Day Meal Scheme contributes to students' nutrition, classroom engagement, and satisfaction with meal quality, while considering the role of socio-economic background.

The study was carried in two schools located in Mapusa city, Bardez taluka, of North Goa district, Government Primary Middle School, Mapusa, and Dr. B.R. Ambedkar English High School, Cunchelim, in October 2024. These schools were chosen because of their relatively high share of migrant students, which made them suitable sites for studying how socio-economic conditions shape the Mid-Day Meal program's influence on education nutrition. The study was restricted to students in classes V to VIII who attended school regularly and participated in the Mid-Day Meal scheme. The study was conducted as part of a Master's degree dissertation within a restricted time frame, and the student had less than a month available for data collection. Despite this limitation, the sample size provides meaningful and representative insights into the study area. Altogether, the study covered 122 students. Anthropometric data were collected with weight measured using a weighing machine and height recorded with a steel measuring tape.

Body Mass Index (BMI) was computed as using weight (kg) / height $(m)^2$, and classified following the World Health Organization's reference standards for children and adolescents.[1] BMI categories were compared with meal participation, hunger, and education outcomes. In addition, the survey also gathered data on students' demographic profiles, socio-economic conditions, nutritional status, and indicators of school performance. Data analysis was carried out using cross-tabulation and descriptive statistics (frequency and percentage) to examine the relationship between Mid-Day Meal participation and students' nutritional status. Cross-tabulation was employed to compare MDM participation with nutritional status. Where appropriate, Chi-square tests were conducted to explore associations between nutritional status and various variables.

3. RESULTS

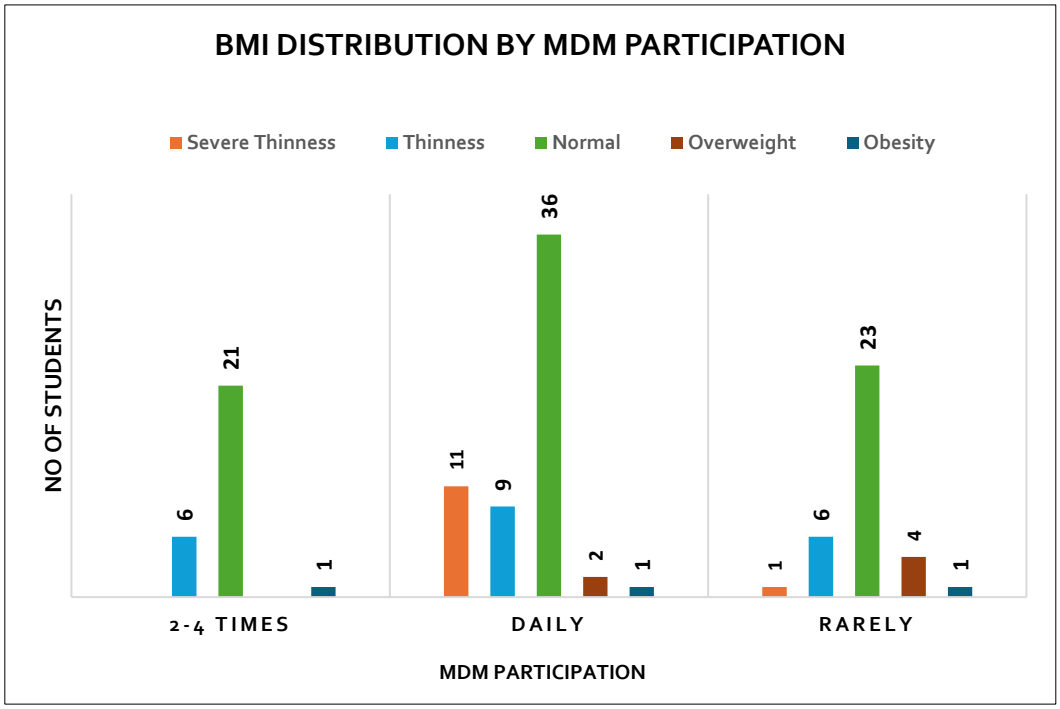
3.1. Impact of the Mid-Day Meal Scheme on Student Nutrition

Among 122 students, 70 students attended Dr. B.R. Ambedkar English High School (Cunchelim), while 52 were from Government Primary Middle School (Mapusa). In terms of participation, 48% of students consumed the Mid-Day Meal daily, 23% two to three times a week, and 29% took it occasionally. BMI was used as the key indicator to assess students' nutritional status and the impact of the Mid-Day Meal, with categories defined according to WHO standards (Figure 1). As shown in Figure 1, most of students (80) fell into the normal

[1] While BMI for age z-score are ideal for assessing children's nutritional status, due to time and data constraints, this study used BMI calculated from WHO reference cut-offs. The authors acknowledge that this may not fully capture age and sex variations, which is a limitation of the study.

BMI range, suggesting relatively stable nutritional levels overall. Despite this, 12 were severely thin, 21 thin, six overweight, and three obese, indicating that while under-nutrition was the more prevalent concern, instances of over-nutrition also existed.

Figure 1 - BMI distribution by MDM participation

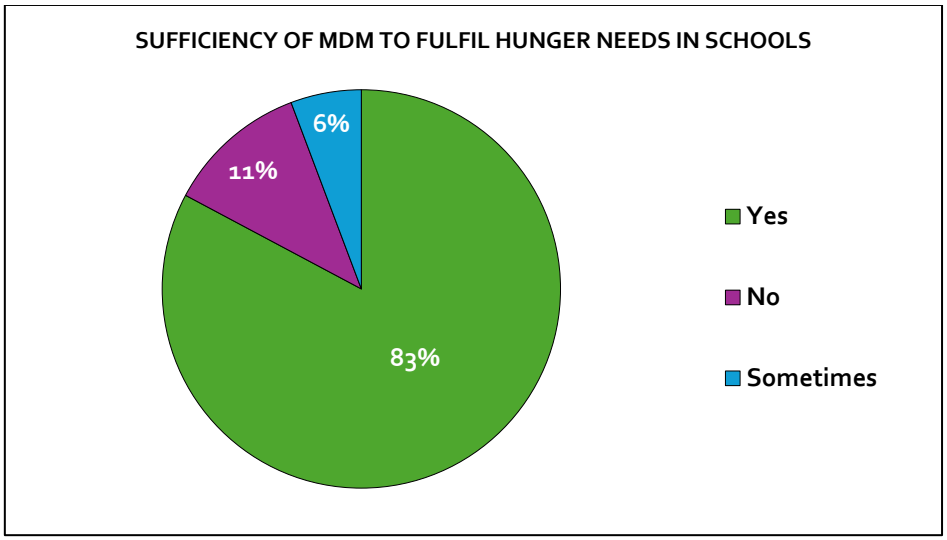


Source: Field Survey, 2024

To assess how meal participation influenced nutritional outcomes, BMI was compared with how often students ate the MDM (Figure 2). Of the daily MDM consumers, 36 students were in the normal weight range, while 11 were severely underweight, 9 underweight, 2 overweight, and 1 obese. Those consuming MDM 2-3 times a week showed a more balanced distribution, with 21 in the normal weight range and 6 underweight, but none were classified as severely underweight or overweight except for one case of obesity. Among rare MDM eaters: 23 normal, 6 underweight, 4 overweight, 1 severely underweight, 1 obese.

Hunger satisfaction levels were also analysed to further gauge the effectiveness of the MDM scheme. Of the 122 respondents, 83% reported feeling satisfied after consuming the meals, 11% stated they were not satisfied, and 6% mentioned feeling satisfied only sometimes (Figure 2). When results were analysed by BMI, of the 80 students in the normal range, 65 reported being satisfied with the meals, 6 occasionally felt hungry, and 9 stated that the meals did not adequately meet their hunger needs.

Figure 2 - Sufficiency of MDM to fulfil hunger needs in schools



Source: Field Survey, 2024

3.2. Role of Mid-Day Meals in Supporting Education

Food is a key factor influencing students' concentration in class. Accordingly, this study examined whether the MDM scheme supports learning outcomes, classroom engagement, and overall academic development. Among the 122 students, 81 (66.4%) reported higher energy levels, 22 (18.0%) noted partial improvement, and 19 (15.6%) observed no change. To assess whether attention span improved in afternoon classes, students were asked about their concentration levels. Responses were grouped as 'Yes', 'Somewhat', and 'No'. Of the 122 students, 76 (62.3%) reported improved concentration, 26 (21.3%) experienced partial improvement, and 20 (16.4%) saw no improvement. The association between Mid-Day Meal (MDM) participation and students' energy levels was analysed using a Chi-Square test. The test results ($\chi^2(4) = 9.877$, $p = 0.043$) indicate a significant relationship, as the p-value is below 0.05. This suggests that MDM participation plays a role in influencing students' energy levels.

3.4 Implications of Students' Socio-Economic Status on Nutrition

Socio-economic background strongly shapes students' nutritional status. In this study, most of the participants were originally from Uttar Pradesh and Karnataka, with 39 and 36 students respectively (Table 1).

Table 1 - Distribution of Students' BMI Status by Native Place

States	Normal weight	Obesity	Overweight	Severe Thinness	Thinness	Grand Total
UP	29	-	2	2	6	39
Karnataka	20	3	1	5	7	36
Bihar	14	-	-	1	5	20
Maharashtra	7	-	-	-	-	7
Jharkhand	1	-	1	1	1	4
Goa	1	-	2	-	-	3
Nepal	2	-	-	1	-	3
Assam	1	-	-	-	1	2
Delhi	2	-	-	-	-	2
MP	1	-	-	1	-	2
Chhattisgarh	1	-	-	-	-	1
Gujarat	-	-	-	1	-	1
Orissa	-	-	-	-	1	1
West Bengal	1	-	-	-	-	1
Grand Total	**80**	**3**	**6**	**12**	**21**	**122**

Source: Field Survey, 2024

To understand how students' health is linked to where they come from, it is useful to look at their Body Mass Index (BMI) and their native states. The most normal weight students were observed in Maharashtra. In contrast, underweight cases were more common in Bihar (Table 1). Parental occupation and income are major determinants of children's health, as they directly shape access to food and the other necessities. As students did not know about their parent's income, the occupations are categorized into broad categories using the reference of National Occupational Classification (NOC) just to understand the type of work they do. Analysis by mothers' occupations showed that the majority of normal –weight students had homemaker mothers, followed by 16 with mothers in domestic work and 7 in food service. A closer look at homemakers reveals a notable trend. A majority, 66% (52 out of 79), fall within the normal weight range, suggesting they might have more consistent access to home-cooked meals and a structured diet. However, thinness and severe thinness were also observed among students with homemaker mothers 15 and 7, respectively, indicating variations in nutritional status within the same occupational group. For fathers' occupations, the highest normal-BMI counts were among students whose fathers worked as skilled labourers (29) or in unskilled/manual jobs (21). Overweight and obesity found to be comparatively low in all categories, with a few cases found among students whose fathers

worked in retail, skilled labour, and unskilled labour. Thinness and severe thinness were more noticeable in students with fathers in unskilled labour 5 and 4 cases, respectively and skilled work 6 and 3 cases, respectively. This reveals that normal weight is common across all occupational groups; underweight conditions appear more frequently in students whose fathers hold physically demanding or lower-income jobs.

While occupation determines income, household size dictates how resources are distributed among members. Cross-tabulation was used to analyse the link between household size and students' nutritional status. The results show that the majority of students with a normal BMI (61 out of 80) belong to medium-sized households (5 to 8 members). This household may provide relatively stable nutrition. In comparison, smaller households (≤4 members) have 17 students with a normal BMI, while larger households (≥9 members) have only 2 students in this category.

However, despite the higher number of students with normal BMI in medium-sized households, underweight cases (thinness and severe thinness) are also most common in this group. A total of 23 students from medium-sized households fall into the underweight category, compared to 8 students in small households and 2 students in large households. This indicates that while medium-sized households may provide sufficient food for some, others within the same household may face challenges in maintaining proper nutrition. We analysed the type of houses students were living in and found that out of 122 students, 103 lived in rented houses, 16 in owned houses, and 3 in company-provided rent-free accommodation. This indicates that the majority of students come from rented households, which may reflect the overall housing and economic background of the student population.

3.5. Dietary Habits

To understand the overall dietary habits of students, their food preferences were first analysed. Students were categorized as either vegetarian or non-vegetarian or consuming both. The majority (115 out of 122) reported eating both veg and non-veg food, while only 7 students identified as strictly vegetarian.

Breakfast is often described as the most critical meal for students, since it supplies essential energy and nutrients needed for learning and daily activity. To analyse its impact, student's habit of breakfast consumption before coming to school was asked. The data shows that 81 students regularly eat breakfast before school, which makes up majority of sample, 20 students sometimes have breakfast and 21 students skip breakfast entirely. A notable 34% of the sample reported skipping or only occasionally consuming breakfast, whereas, 26 out of 33 underweight students (thinness and severe thinness) eat breakfast regularly. However, 7 underweight students either skip breakfast or eat it only sometimes.

3.6. Menu Satisfaction & Meal Quality

In both schools, freshly cooked meals are provided rather than dry rations. The menu changes daily and includes *Pulav, Bhaji-Chapati, and Idli-Sambar.* However, teachers have observed that meal variety is limited, and certain items are repeated too often, which leads to students losing interest in the food. All teachers have pointed that students do not like certain meals due to their taste and texture. Specifically, "*Sambar is often watery,"* which makes it unappealing. "*Potato Bhaji is tasteless and soupy*," leading many students to avoid. When question about meal quality was asked to students, a large majority (81%) of students rated the food as "Very Good" or "Good," while 19 per cent found it "Average" which suggests that the general quality of the meals is acceptable. However, some students feel that taste wise improvements are needed. The inclusion of non-vegetarian food in the Mid-Day Meal (MDM) scheme has long been a subject of debate. In this study, three teachers strongly supported the addition of non-vegetarian items, arguing that it would enhance students' health and energy levels. Eight teachers recommended including eggs in the program, though with certain conditions. Conversely, the majority of teachers opposed the idea, believing that vegetarian meals are sufficient and expressing concerns about the practical challenges and cultural sensitivities involved. In fact, 12 teachers from both schools completely rejected the proposal to incorporate non-vegetarian food into MDM.

4. DISCUSSION

This study aimed to examine whether participation in the Mid-Day Meal (MDM) Scheme is associated with variations in students' nutritional status, hunger satisfaction, and educational engagement in selected schools of Mapusa, Goa.

4.1. Nutritional Outcomes and Participation Patterns

Students consuming MDM daily recorded the highest proportion normal BMIs (36 out of 59), indicating that consistent participation may support healthier weight maintenance. Yet, the fact that 11 daily MDM participants were severely underweight raises questions regarding the adequacy of the meal portions and nutritional content. The observation aligns with Navaneethan (2011), who noted that MDM improves nutritional outcomes, it alone cannot fully address under-nutrition. `Interestingly, students who rarely consume MDM had fewer cases of severe thinness but exhibited a slightly higher proportion of overweight individuals. Similarly, a study by (Saleem et al., 2024) observed that students relying primarily on MDM showed lower anthropometric scores than peers consuming home-made cooked food, suggesting that the scheme may not fully meet students' nutritional requirements. Although MDM didn't show a clear BMI effect but did fill hunger for most students. The results of (Hoque, 2023), similarly pointed out that operational issues such as repetitive menus and

small portion sizes reduce the program's overall effectiveness. Interestingly, 75 per cent of severely underweight students felt the meals were adequate, implying that while the scheme satisfies hunger, it may not provide the nutrient required for weight improvement.

4.2. Educational Engagement and Well-being

Beyond nutrition, the study revealed a positive link between meal participation and classroom engagement. Participation in MDM contributed to higher energy levels, and 76 students reported better afternoon concentration following meal consumption. According to (Poswal & Mishra, 2025), 33 per cent of teachers thought MDM boosted learning. Regarding extracurricular, the findings show that although students with normal BMI were more active, participation was evident across all BMI categories, including underweight groups. This indicates that BMI alone is not a major determinant of student participation. Sports and physical activity help students stay healthy and keep a normal BMI.

4.3. Socio-Economic Dimensions and Regional Variation

Socio-economic background emerged as a crucial determinant of nutritional outcomes. The analysis showed that all students from Maharashtra a state in western India recorded normal BMI, whereas underweight cases were more frequent among students from Bihar located in eastern India. This suggests a possible link between students' place of origin and their dietary practices. The regional contrast may reflect broader dietary practices and income disparities, consistent with Gharge et al., (2024) who found that adolescents from Eastern India having lower odds of being underweight than those from Northern India. Parental employment strongly influenced children's health. Notably, students with homemaker mothers more often fell within normal BMI category. Yet, even within this group, cases of thinness and severe thinness were recorded, showing that fathers' earnings and household income also significantly influence nutrition. Housing analysis showed most students lived in rented accommodation, which added to the family's financial strain.

4.4. Dietary Habits and Health Implications

The study also explored broader dietary behaviour. The majority of students reported consuming vegetables more than three times a week, with many indicating near-daily intake. However, the vegetables most frequently consumed such as potato, cabbage, and ladyfinger which do not provide the full range of vitamins and minerals required for healthy growth. Dairy intake was also limited, as many students reported consuming milk only when it was available at home. Intake of chicken and fish was generally low,, usually less than four times per week. Overall, students' dietary habits were shown to be largely dependent on parental

choices, as they ate what was prepared at home. A notable number of students admitted to eating Maggi for lunch or breakfast, while the consumption of junk food was observed to be common, negatively impacting their health. The frequent occurrence of ailments such as headaches, stomach aches, and common colds suggests that students' health is influenced by these dietary patterns.

4.5. Menu Quality and Acceptability of the MDM Scheme

This study also examined the perspectives of both students and school staff regarding the Mid-Day Meal (MDM) scheme. One important finding was dissatisfaction with the menu. Hoque (2023) in their study highlighted that poor meal quality often undermines program effectiveness, while a study by Ozwald (2017) found wide variation in meal taste and nutrition across schools, with only 29.2 per cent of meals rated 'very good' and 37.5 per cent 'poor' In the present study, many students reported avoiding MDM on days when certain items were served, particularly *potato bhaji and idli-sambar*, the latter being disliked due to its watery consistency. These issues of taste, quality, and limited variety often reduce students' willingness to consume MDM regularly. As a result, some bring food from home while others prefer to remain hungry, leaving their nutritional requirements unmet. This problem of low participation due to dissatisfaction with menu options has also been highlighted in earlier studies (Anitha et al., 2019; Swami et al., 2021).

Teachers from both schools recommended diversifying the menu by adding items like fruits and sprouted pulses. A more diverse diet, incorporating locally available vegetables and protein sources, was considered essential for improving dietary outcomes, a view also supported by Braganza et al. (2007). It was suggested that seasonal fruits be distributed at least weekly, since they are more affordable during peak harvest. The repeated serving of identical dishes caused monotony, lowering satisfaction and participation, noted by Poswal and Mishra (2025) in their study. To address this, authorities should consider revising the menu at least every six months. However, concerns remain about whether children will accept modified diets. According to Anitha et al. (2019), through sensory evaluations, demonstrated that students highly preferred culturally familiar and well-prepared millet-based dishes such as *finger millet idli, little and pearl millet bisi bele bath*, and *millet upma,* highlighting the potential for integrating nutrient-rich alternatives. Similarly, Hoque (2023) suggested adding *horse gram*, which is rich in calcium, zinc, and protein, as a low-cost way to boost the nutritional quality of meals.

4.6. Policy Implications and the Role of Governance

On a positive note, most students in the study belonged to low socio-economic backgrounds, where the assurance of free meals through the Mid-Day Meal (MDM) program reduces the

financial burden on families and serves as an important safety net. While the scheme does not provide the full day's nutritional requirements, it ensures at least one meal that helps students remain energetic during school hours. The findings also highlight the need for nutritional education for parents. However, as several studies including Saleem et al. (2024) reported that 78.7% of parents of MDM beneficiaries had never received dietary education, which contributed to the poor nutritional outcomes of their children. Therefore, nutrition awareness programs targeting parents, students, and teachers are essential to maximize the impact of MDM. The results highlights the importance of local governance in determining program outcomes.

5. CONCLUSION

Adequate nutrition is fundamental to students' physical growth, cognitive development, and overall learning capacity. This findings of this study revealed that while the majority of daily MDM consumers maintained a normal BMI, the persistence of underweight cases indicates that the scheme alone is insufficient to fully address nutritional deficiencies. Nutritional outcomes were also shaped by factors including parental occupation, household size, and students' dietary habits. Enhancing menu diversity and meal quality is essential to improve students' satisfaction and participation in the program. In conclusion, coordinated efforts among schools, local bodies, and families are essential to ensure sustainable improvements in students' nutritional and educational well-being. While limited in scope, this field-based study contributes to the understanding of how nutritional and socio-economic dimensions interact with larger, longitudinal samples and more detailed nutritional measures could better inform policy refinement.

6. LIMITATION

The small sample size limits statistical generalization, but the findings provide useful indicative insights for similar socio-economic context in Goa.

REFERENCES

Anitha, S., Kane-Potaka, J., Tsusaka, T. W., Tripathi, D., Upadhyay, S., Kavishwar, A., Jalagam, A., Sharma, N., & Nedumaran, S. (2019). Acceptance and impact of millet-based mid-day meal on the nutritional status of adolescent school going children in a peri urban region of karnataka state in india. *Nutrients*, *11*(9).

Bentham, J., Cesare, M. D., Bilano, V., Bixby, H., Zhou, B., Stevens, G. A., Riley, L. M., Taddei, C., Hajifathalian, K., Lu, Y., Savin, S., Cowan, M. J., Paciorek, C. J., Chirita-Emandi, A., Hayes, A. J., Katz, J., Kelishadi, R., Kengne, A. P., Khang, Y. H., … Cisneros, J. Z. (2017).

Worldwide trends in body-mass index, underweight, overweight, and obesity from 1975 to 2016: A pooled analysis of 2416 population-based measurement studies in 128·9 million children, adolescents, and adults. *The Lancet*, *390*(10113), 2627–2642.

Braganza, S. Y., Xavier, S., Deodhar, C., Mahandiratta, S., Ramani, K. V., Mavalankar, D., Ghosh, S., Braganza, V., & Xavier, S. S. (2007). *Mid Day Meal Scheme: Understanding Critical Issues with Reference to Ahmedabad City Indian Institute of Management Ahmedabad.*

Gharge, S., Vlachopoulos, D., Skinner, A. M., Williams, C. A., Iniesta, R. R., & Unisa, S. (2024). The effect of the Mid-Day Meal programme on the longitudinal physical growth from childhood to adolescence in India. *PLOS Global Public Health*, *4*(1). https://doi.org/10.1371/JOURNAL.PGPH.0002742

Gyawali, A. (2024). Nutritional Status of Children Attending Basic Schools Providing Mid-Day Meal A Comparitive Study. Journal Healthcare Treatment Development.

Hoque, M. A. (2023). Mid-Day Meal Scheme in India: Current Status, Critical Issues and Challenges. *East African Journal of Education Studies*, *6*(3), 460–471.

Ministry of Education, Government of India. (n.d.). *Pradhan Mantri Poshan Shakti Nirman (PM POSHAN) in India*. Retrieved October 4, 2025, from (n.d.). https://pmposhan.education.gov.in/

Navaneethan, P. P. (2011). *Nutritional status of children in rural India: A case study from Tamil Nadu, first in the world to initiate the Mid-Day Meal scheme.*

Ozwald, M. G. (2017, August). (PDF) EVALUATION OF MID DAY MEAL PROGRAMME IN BMC SCHOOLS. In *International journal of multidisclipinary acedemic reserch*.

Poswal, M. V., & Mishra, D. P. (2025). Evaluating the Influence of the Mid-Day Meal Program on Primary School Students Enrollment and Retention. *Cuestiones de Fisioterapia*, *54*(1), 228–236.

Saleem, A., Goel, S., Singh, M., Mathur, A., & Choudhary, A. (2024). Assessing the Dietary Practices and Anthropometric Outcomes of Students Consuming Mid-day Meals Versus Home-Cooked Meals. *Cureus*, *16*(10).

Souza, S. H. D., Shetty, P., & Shetty, G. B. (2021b). Nutritional status of mid-day meal program on government and private school students: A comparative study. *International Journal Of Community Medicine And Public Health*, *8*(10).