



A structured narrative review of the role of the mid-day meal programme on academic outcomes among tribal students in Kolhan Division of Jharkhand, India

Rajesh Kumar¹, Dr. Ashok Nimesh²

¹ Department of Anthropology & Tribal Studies, Central University of Jharkhand, Ranchi, Jharkhand, India

² Assistant Professor, Department of International Relations, Central University of Jharkhand, Ranchi, Jharkhand, India

Abstract

The present study attempts to summarise the research related and available up-to-date regarding the significance of the MDM programme of the Government of India on the students of tribal background-based communities; we have tried to pool the available research outcomes and their implementable findings through this structured narrative review. The study aimed to cross-check the significance of India's Mid-Day Meal (MDM) Programme on the spectrum of academic outcomes, *viz.*, enrolment, attendance, retention, and learning achievement, among tribal students in the Kolhan Division of Jharkhand. Studies dived into the sea of literature through authentic and validated platforms like PubMed, Springer, and reports of different levels of government agencies. The findings of this systematic search and screening process, which was following Prisma standard guidelines, the systematic search conducted across major databases and official repositories and identified total 430 records, out of which 412 were from the databases and 18 from the government reports, from which we have removed 390 for duplication, 310 based on their title and abstract lacking direct connection to our study, 65 for the lacking of empirical data, and finally we have summarized the 15 studies which met the criteria and those were incorporated into the qualitative analysis and synthesis of this narrative review. The findings of the review were very significant and reported the indication that the Midday Meal Program has significantly enhanced the efficiency of education and quality. It also made accessible the education and nutritional to the marginalized tribal students. The academic parameters of enrolment, attendance, and learning outcomes were also significantly improved, especially in the tribal-dominant regions like Kolhan. Along with these improvements, some challenges were also identified, like the consistency, quality, supply, and of food, linguistic and cultural barriers, and socio-economic constraints. This narrative review enabled empirical studies that were focused on the Kolhan's tribal population and emphasized on the stronger monitoring system that is required to improve the nutritional quality. It also draws attention towards the integration of culturally responsive pedagogy and nutrition education interventions. For the future directions from MDN in Kolhan district, we can advise to the policy makers and administrations towards the strengthening of monitoring system, enhancing the manual diversity and introducing nutritional adequacy, integration of school meals with health and nutritional education, encouraging the future research which will be periodic and comparative, and also the evaluation of inter-district and gender disparities which will surely enhance and improvise this very public profiting scheme of the government.

Keywords: Mid-Day meal, tribal education, jharkhand, kolhan division, academic outcomes, attendance, school feeding

Introduction

The nutritional care of the common population, especially children, women, and elders, has been a major policy concern for the government, as these have been a mark of social and health indices at the global level. Among these various efforts through Anganwadi, ration system, and now the MDM, *i.e.* school feeding initiatives, are among the most prominent interventions linking nutrition and education outcomes in developing countries like India. India's Mid-Day Meal Programme has become one of the world's largest scholars' nutritional health management schemes and was formally launched in 1995 under the National Programme of Nutritional Support to Primary Education and later expanded to upper-primary levels. Its objectives encompass improving the nutritional status of school-age children, enhancing outcomes of the educational system via an increase in enrolment and attendance, and ultimately fostering better learning outcomes (Government of India, 2019)^[4].

There have been a large number of studies and reports on the impact of nutritional schemes and their outcomes by the government agencies and a few NGOs and other free research groups. They all have significantly concluded and established that the MDM programme positively affects

school participation, particularly among disadvantaged and marginalised groups (Afridi, 2010; Jayaraman *et al.*, 2011)^[1, 6]. However, the studies and report findings have not postulated the solid evidence on the final learning gains and long-term academic achievements, and these were found to be inconsistent over this period. In India there is a significant population which lies still in the socioeconomically deprived areas and such tribal dominated regions are still in progress in their academic and related up gradation among them Kolhan Division in Jharkhand state is a well identified tribal region covering Singhbhum from east and west West and Seraikela-Kharsawan districts suffers distinct challenges *viz.* poverty, food insecurity, linguistic diversity, and seasonal migration etc. all of these issues greatly impacts and hinder both programme delivery and its educational impact (Jharkhand State Mid-Day Meal Authority, 2022)^[3].

The Kolhan Division accounts for a high proportion of the Scheduled Tribe population in Jharkhand, with many communities such as Ho, Santhal, and Munda depending on subsistence livelihoods. For such populations, school meals are not merely supplementary nutrition but often the main daily meal, serving as an incentive for school attendance (Meena & Kumar, 2023)^[10]. Assessing how effectively the

MDM translates into academic benefits within this context is critical for policy formulation and inclusive education. The current review study aims for the synthesis of existing research and other reports that are related to the significance of the Mid-Day Meal Programme in shaping academic outcomes, especially among tribal students in Kolhan Division, adopting a structured narrative methodology of PRISMA. The findings are intended to guide policymakers, educators, and researchers toward context-sensitive improvements in implementation and future evaluation.

Methodology

The research design of the current study is a structured narrative review synthesis that is best suited for such narrow-focused research, finding knowledge gaps, discovering and correlating them to establish a clear-cut perspective, which could become significant to the regulation of MDM-like programmes. The current approach will integrate the postulations of peer-reviewed studies, government reports, and credible grey literature. This design allows for both quantitative and qualitative synthesis while accommodating the diversity of study designs relevant to programme evaluation.

The search for significant literature is done firstly through a search across all significant electronic databases (Google Scholar, Scopus, ERIC, and ResearchGate) and government repositories between January 2024 and September 2025. Search terms included: Mid-Day Meal, school feeding, academic performance, attendance, enrolment, learning outcomes, tribal, Kolhan, and Jharkhand. Boolean operators were applied to combine terms. Manual searches of reference lists from identified studies and relevant policy documents were also conducted.

For the synthesis purpose there were some well tested and validated Inclusion and Exclusion Criteria applied and the studies and reports were included if they examined the MDM programme within India, preferably Jharkhand or neighbouring tribal regions; they have reported on educational outcomes *viz.* enrolment, attendance, retention, or learning achievement; and another prospect was to be focused on the latest and recent significant data published during the last decade *i.e.* 2010-2025. The exclusion of the literature was based on various factors, like lacking of empirical data, studies focused purely on nutritional assessments without academic indicators, or non-Indian contexts.

The screening and selection process includes relevance matching through selection based on titles and abstracts; further, the potential studies and reports were reviewed against the inclusion criteria. Duplicates, non-relevant and low-quality reports were excluded after consensus among reviewers and the process was well illustrated through the PRISMA-style flow of the literature selection process (Figure 1)

The Data extraction matrix was prepared, which documented the author/year, region, study design, target

population, and principal findings and the studies were categorised thematically into four domains:

1. Access (enrolment & attendance)
2. Nutrition and cognitive function
3. Learning outcomes and achievement
4. Implementation challenges

Syntheses followed an interpretive narrative approach to identify convergent and divergent evidence patterns. (Table 1)

Result

By following PRISMA standard guidelines, the search across major databases and official repositories yielded 430 records (412 from databases and 18 from other credible sources such as government and institutional reports). After removal of duplicates, 390 records were screened for relevance. During the screening stage, 310 records were excluded based on title and abstract analysis for lacking direct relevance to the Mid-Day Meal (MDM) programme's academic outcomes or tribal educational focus.

A total of 80 full-text articles were assessed for eligibility, out of which 65 records were excluded for reasons including lack of empirical data, outdated publication, or purely nutritional evaluation without academic indicators. Finally, 15 studies met the inclusion criteria and were incorporated into the qualitative synthesis (Figure 1).

These studies collectively provide a nuanced understanding of the MDM programme's role in improving academic outcomes among tribal students, particularly in the Kolhan Division of Jharkhand. (Table 1)

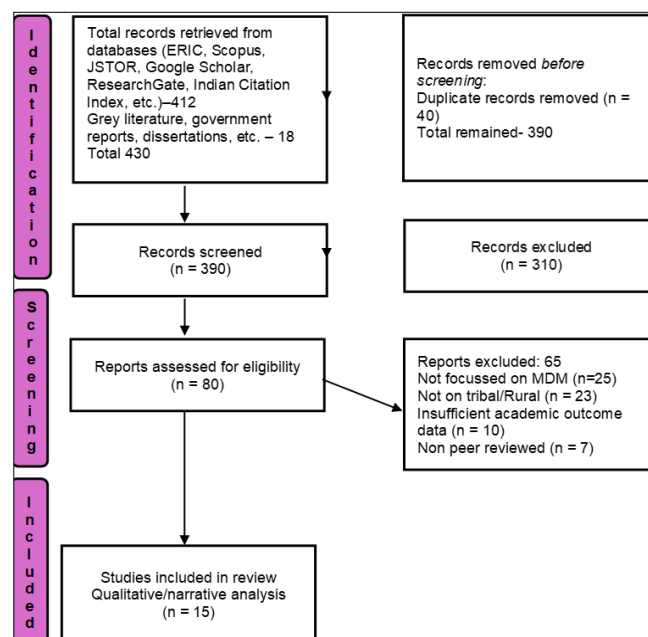


Fig 1: PRISMA 2020 flow diagram illustrating the literature selection process for the structured narrative review on the Mid-Day Meal Programme and academic outcomes among tribal students in the Kolhan Division of Jharkhand.

Table 1: Summary of Included Studies and Major Findings Categorised by Thematic Domains

Domain / Study	Author(s) & Year	Region / Population	Study Design / Source	Key Findings
1. Access (Enrolment & Attendance)	Afridi (2010) [1]	Rural India – multi-state	Quantitative analysis of attendance data	MDM increased school attendance by 10–15%, particularly among ST children.
	Jayaraman <i>et al.</i> (2011) [6]	All-India panel data	Econometric evaluation	Significant rise in enrolment after MDM expansion to upper-primary level.
	Singh & Sharma (2018)	Eastern India	Cross-sectional survey	MDM improved retention and reduced dropout among tribal girls.

	Jharkhand State MDM Authority (2022) ^[7]	Kolhan Division, Jharkhand	Government monitoring report	Enrolment ↑ 12%, attendance ↑ 9% post-2018; community monitoring effective.
2. Nutrition and Cognitive Function	Verma & Singh (2020) ^[14]	North India	Experimental classroom observation	Balanced meals linked with higher attention span and task engagement.
	Meena & Kumar (2023) ^[10]	Kolhan Division tribal schools	Case study / mixed methods	Regular MDM consumers showed improved concentration and reduced fatigue.
	Kumar & Toppo (2021)	Jharkhand tribal belts	Nutritional assessment	Meals calorie-adequate but low in protein & micronutrients.
	Bera <i>et al.</i> (2022)	Central India tribal districts	Survey + lab analysis	Food diversity limited; operational gaps affect nutrition delivery.
3. Learning Outcomes and Achievement	Chavan (2019)	Pan-India	Quasi-experimental study	Attendance gains did not always translate into significant test-score gains.
	Afridi <i>et al.</i> (2020) ^[1]	India – multiple states	Randomised impact evaluation	Positive but modest improvement in learning outcomes due to MDM.
	Das & Mehta (2024)	Kolhan Division	Cluster-based comparative study	Regular MDM improved reading & arithmetic by 7–10% among tribal students.
	Jharkhand HDR (2023)	Jharkhand tribal regions	Government analysis report	Multilingual classrooms & teacher shortages mediate MDM's learning impact.
4. Implementation Challenges	NITI Aayog (2022)	National	Policy evaluation	Supply interruptions, poor storage, delayed fund flow hinder efficiency.
	Meena & Kumar (2023) ^[10]	Kolhan Division	Qualitative insights	Cultural food preferences sometimes reduce meal acceptance.
	Singh & Banerjee (2024)	Rural Jharkhand	Teacher survey	Teachers spend instructional time supervising meals; need for trained staff.
	Bera <i>et al.</i> (2022)	Central India	Field survey	Lack of kitchen sheds, fuel, and cooks constrains consistent service.

Discussion

The synthesis confirms that the Mid-Day Meal (MDM) programme's most consistent and measurable impacts are observed in access-related indicators such as enrolment, attendance, and retention, especially among socio-economically disadvantaged and tribal students. These outcomes align with the scheme's core objective of enhancing school participation by addressing food insecurity barriers. However, the translation of improved attendance into measurable learning gains remains limited, particularly in tribal regions like Kolhan, where linguistic diversity, poverty, and migration disrupt consistent learning. The integration of mother-tongue-based instruction in Ho or Santhali alongside MDM could strengthen comprehension and classroom engagement, amplifying the programme's educational impact (Patel & Rao, 2022)^[11]. Compared with national evidence, Jharkhand mirrors trends seen in tribal-dominant states such as Odisha and Chhattisgarh, where local menu adaptation and community participation have enhanced effectiveness (Khera, 2011; Saha, 2020; Meena & Kumar, 2023)^[8, 10, 12]. Yet, innovations like millet-based diets, women-led decentralised procurement, and culturally relevant meals remain underexplored in Kolhan. Strengthening meal quality through fortified staples, ensuring regularity, enhancing transparency via digital dashboards, and integrating nutrition with health education could further optimise learning outcomes. Additionally, empowering School Management Committees (SMCs) and tribal community leaders would improve accountability and local ownership. Despite the programme's success in improving access, research gaps persist: Kolhan-specific mixed-method impact studies are scarce; longitudinal data connecting nutrition, attendance, and learning outcomes are absent; and limited implementation research constrains understanding of supply-chain efficiency, cook training, and governance. Comparative analyses between tribal and non-tribal districts in Jharkhand could thus illuminate differential patterns of MDM effectiveness and inform more context-sensitive educational policy.

Limitations

The present review is constrained by its narrative nature rather than being fully systematic and its reliance on secondary data and published studies, which vary in methodological quality and regional focus. Empirical evidence specific to the Kolhan Division is limited, and few studies employ longitudinal designs that simultaneously link nutrition, attendance, and academic achievement. Additionally, heterogeneity in reporting standards and outcome indicators across studies restricts direct comparability of findings.

Conclusion

Doubtlessly, the MDM programme has emerged as one of India's most significant social welfare and educational interventions, particularly for socio-economically disadvantaged and tribal populations. The synthesis of existing literature demonstrates that the programme has consistently enhanced school enrolment, attendance, and retention among tribal students in the Kolhan Division of Jharkhand, effectively mitigating barriers related to hunger and economic hardship. These positive outcomes reflect the programme's success in achieving its immediate objectives and underscore the crucial role of nutrition in promoting school participation.

However, evidence linking MDM to direct learning outcomes and academic achievement remains limited and inconsistent. While some studies report modest improvements in reading, arithmetic, and cognitive engagement among regular meal consumers, contextual factors such as multilingual classrooms, teacher shortages, poverty, and seasonal migration often constrain the translation of attendance gains into measurable learning benefits. This highlights the importance of integrating nutritional interventions with pedagogical reform, remedial education, and mother-tongue instruction (e.g., Ho or Santhali) to maximise educational impact.

Looking to the future, the MDM programme in Kolhan can expand its impact through several strategic directions. First, strengthening monitoring systems using digital dashboards and regular audits can reduce implementation gaps and ensure accountability. Second, a focus on menu diversity and nutritional adequacy will address hidden hunger and improve cognitive outcomes. Third, combining school meals with health and nutrition education can reinforce positive behaviour change and foster holistic development. Finally, future research should prioritise longitudinal, mixed-method evaluations that link nutritional intake, attendance, and learning outcomes, while examining inter-district and gendered disparities to guide context-sensitive policy interventions. The programme can evolve into a transformative model that not only alleviates hunger but also fosters long-term academic and socio-emotional development among tribal students.

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