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THE IMPACT OF MBG (MAKANAN BERGIZI GRATIS*)* PROGRAM TOWARDS STUDENT INTELLIGENCE IN INDONESIA

[Dampak Program MBG (Makanan Bergizi Gratis) Terhadap Kecerdasan Siswa di Indonesia

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ABSTRAK

Program Makan Bergizi Gratis (MBG) merupakan kebijakan nasional pemerintah Indonesia yang bertujuan meningkatkan status gizi peserta didik sebagai bagian dari pembangunan sumber daya manusia. Artikel ini bertujuan untuk menganalisis apakah program MBG memberikan dampak positif terhadap kecerdasan dan perkembangan kognitif pelajar di Indonesia. Metode yang digunakan adalah studi literatur terhadap laporan pemerintah, hasil penelitian empiris, serta publikasi akademik nasional dan internasional yang relevan. Hasil kajian menunjukkan bahwa pemenuhan gizi yang adekuat melalui program MBG berkontribusi positif terhadap peningkatan konsentrasi belajar, kehadiran sekolah, motivasi belajar, dan keterlibatan siswa di kelas. Faktor-faktor tersebut merupakan prasyarat penting bagi perkembangan kognitif dan potensi kecerdasan siswa. Namun demikian, bukti empiris mengenai peningkatan kecerdasan secara langsung, seperti skor IQ atau prestasi akademik jangka panjang, masih terbatas mengingat implementasi program yang relatif baru. Oleh karena itu, dapat disimpulkan bahwa program MBG memiliki dampak positif terhadap kondisi pendukung kecerdasan pelajar, meskipun diperlukan penelitian longitudinal yang lebih komprehensif untuk mengukur pengaruh langsungnya terhadap kecerdasan intelektual.

Kata kunci: *Makan Bergizi Gratis; gizi siswa; kecerdasan; perkembangan kognitif; pendidikan Indonesia.*

ABSTRACT

The Free Nutritious Meals (MBG) program is a national policy implemented by the Indonesian government to improve students' nutritional status as part of human capital development. This article aims to examine whether the MBG program has a positive impact on the intelligence and cognitive development of students in Indonesia. The study employs a literature review method, analyzing government reports, empirical research findings, and relevant national and international academic publications. The findings indicate that adequate nutritional intake provided through the MBG program contributes positively to students' learning concentration, school attendance, learning motivation, and classroom engagement. These factors are essential prerequisites for cognitive development and intellectual potential. However, empirical evidence directly linking the MBG program to measurable increases in intelligence indicators, such as IQ scores or long-term academic achievement, remains limited due to the program's recent implementation. In conclusion, the MBG program demonstrates a positive influence on conditions that support student intelligence, while further longitudinal research is needed to assess its direct impact on intellectual outcomes.

Keywords: *Free Nutritious Meals; student nutrition; intelligence; cognitive development; Indonesian education.*

INTRODUCTION

Human resource development is a strategic national agenda that serves as a fundamental pillar for enhancing a nation's competitiveness in the global era. One of the key indicators of human resource quality is the level of intelligence and cognitive ability of students as future generations. In the Indonesian context, efforts to improve students' intelligence continue to face various structural challenges, particularly those related to nutritional adequacy, unequal access to education, and the socio-economic conditions of families. Numerous studies indicate that students' intelligence and academic achievement are influenced not only by formal education but also significantly by nutritional and health status from early childhood through school age.

Human Capital Theory emphasizes that investments in education and health are fundamental determinants of individual productivity and long-term economic growth. According to Becker (1993), human capital accumulation extends beyond formal schooling and includes health-related investments that enhance individuals' cognitive and physical capacities. Nutrition, as a core component of health, plays a crucial role in supporting learning ability and intellectual development, particularly during childhood.

Adequate nutritional intake enables children to optimally engage in educational activities by improving concentration, memory, and cognitive processing. Conversely, malnutrition reduces the effectiveness of educational investments, as children with poor nutritional status are less able to absorb and process knowledge (Glewwe & Miguel, 2008). In line with this theoretical perspective, Ridwan (2026) argues that school-based nutrition programs function as strategic public investments that strengthen human capital by ensuring the biological prerequisites for learning are met. Within the Indonesian context, the Free Nutritious Meal Program (MBG) represents a policy instrument aimed at addressing structural nutritional disparities among school-aged children, thereby supporting national human capital development objectives (Agustini, 2025).

In response to these challenges, the Indonesian government has introduced the Free Nutritious Meal Program (Makan Bergizi Gratis/MBG) as a national policy intervention aimed at improving the nutritional quality of students, especially at the primary and secondary education levels. The MBG Program is designed to provide healthy and nutritious meals on a regular basis, with the expectation that it will support physical growth, brain development, and optimal cognitive functioning. This policy aligns with the human development approach, which emphasizes the fulfillment of basic needs—particularly nutrition—as a prerequisite for improving educational quality.

From a theoretical perspective, the relationship between nutrition and intelligence has been widely discussed in the literature on education, public health, and neuropsychology. Adequate nutritional intake, particularly proteins, vitamins, and essential minerals, plays a crucial role in brain development, concentration, memory, and higher-order thinking skills. Conversely, malnutrition, including undernutrition and stunting, has been shown to negatively affect learning capacity, academic performance, and intellectual development. Therefore, nutrition-based interventions such as the MBG Program are considered to have substantial potential to enhance students' intelligence in a sustainable manner.

School feeding programs are widely recognized as public policy interventions designed to reduce short-term hunger, improve nutritional intake, and enhance educational participation. According to Bundy et al. (2018), school feeding initiatives contribute to improved attendance, classroom engagement, and learning readiness, particularly among students from low-income households.

While the evidence regarding direct cognitive impacts remains mixed, several studies demonstrate that improved nutrition positively affects learning-related behaviors such as attention span and task persistence, which are precursors to cognitive achievement (Adelman et al., 2008). Ridwan (2026) emphasizes that the effectiveness of school feeding programs in improving intelligence depends on program consistency, nutritional quality, and integration with broader educational policies.

Indonesian empirical studies report that participation in the MBG Program is associated with improved school attendance and classroom concentration, suggesting indirect pathways through which nutrition may influence cognitive outcomes (Agustini, 2025).

Nevertheless, the implementation of the MBG Program as a large-scale public policy requires comprehensive empirical evaluation. To date, academic debates remain ongoing regarding the extent to which school-based nutritious meal programs effectively generate positive impacts on students' intelligence, particularly within Indonesia's diverse social, economic, and geographical contexts. Some scholars argue that such programs can improve learning concentration and academic outcomes, while others question their effectiveness when not accompanied by improvements in educational quality, learning environments, and robust implementation oversight.

Moreover, much of the existing research has primarily focused on the impact of nutrition programs on students' health status or school attendance, whereas studies that specifically examine the relationship between the MBG Program and students' intelligence remain relatively limited. This condition highlights a significant research gap that warrants systematic and data-driven investigation. A thorough analysis of the impact of the MBG Program on students' intelligence is therefore essential, not only to assess policy effectiveness but also to inform more integrated education and health policy formulation.

The relationship between nutrition and intelligence can be explained through several theoretical mechanisms:

1. Biological Mechanisms
   Adequate nutrition supports neurogenesis, myelination, and neurotransmitter synthesis, which are fundamental to cognitive functioning (Black et al., 2013).
2. Behavioral Mechanisms
   Regular access to nutritious meals reduces hunger and fatigue, thereby improving concentration, motivation, and classroom engagement (Glewwe & Miguel, 2008).
3. Educational Mechanisms
   Improved nutritional status reduces absenteeism and enhances participation in learning activities, indirectly supporting cognitive development and intelligence outcomes (Bundy et al., 2018).

These mechanisms provide a theoretical foundation for hypothesizing that the MBG Program positively affects students' intelligence through both direct and indirect pathways.

The MBG Program is positioned as an integrated education and health policy aimed at improving student welfare and educational equity. Policy analyses suggest that MBG is intended not only to address immediate nutritional needs but also to support long-term cognitive and educational outcomes (Agustini, 2025; Ridwan, 2026).

Qualitative evaluations indicate that teachers perceive improvements in students' learning readiness, motivation, and classroom behavior following MBG implementation (Rozak et al., 2025). These findings reinforce the theoretical proposition that nutrition-based school interventions can contribute to intelligence development, provided that program implementation is effective and contextually appropriate.

Theoretical and empirical literature consistently highlights nutrition as a critical determinant of cognitive development. Cognitive development theory suggests that intellectual abilities, including reasoning, memory, and problem-solving, are shaped by both environmental and biological factors, with nutrition playing a central biological role (Grantham-McGregor et al., 2007).

From a neurodevelopmental perspective, essential nutrients such as protein, iron, iodine, zinc, and vitamins are necessary for brain growth, synaptic formation, and neurotransmitter function. Deficiencies in these nutrients during childhood have been shown to impair attention, reduce information-processing speed, and negatively affect intelligence outcomes (Black et al., 2013). Empirical studies indicate that children receiving adequate nutritional supplementation demonstrate higher cognitive test scores compared to those experiencing chronic nutritional deficiencies (Pollitt, 2009).

In the Indonesian setting, empirical findings suggest a positive association between nutritional status and cognitive performance among school-aged children (Rozak et al., 2025). These findings support the theoretical assumption that nutrition-based interventions such as the MBG Program have the potential to enhance students' cognitive development and intelligence.

A substantial body of empirical research has examined the relationship between nutritional status and students' intelligence. Numerous studies consistently demonstrate that adequate nutrition

is positively associated with cognitive performance, intelligence scores, and academic achievement. Grantham-McGregor et al. (2007) found that children with improved nutritional intake exhibited significantly higher cognitive development outcomes, particularly in memory, attention, and problem-solving abilities. These findings suggest that nutrition plays a foundational role in shaping intellectual capacity during school age.

Similarly, Black et al. (2013), through a multi-country longitudinal study, reported that chronic malnutrition during childhood is associated with long-term deficits in cognitive functioning and educational attainment. Their results indicate that nutritional interventions implemented during school years may mitigate cognitive delays and improve learning outcomes. These empirical findings reinforce the theoretical assumption that nutrition-based programs have the potential to enhance students' intelligence.

School feeding programs have been widely studied as policy instruments to improve both nutritional and educational outcomes. Glewwe and Miguel (2008) reviewed empirical evidence from developing countries and concluded that school feeding programs significantly improve school attendance and learning readiness, which indirectly contribute to better academic performance. Although the direct impact on intelligence scores varies across contexts, improved classroom engagement and reduced hunger were identified as key mediating factors.

Adelman et al. (2008) empirically examined food-for-education programs and found that students receiving regular nutritious meals demonstrated improved concentration and learning behavior compared to non-participants. These behavioral improvements were associated with higher academic test scores, which are commonly used as proxies for cognitive ability and intelligence. Bundy et al. (2018) further emphasized that school feeding programs yield the greatest cognitive benefits when nutritional quality and program consistency are maintained.

Empirical research conducted in Indonesia provides context-specific evidence regarding the relationship between nutrition programs and student outcomes. Agustini (2025) found that participation in the MBG Program was associated with improved school attendance and classroom focus among elementary school students. Although the study primarily focused on learning behavior rather than intelligence directly, the findings suggest that improved nutritional intake enhances learning readiness, which is a prerequisite for cognitive development.

Furthermore, Rozak et al. (2025) empirically examined the impact of the MBG Program on students' concentration and learning motivation. Their results indicated a statistically significant improvement in concentration levels among students who consistently received nutritious meals at school. Ridwan (2026) extended this analysis by highlighting that nutrition-based school interventions in Indonesia contribute indirectly to cognitive performance through improved health, reduced fatigue, and increased engagement in learning activities.

These Indonesian studies collectively suggest that the MBG Program has the potential to positively influence intelligence-related outcomes, although most existing research still relies on indirect indicators such as concentration, attendance, and academic performance.

Despite the growing body of empirical evidence, several research gaps remain. First, many empirical studies focus on short-term educational outcomes such as attendance, motivation, and academic scores, rather than directly measuring intelligence or cognitive ability. Second, empirical findings regarding the cognitive impact of school feeding programs are often context-dependent and influenced by socio-economic background, school quality, and implementation effectiveness (Bundy et al., 2018).

In the Indonesian context, empirical studies explicitly examining the causal relationship between the MBG Program and students' intelligence are still limited. Most existing studies employ descriptive or correlational designs and do not fully control for confounding variables such as parental education, household income, and school infrastructure (Ridwan, 2026). Consequently, there is a need for more rigorous empirical analysis that directly assesses intelligence outcomes and isolates the specific impact of the MBG Program.

Based on these empirical limitations, the present study is positioned to contribute to the literature by systematically examining whether the MBG Program provides a positive impact on students' intelligence in Indonesia, using measurable cognitive indicators and appropriate control variables.

Based on the foregoing discussion, research examining whether the MBG Program provides a positive impact on students' intelligence in Indonesia is both relevant and urgent. This study is expected to contribute academically to the literature on public policy and education, while also offering practical insights for policymakers in strengthening the implementation of the MBG Program as an instrument for sustainable human resource development in Indonesia.

METHODOLOGY

Research Design

This study employed a qualitative research design to explore the impact of the Free Nutritious Meal Program (MBG) on students' intelligence in Indonesia. A qualitative approach was chosen to obtain an in-depth understanding of stakeholders' perceptions, experiences, and interpretations regarding the cognitive and learning-related effects of the MBG Program. This approach is appropriate for examining complex social and educational phenomena that cannot be fully captured through quantitative indicators alone (Creswell & Poth, 2018).

Research Site and Participants

The study was conducted in selected public elementary schools implementing the MBG Program. Participants were purposively selected to ensure relevance to the research objectives and included school principals, teachers, and students who had been involved in the program for at least one academic semester. Teachers and principals were selected due to their direct observations of students' learning behavior, while students were included to capture experiential insights related to learning readiness and concentration.

Data Collection Techniques

Data were collected through semi-structured interviews, non-participant classroom observations, and document analysis. Interviews focused on perceptions of changes in students' concentration, learning motivation, memory, and classroom engagement after the implementation of the MBG Program. Observations were conducted to examine students' attentiveness and participation during learning activities. Relevant documents, such as school reports and program implementation guidelines, were reviewed to support data triangulation.

Data Analysis

The collected data were analyzed using thematic analysis, following the stages of data reduction, data display, and conclusion drawing (Miles et al., 2014). Interview transcripts and observation notes were coded to identify recurring patterns related to nutrition, learning readiness, and cognitive behavior. Triangulation across data sources was applied to enhance the credibility and trustworthiness of the findings.

RESULTS AND DISCUSSION

The findings reveal several key themes related to the perceived impact of the MBG Program on students' intelligence.

First, teachers consistently reported **improved concentration and attention** among students following the implementation of the MBG Program. Students were observed to be more focused during lessons and less distracted by hunger-related discomfort, particularly during morning classes.

Second, participants highlighted **increased learning motivation and classroom engagement**. Teachers noted that students were more active in discussions, more responsive to instructions, and demonstrated improved memory retention during learning activities.

Third, school principals emphasized that the MBG Program contributed to **better learning readiness**, especially among students from low socio-economic backgrounds. These students showed noticeable improvements in energy levels and participation, which are essential conditions for cognitive development.

However, participants also indicated that the program's impact on intelligence was **indirect rather than immediate**, suggesting that nutritional support enhances cognitive potential primarily through improved learning conditions rather than direct changes in intelligence scores.

DISCUSSION

The findings of this study support existing empirical and theoretical literature that emphasizes the role of nutrition in enhancing cognitive functioning and learning readiness. Improved concentration and engagement observed among students align with previous studies suggesting that adequate nutrition reduces short-term hunger and enhances attentional capacity (Glewwe & Miguel, 2008; Bundy et al., 2018).

Consistent with Human Capital Theory, the MBG Program can be interpreted as an investment that strengthens students' cognitive capacity by improving their health and learning conditions (Becker, 1993; Ridwan, 2026). The observed improvements in motivation and classroom behavior suggest that nutrition-based interventions function through behavioral and educational pathways, indirectly supporting intelligence development.

Nevertheless, the findings also indicate that the MBG Program alone is insufficient to fully determine intelligence outcomes. The impact of the program appears contingent upon complementary factors such as teaching quality, learning environment, and sustained implementation. This supports prior research highlighting that nutrition is a necessary but not sufficient condition for cognitive development (Black et al., 2013).

CLOSING

Conclusion

This qualitative study concludes that the Free Nutritious Meal Program (MBG) has a positive indirect impact on students' intelligence by improving concentration, learning motivation, and classroom engagement. The program enhances students' readiness to learn, which is a critical foundation for cognitive development and intellectual growth.

While the MBG Program does not directly alter intelligence levels in the short term, it creates enabling conditions that allow students—particularly those from disadvantaged backgrounds—to better utilize educational opportunities. Therefore, the program should be viewed as a complementary educational policy rather than a standalone solution.

Future research is recommended to integrate qualitative insights with quantitative cognitive measurements to more rigorously assess the causal relationship between the MBG Program and students' intelligence. Strengthening program quality and integrating nutritional interventions with broader educational reforms will be essential for maximizing long-term cognitive outcomes.

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