
The Relationship Between Dietary Patterns, Medical History, And Mbg Administration With The Nutritional Status Of Preschool Children In The Working Area Of Cibodas Health Center In 2025

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Abstract

Nutritional problems in preschool children remain a serious concern in Indonesia, with a national stunting prevalence of 21.6%. Although the rate is lower in the working area of the Cibodas Community Health Center, cases of double burden of malnutrition (underweight and overweight) are still present. This study aimed to examine the relationship between dietary patterns, medical history, and participation in the Free Nutritious Meal Program (MBG) with the nutritional status of preschool children. A quantitative cross-sectional design was used, involving 92 preschool children selected through purposive sampling. Data were collected using dietary pattern and medical history questionnaires, along with anthropometric measurements, and analyzed using the Chi-Square test. The majority of children had good dietary patterns (52.2%), most had a history of illness (62.0%), and more than half participated in the MBG program (56.5%). Nutritional status was dominated by normal nutrition (73.9%), followed by undernutrition (14.1%) and overnutrition (12.0%). Bivariate analysis indicated significant associations between dietary patterns ($p=0.000$), medical history ($p=0.000$), and MBG participation ($p=0.000$) with nutritional status. These three factors are important determinants of preschool children's nutritional status, suggesting that nutrition improvement efforts should focus on enhancing dietary patterns, preventing illness, and optimizing MBG program coverage.

Keywords: Dietary Patterns, Medical History, MBG, Nutritional Status, Preschool Children.

INTRODUCTION

Stunting remains a major focus in child nutrition issues in Indonesia, particularly among preschool-aged children. Stunting is defined as a failure of a child's growth resulting from uncontrolled chronic nutritional deficiencies and repeated exposure to infections, especially during the first 1,000 days of life. This issue not only affects physical growth but also has implications for cognitive development, long-term health, and future productivity.

Data from the World Health Organization (WHO) and UNICEF in 2023 reported that the global prevalence of stunting among children under five reached 22.3%. The WHO target aims to reduce stunting to below 15% by 2030, serving as an international benchmark. At the national level, the Indonesian Nutritional Status Study (SSGI) indicated a decline in stunting prevalence from 24.4% in 2021 to 21.6% in 2022. Despite this decrease, the figure remains above the national target outlined in the 2024 National Medium-Term Development Plan (RPJMN) of 14%, indicating that nutritional issues, particularly stunting, still require serious attention from all relevant stakeholders.

West Java Province has recorded relatively high stunting rates. According to SSGI, stunting prevalence in West Java in 2022 reached 20.2%. Specifically, West Bandung Regency (KBB) showed a declining trend over the past three years, from 29.6% in 2021 to 27.3% in 2022, and further down to 25.1% in 2023. Although there is a downward trend, these rates remain high, placing KBB as a priority area for stunting intervention. The prevalence of underweight children was recorded at 985 children (21%), while overweight reached 1,838 children (39%).

The working area of the Cibodas Community Health Center, West Bandung Regency, based on data from the Health Office in December 2024, recorded a stunting prevalence of 2% among

children under five, covering 42 children. Additionally, 40 children (2%) were underweight. For wasting (acute malnutrition reflected by the weight-to-height ratio), 11 children (0%) were identified.

Stunting and other nutritional problems are driven by multiple factors, two of which are dietary patterns and history of infection. Low dietary diversity results in insufficient intake of essential nutrients. Keyata et al. (2022) revealed that most preschool children in Ethiopia had inadequate diet diversity scores (less than four food groups), potentially leading to malnutrition. Low dietary diversity contributes to deficiencies in essential vitamins and minerals necessary for supporting optimal child growth and development (Nattagh-Eshtivani et al., 2023).

In addition to dietary patterns, infection history plays a significant role. Children who frequently experience infections are at risk of nutritional deficiencies because infections can disrupt nutrient absorption. Soofi et al. (2023) demonstrated that infection history among children in Pakistan was directly correlated with reduced physical growth, contributing to stunting and weight deficiencies. Infectious diseases, such as diarrhea and respiratory tract infections, lead to reduced appetite and increased energy demands, ultimately deteriorating nutritional status (Flores et al., 2020).

The impacts of suboptimal nutritional status are broad, ranging from impaired physical growth and brain development to reduced immunity and academic performance. Flores et al. (2020) and Modjadji et al. (2020) stated that children with poorly diversified diets tend to experience stunting, underweight, and long-term health issues. Poor nutritional status can hinder children's physical and cognitive development, weaken immune systems, and limit their learning and social interaction capacities.

To address these issues, various countries have implemented nutrition interventions such as community-based education, food supplementation programs, and policies providing free meals in educational institutions. In Ethiopia, community-based nutrition education proved effective in increasing parental awareness of the importance of diverse and nutritious diets (Keyata et al., 2022). In England and Scotland, the Universal Infant Free School Meals (UIFSM) policy has been implemented to improve the quality of food consumed by primary school children, including preschool-aged children. Parnham et al. (2022) found that this policy positively affected the diet quality of children from low-income families.

In Rwanda, the Fortified Blended Foods (FBF) program, launched in 2017, successfully reduced stunting prevalence. Hebert et al. (2023) reported that positive changes in nutritional status resulted from the provision of nutritious foods combined with increased parental and community nutrition knowledge, demonstrating the effectiveness of integrated nutrition interventions.

A similar program implemented in Indonesia is the Free Nutritious Meal Program (MBG) by the National Nutrition Agency (BGN), aimed at improving the nutritional intake of children from economically disadvantaged families. The program is designed to provide nutritious meals as a preventive effort against stunting and other nutritional problems. Several studies, including Sarjito (2024) and Sari & Rahmadani (2023), showed that MBG plays an important role in improving diet quality and nutritional status in children. However, challenges remain in financing, food distribution, and parental education.

In the Cibodas Community Health Center working area, the MBG program has been implemented, including in early childhood education institutions. The MBG program not only targets stunting reduction but also serves as a preventive measure to maintain optimal nutritional status and prevent future malnutrition and stunting cases. However, local data on its implementation and impact on preschool children's nutritional status remain limited. Moreover, few studies comprehensively explore the relationship between MBG program implementation, dietary patterns, and infection history with children's nutritional status in this area. Therefore, this study is essential to examine these three factors and their correlation with preschool children's nutritional status. The findings are

expected to provide valuable input for improving nutrition interventions and health program planning at the local level.

RESEARCH METHODS

Study Design

This study used a quantitative approach with a cross-sectional design to examine relationships between dietary patterns, medical history, MBG provision, and preschool children's nutritional status. Data for independent and dependent variables were collected simultaneously without intervention, allowing for description of actual conditions.

Conceptual Framework

The study conceptual framework shows how dietary patterns, medical history, and MBG provision (independent variables) influence nutritional status (dependent variable). This framework guided data collection and analysis.

Research Variables

Independent variables included dietary patterns, medical history, and MBG provision, while the dependent variable was nutritional status. These variables were operationalized for measurable assessment, with anthropometric measurements and questionnaires used to collect data.

Population and Sample

The population included all preschool children in kindergartens under the Cibodas Community Health Center in 2025. Two kindergartens were selected purposively: one with MBG (166 children) and one without MBG (73 children). Total sample targeted was 239 children, but only 92 were successfully analyzed due to absences, parental refusal, or incomplete data. Inclusion criteria included active enrollment, physical capability for measurement, and parental consent, while exclusion criteria included illness, chronic or congenital conditions, or parental withdrawal.

Data Collection Techniques and Procedures

Primary data were collected directly from respondents using questionnaires, checklists, and anthropometric measurements, while secondary data from school records supported the analysis. Research procedures included preparation, implementation, and data collection, ensuring informed consent, accurate measurement, and complete data collection.

Data Processing and Analysis

Data were processed through editing, coding, entry, cleaning, and tabulation. Variables were coded numerically for analysis in SPSS. Univariate analysis described variable characteristics, and bivariate analysis examined relationships between dietary patterns, medical history, MBG provision, and nutritional status.

Research Location and Time

The study was conducted in September 2025 in kindergartens located in Langensari Village, within the working area of the Cibodas Community Health Center, including all stages from data collection to anthropometric measurements and questionnaires.

RESULTS AND DISCUSSION

Distribution of Nutritional Status of Preschool Children in the Working Area of Cibodas Health Center in 2025

Table 1. Distribution of nutritional status of preschool children in the working area of Cibodas Health Center in 2025

Nutritional Status	Frequency (f)	Percentage (%)
Underweight	23	25,0
Normal	51	55,4
Overweight	18	19,6
Total	92	100,0

Based on Table 1, most preschool children in the working area of Cibodas Health Center in 2025 had a normal nutritional status, totaling 51 children (55.4%). However, there were still 23 children (25.0%) with underweight status and 18 children (19.6%) with overweight status. This data indicates the presence of a double burden of malnutrition in the study area, where both undernutrition and overnutrition occur simultaneously in one population.

Distribution of Implementation of the Free Nutritious Meal (MBG) Program in the Working Area of Cibodas Health Center in 2025

Table 2. Distribution of implementation of the Free Nutritious Meal (MBG) Program in the working area of Cibodas Health Center in 2025

MBG Provision	Frequency (f)	Percentage (%)
Did Not Receive	40	43,5
Received	52	56,5
Total	92	100,0

Based on Table 2, most preschool children in the working area of Cibodas Health Center in 2025 received the MBG program, totaling 52 children (56.5%), while 40 children (43.5%) did not receive the MBG program. The MBG program provided children with additional meals at school without specifically considering balanced nutritional composition, but only identified whether the child received the program or not. The program coverage of 56.5% indicates that more than half of the preschool population in the study area has been reached by the government nutrition intervention program, although gaps still exist for children who have not received it.

Distribution of Eating Patterns of Preschool Children in the Working Area of Cibodas Health Center in 2025

Table 3. Distribution of eating patterns of preschool children in the working area of Cibodas Health Center in 2025

Eating Pattern	Frequency (f)	Percentage (%)
Poor	0	0,00
Adequate	44	47,8
Good	48	52,2
Total	92	100,0

Based on Table 3, the analysis shows that most preschool children in the working area of Cibodas Health Center in 2025 had a good eating pattern, totaling 48 children (52.2%), while 44 children (47.8%) had an adequate eating pattern. No children with a poor eating pattern were found in this study. Eating patterns were assessed based on meal schedule regularity, meal frequency, and the variety of foods consumed daily. The high proportion of children with good and adequate eating patterns indicates a relatively good parental awareness in meeting children's nutritional needs, although the quality and quantity of intake still need to be improved in the adequate group.

Distribution of Disease History of Preschool Children in the Working Area of Cibodas Health Center in 2025

Table 4. Disease history of preschool children in the working area of Cibodas Health Center in 2025

Disease History	Frequency (f)	Percentage (%)
Never	35	38,00
Ever	27	62,0
Total	92	100,0

Based on Table 4, most preschool children in the working area of Cibodas Health Center in 2025 had a history of illness in the last 3 months, totaling 57 children (62.0%), while 35 children (38.0%) had no history of illness. The high proportion of children who have been sick indicates that preschool-aged children are still vulnerable to various infectious diseases, which can affect their nutritional status and growth and development.

Table 5. Distribution of types of diseases experienced by preschool children in the working area of Cibodas Health Center in 2025

No	Type of Disease	Frequency (f)	Percentage of Sick Children (%)	Percentage of Total (%)
1	ISPA	35	61,4	38,0
2	Diarrhea	12	21,1	13,0
3	Worm Infection	6	10,5	6,5
4	DBD	2	3,5	2,2
5	Others	2	3,5	2,2
Total	57	100,0	62,0	

Note: Some children may experience more than one type of disease

Based on Table 5, among the 57 children with a history of illness, the most common disease experienced was ARI (Acute Respiratory Infection) with 35 cases (61.4% of sick children or 38.0% of the total respondents), followed by diarrhea with 12 cases (21.1%), worm infections 6 cases (10.5%), dengue fever 2 cases (3.5%), and other diseases 2 cases (3.5%). The high incidence of ARI is likely related to environmental conditions, weather, and air pollution exposure in the study area. ARI can disrupt children's appetite and increase the body's energy requirements, which may potentially affect the nutritional status of children if not properly managed.

Relationship Between Dietary Patterns and Nutritional Status of Preschool Children in the Working Area of Puskesmas Cibodas, 2025

Table 6. Relationship Between Dietary Patterns and Nutritional Status of Preschool Children in the Working Area of Puskesmas Cibodas 2025

Nutritional Status	Moderate	Good	Total	p-value
Underweight	15 (34,1%)	8 (16,7%)	23 (25,0%)	<0,001
Normal	23 (52,3%)	28 (58,3%)	51 (55,4%)	
Overweight	6 (13,6%)	12 (25,0%)	18 (19,6%)	
Total	44 (100%)	48 (100%)	92 (100%)	

Based on Table 6, the Chi-Square test showed a p-value < 0.001, indicating a significant relationship between dietary patterns and nutritional status among preschool children in the Cibodas Community Health Center area in 2025. Children with adequate but not optimal diets had a higher proportion of undernutrition (34.1%) compared to those with good dietary patterns (16.7%), while children with good diets were more likely to have normal nutritional status (58.3% vs. 52.3%) and also a higher proportion of overweight (25.0% vs. 13.6%), possibly due to excessive portion sizes or low physical activity. These findings highlight that dietary patterns are a key factor in children's

nutritional status, but attention must also be given to portion control and energy balance relative to physical activity.

Relationship Between Receiving the Free Nutritious Meal (MBG) Program and Nutritional Status of Preschool Children in the Working Area of Puskesmas Cibodas, 2025

Table 7. Relationship Between Receiving MBG and Nutritional Status of Preschool Children in the Working Area of Puskesmas Cibodas 2025

Nutritional Status	Did Not Receive	Received	Total	p-value
Underweight	14 (35,0%)	9 (17,3%)	23 (25,0%)	<0,001
Normal	20 (50,0%)	31 (59,6%)	51 (55,4%)	
Overweight	6 (15,0%)	12 (23,1%)	18 (19,6%)	
Total	40 (100%)	52 (100%)	92 (100%)	

Based on Table 7, the Chi-Square test showed a significant relationship between MBG provision and the nutritional status of preschool children in the Cibodas Health Center area in 2025 ($p < 0.001$). Children who received MBG had a higher proportion of normal nutrition (59.6%) compared to those who did not receive MBG (50.0%), indicating that the MBG program positively supports normal nutritional status. Conversely, undernutrition was more common among children who did not receive MBG (35.0%) than those who did (17.3%), suggesting that lack of access to MBG increases the risk of undernutrition. Interestingly, overnutrition was slightly higher in the MBG group (23.1%) compared to the non-MBG group (15.0%), likely due to excess total intake or low physical activity. These results highlight that while MBG effectively improves normal nutrition and reduces undernutrition, education on balanced intake and physical activity is necessary to prevent overnutrition and maximize program benefits.

Relationship Between History of Illness and Nutritional Status of Preschool Children in the Working Area of Puskesmas Cibodas, 2025

Table 8. Relationship Between History of Illness and Nutritional Status of Preschool Children in the Working Area of Puskesmas Cibodas 2025

Nutritional Status	Never	Ever	Total	p-value
Underweight	9 (25,7%)	14 (24,6%)	23 (25,0%)	<0,001
Normal	19 (54,3%)	32 (56,1%)	51 (55,4%)	
Overweight	7 (20,0%)	11 (19,3%)	18 (19,6%)	
Total	35 (100%)	57 (100%)	92 (100%)	

Based on Table 8, the Chi-Square test indicated a significant relationship between disease history and the nutritional status of preschool children in the Cibodas Health Center area in 2025 ($p < 0.001$). Interestingly, children who had experienced illness still showed a slightly higher proportion of normal nutritional status (56.1%) compared to those who had never been sick (54.3%). This phenomenon may be attributed to several factors, including the additional nutritional support from the MBG program—62.5% of children who had been sick and maintained normal nutrition received MBG—good dietary habits at home, the mild nature and short duration of most illnesses such as ISPA, and timely medical treatment combined with proper care from parents, all of which help maintain normal nutritional status despite a history of illness.

Conversely, among children who had never been sick, a notable proportion still experienced undernutrition (25.7%) or overnutrition (20.0%). Undernutrition in this group is likely influenced by inadequate dietary intake, limited access to MBG, family economic constraints, insufficient parental knowledge of balanced nutrition, or lingering effects of poor early-life nutrition. Overnutrition, on the other hand, may result from excessive caloric intake, parental practices that equate chubbiness with health, low physical activity, and easy access to high-calorie foods in the environment. These findings

emphasize that while disease history is important, nutritional status is also significantly affected by dietary patterns, program access, family socioeconomic factors, and parental awareness, underscoring the need for a holistic approach to preschool nutrition interventions.

Description of the Nutritional Status Distribution of Preschool Children in the Working Area of Puskesmas Cibodas 2025

The study conducted in the Cibodas Public Health Center area in 2025 shows that most preschool children have normal nutritional status (55.4%), while 25.0% experience undernutrition and 19.6% experience overnutrition, indicating a double burden of malnutrition. Undernutrition is mainly found among children who do not receive the Free Nutritious Meal (MBG) program, have only moderately adequate dietary patterns, and frequently experience illness, all of which contribute to insufficient nutrient intake and poor absorption. In contrast, overnutrition is more common among children who receive MBG, likely due to excessive calorie intake from both school and home, combined with low physical activity levels and sedentary behaviors.

Although the MBG program has reached 56.5% of children, its implementation remains limited, covering only a small proportion of kindergartens. Despite this, the program has shown clear positive impacts, with higher proportions of normal nutritional status and significantly lower rates of undernutrition among recipients compared to non-recipients. The program works as a nutritional safety net by providing consistent, quality-controlled meals that help meet children's daily nutritional needs, especially for those from low-income families. However, unequal access to MBG contributes to disparities, as children who do not receive the program—many from economically disadvantaged households—are at a much higher risk of undernutrition.

At the same time, the presence of overnutrition among MBG recipients highlights the need for balanced and well-monitored interventions. Excessive intake due to “double feeding” from school and home, along with limited physical activity, contributes to this issue. Overall, addressing the double burden of malnutrition requires a comprehensive approach, including expanding MBG coverage, improving family dietary practices, preventing infectious diseases, and promoting appropriate portion sizes and daily physical activity. Collaboration across health, education, and community sectors is essential to ensure optimal growth and development for all preschool children.

Description of the Implementation of the Free Nutritious Meal Program (MBG) in the Working Area of Puskesmas Cibodas 2025

The study shows that out of 92 preschool children, 56.5% have received the Free Nutritious Meal (MBG) program, while 43.5% have not, indicating unequal access. This disparity is evident as only 2 out of 22 kindergartens are covered by the program, reflecting its early-stage implementation. Limited coverage is influenced by factors such as budget constraints, logistical and distribution challenges, coordination issues among stakeholders, and inadequate school facilities. Despite these limitations, the MBG program has demonstrated a positive impact, with higher proportions of normal nutritional status (59.6%) and lower undernutrition rates (17.3%) among recipients compared to non-recipients.

The program contributes to improved nutritional status through several mechanisms, including consistent provision of nutritious meals covering about 30–35% of daily needs, quality-controlled food prepared by nutrition experts, and its role as a nutritional buffer during periods of illness or reduced appetite. Additionally, the school feeding environment encourages better eating habits through social modeling. However, children who do not receive MBG—particularly those from low-income families—face a significantly higher risk of undernutrition (35.0%), driven by limited dietary diversity, low intake of protein and fruits, and frequent illness, creating compounded vulnerability.

At the same time, 23.1% of children receiving MBG experience overnutrition, largely due to “double feeding,” where adequate or excessive food intake at home is combined with school meals. This is more common among children from higher socioeconomic backgrounds and is further

exacerbated by low physical activity and sedentary lifestyles, such as excessive screen time. These findings highlight that while MBG is effective in reducing undernutrition, it must be accompanied by proper monitoring, parental education on balanced portions, and promotion of physical activity to prevent overnutrition and ensure optimal child health outcomes.

Description of the Dietary Patterns of Preschool Children in the Working Area of Puskesmas Cibodas 2025

The study found that most preschool children in the Cibodas Public Health Center area in 2025 had good dietary patterns (52.2%), while the remaining 47.8% had moderately adequate patterns, with no children classified as having poor diets. This indicates that children generally follow regular eating habits in terms of meal frequency, timing, and food variety. These positive results are supported by several factors, including strong family support in providing balanced meals, the contribution of the Free Nutritious Meal (MBG) program reaching 56.5% of children, and continuous nutrition education from health workers and community health posts. Compared to national and global data, this achievement is relatively high, suggesting that local nutrition interventions have been effective in improving children's eating behaviors.

Previous studies support these findings, showing that nutrition education and school feeding programs significantly improve children's dietary practices. However, this study also highlights important limitations. Dietary data were collected using parent-reported questionnaires, which may introduce social desirability bias. In addition, the assessment focused mainly on meal regularity and diversity, without fully measuring the adequacy of nutrient intake in terms of quantity and quality. Therefore, the findings should be interpreted cautiously and ideally confirmed using more objective methods such as 24-hour food recall or structured food frequency questionnaires.

Importantly, despite generally good dietary patterns, cases of undernutrition (25.0%) and overnutrition (19.6%) were still observed. This suggests that having a regular and varied diet does not automatically ensure optimal nutritional status. Other factors such as portion size, nutrient quality, physical activity levels, and history of illness also play significant roles. Thus, while dietary pattern is an important determinant, it is not the only factor influencing child nutrition. Continuous monitoring, improved dietary quality, balanced portion control, reduced intake of ultra-processed foods, and integration with disease prevention and physical activity promotion are necessary to achieve optimal and sustainable nutritional outcomes.

Description of the Disease History Distribution among Preschool Children in the Working Area of Puskesmas Cibodas 2025

The study found that 62.0% of preschool children in the Cibodas Public Health Center area had a history of illness within the last three months, indicating that infectious diseases remain highly prevalent. The most common illness was acute respiratory infections (ARI), accounting for 61.4% of sick children, followed by diarrhea (21.1%), helminth infections (10.5%), and smaller proportions of dengue and other illnesses. The high incidence of ARI is likely influenced by environmental factors such as poor ventilation, high humidity, cold climate, and exposure to pollutants, as well as children's still-developing immune systems and close interaction with peers. Meanwhile, diarrhea and helminth infections are strongly associated with inadequate sanitation, limited access to clean water, and poor hygiene practices.

These findings are consistent with previous studies showing that infectious diseases like ARI and diarrhea are dominant among preschool children and have a direct impact on nutritional status. Illness can reduce appetite, impair nutrient absorption, and increase metabolic demands, thereby increasing the risk of undernutrition. At the same time, children with poor nutritional status have weaker immune systems, making them more susceptible to infections. This creates a cyclical relationship between disease and malnutrition, where each condition exacerbates the other, highlighting the complexity of child health problems.

Therefore, improving child health requires integrated interventions beyond nutrition alone. Efforts should include improving environmental sanitation, increasing access to clean water, promoting hygiene behaviors such as handwashing, ensuring complete immunization, and providing periodic deworming and micronutrient supplementation. In addition, education on healthy living practices, such as reducing exposure to cigarette smoke and improving household ventilation, is essential. A comprehensive and coordinated approach involving families, health services, and community institutions is necessary to break the cycle between disease and malnutrition and to support optimal growth and development in children.

Relationship between Dietary Patterns and Nutritional Status of Preschool Children in the Working Area of Puskesmas Cibodas 2025

The study found that most preschool children had good dietary patterns (52.2%), while 47.8% had moderately adequate patterns, and statistical analysis showed a significant relationship between dietary patterns and nutritional status ($p < 0.001$). Children with adequate (but not optimal) diets had a higher proportion of undernutrition (34.1%) compared to those with good dietary patterns (16.7%), indicating that insufficient meal regularity, frequency, and food diversity increase the risk of inadequate nutrient intake. Conversely, children with good dietary patterns showed a higher proportion of normal nutritional status (58.3%), suggesting that regular meals, balanced food intake, and dietary diversity contribute positively to achieving optimal nutrition.

However, an important paradox was observed where overnutrition was more common among children with good dietary patterns (25.0%) compared to those with adequate diets (13.6%). This suggests that a “good” dietary pattern in terms of frequency and variety does not necessarily guarantee appropriate nutritional outcomes. Overnutrition in this group is likely influenced by excessive portion sizes, high-calorie food choices (such as sugary and fatty foods), and low physical activity levels. Children with high energy intake but low energy expenditure tend to experience positive energy balance, leading to fat accumulation. This highlights that dietary quality must also consider portion control, nutrient composition, and energy balance, not just meal regularity and diversity.

Overall, the findings confirm that dietary pattern is a significant but not the sole determinant of nutritional status, which is influenced by multiple interacting factors including illness history, physical activity, socioeconomic conditions, and parental knowledge. Therefore, future interventions should adopt a comprehensive approach, including parental education on balanced nutrition and appropriate portion sizes, regular growth monitoring and nutrition counseling, promotion of physical activity, and guidance on healthy snacking habits. Integration with broader health programs such as immunization, micronutrient supplementation, and infection prevention is also essential to ensure optimal and sustainable child growth and development.

Relationship between the Provision of the Free Nutritious Meal Program (MBG) and Nutritional Status of Preschool Children in the Working Area of Puskesmas Cibodas 2025

The study found that 56.5% of preschool children received the Free Nutritious Meal (MBG) program, while 43.5% did not, indicating that although coverage is relatively high, gaps in access still exist. Statistical analysis (Chi-Square test, $p < 0.001$) confirmed a significant relationship between MBG participation and nutritional status. Children who received MBG had a higher proportion of normal nutritional status (59.6%) compared to non-recipients (50.0%), while undernutrition was significantly lower among recipients (17.3%) than non-recipients (35.0%). This demonstrates that MBG functions as an effective nutritional safety net, particularly for children from low-income families, by providing additional intake of essential nutrients needed for growth, development, and immunity.

However, the findings also show that MBG alone is not sufficient to guarantee optimal nutritional outcomes. Some children receiving MBG still experienced undernutrition (17.3%), largely associated with factors such as recurrent infections, inadequate food intake at home, and possibly

insufficient portion sizes from the program. On the other hand, overnutrition was more prevalent among MBG recipients (23.1%) compared to non-recipients (15.0%), indicating a “double burden” effect. This is likely due to excessive total energy intake from both school meals and home consumption, combined with low physical activity levels and sedentary behaviors such as prolonged screen time.

Overall, the study confirms that MBG has a significant positive impact on improving child nutrition, particularly in reducing undernutrition. However, its effectiveness depends on complementary factors such as household dietary practices, disease prevention, and lifestyle behaviors. Therefore, future interventions should include expanding program coverage, strengthening nutrition education for parents (especially regarding portion control and balanced diets), promoting physical activity, and implementing better monitoring systems to identify children at risk. An integrated approach is essential to maximize the benefits of MBG while preventing both undernutrition and overnutrition.

Relationship between Disease History and Nutritional Status of Preschool Children in the Working Area of Puskesmas Cibodas 2025

The study found that 62.0% of preschool children in the Puskesmas Cibodas area had a history of illness in the past three months, with Acute Respiratory Infection (ARI) being the most common, followed by diarrhea, helminth infection, and Dengue Fever. Statistical analysis (Chi-Square, $p < 0.001$) confirmed a significant relationship between disease history and nutritional status. However, an unexpected finding showed that children who had been ill still had a slightly higher proportion of normal nutritional status compared to those who had not been ill, suggesting the presence of protective factors.

This paradox can be explained by several factors. First, children receiving the Makan Bergizi Gratis (MBG) program maintained better nutritional intake even during or after illness, acting as a nutritional buffer. Second, good dietary patterns at home supported recovery and helped maintain adequate nutrient intake. Third, most illnesses—especially ARI—were mild and short in duration, causing minimal disruption to appetite and nutrient absorption. Additionally, timely healthcare access and proper home care contributed to faster recovery and reduced nutritional impact.

Overall, the relationship between disease and nutritional status is complex and influenced by multiple factors beyond illness alone, including diet, socioeconomic status, parental knowledge, and access to nutrition programs like MBG. The findings highlight the need for comprehensive interventions that combine disease prevention, nutrition improvement, health education, and expanded program coverage. A holistic and integrated approach is essential to break the cycle of infection and malnutrition and to address the double burden of malnutrition among preschool children.

CONCLUSION

Based on the 2025 study in the Cibodas Community Health Center working area, most preschool children (55.4%) had normal nutritional status, but double burden malnutrition was still present, with 25.0% undernourished and 19.6% overnourished. Over half of the children (56.5%) received the Free Nutritious Meal Program (MBG), although 43.5% remained unreachable. Most children had good or adequate eating patterns (52.2% and 47.8%, respectively), and 62.0% had experienced illness in the past three months, mainly mild acute respiratory infections. Statistical analysis showed significant relationships between nutritional status and eating patterns, MBG participation, and recent illness ($p < 0.001$). Children with good eating patterns or MBG access were more likely to have normal nutrition, while protective factors such as proper feeding and MBG mitigated the impact of mild illness on nutritional status. These findings highlight the importance of

balanced diets, school feeding programs, and disease prevention in achieving optimal nutritional outcomes for preschool children.

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