

Pola Konsumsi Pangan Siswa Program Makanan Bergizi Gratis: Studi di Kota Gorontalo

Food Consumption Patterns of Students in Free Nutritious Meals Program: A Study in Gorontalo City

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Abstrak

Program Makan Bergizi Gratis (MBG) di Kota Gorontalo merupakan inisiatif pemerintah untuk menyediakan makanan sehat dan bergizi bagi siswa SD hingga SMA. Penelitian ini bertujuan untuk menganalisis pola konsumsi makanan siswa dalam program MBG. Metode yang digunakan adalah deskriptif kuantitatif dengan pendekatan potong lintang, dengan sampel 150 siswa dari tiga sekolah peserta program MBG. Hasil penelitian menunjukkan bahwa sayuran merupakan makanan yang paling sering tersisa, yaitu sebanyak 86 siswa (57,3%). Mayoritas siswa (85 siswa) menilai waktu makan netral, yang menunjukkan bahwa jadwal makan saat ini kurang optimal. Frekuensi makan tertinggi berada pada kategori "kadang-kadang", yaitu sebanyak 62 siswa (41,3%). Kenyamanan tempat makan juga berada pada kategori "sedang", yaitu sebanyak 62 siswa (41,3%). Oleh karena itu, perbaikan lingkungan makan diharapkan dapat meningkatkan pengalaman makan siswa. Dalam hal rasa lapar, 80 siswa (53,3%) terkadang merasa lapar ketika makanan disajikan, sementara 75 siswa (50,0%) tidak mengalami gangguan saat makan. Program MBG telah memberikan dampak positif, tetapi masih terdapat tantangan terkait pola konsumsi. Inovasi dalam penyajian sayuran dan penyesuaian waktu makan yang lebih baik sangat penting untuk meningkatkan konsumsi makanan dan mengurangi sampah makanan.

Kata Kunci: pola konsumsi makanan, Program Makanan Bergizi Gratis, siswa, sampah piring

Abstract

The Free Nutritious Meal Program (MBG) in Gorontalo City is a government initiative to provide healthy and nutritious meals for students from elementary to high school. This study aims to analyze student food consumption patterns within the MBG program. The method used was a quantitative descriptive design with a cross-sectional approach, involving a sample of 150 students from three schools participating in the MBG program. The results showed that vegetables were the most frequently leftover food, reaching 86 students (57.3%). The majority of students (85 students) rated mealtimes as neutral, indicating that the current schedule is suboptimal. The highest frequency of food was in the "sometimes" category, with 62 students (41.3%). The comfort of the dining area was also in the "average" category, with 62 students (41.3%). Therefore, improving the dining environment is expected to improve the student experience. In terms of hunger, 80 students (53.3%) felt sometimes hungry when food was served, while 75 students (50.0%) experienced no disturbances while eating. The MBG program has had a positive impact, but challenges remain related to consumption patterns. Innovations in vegetable presentation and better adjustments to meal times are crucial to increasing food consumption and reducing food waste.

Keywords: food consumption patterns, Free Nutritious Meal Program, students, plate waste

BACKGROUND

The free nutritious meal program is a government policy and initiative aimed at providing healthy and nutritious meals free of charge to specific groups of the population, particularly elementary, junior high, and high school students. This is part of efforts to improve the quality of education, health, and community welfare (Hana Afifah Rahmah et al., 2025).

The performance target for the MBG program in the 2025 State Budget is that the MBG program budget is allocated in the National Nutrition Agency's State (BGN) Budget with a ceiling of Rp 71 trillion. The activities include the provision and distribution of nutritious meals for schoolchildren throughout Indonesia. (Ministry of Finance of the Republic of Indonesia, 2025) MBG is expected to become a key pillar in improving human resource quality from an early age (Puspa et al., 2025).

The MBG program is a direct response to the challenges of malnutrition in Indonesia, including undernutrition, overnutrition, and micronutrient deficiencies. Data from 2022 indicates that 32% of Indonesian children suffer from anemia, 41% do not eat breakfast, and 58% have unhealthy eating patterns, particularly among vulnerable groups during the critical growth phase (Humas Kemenko Polhukam RI, 2025).

The results of the study indicate that this program has successfully increased student attendance and concentration. Adequate nutrition contributes positively to students' cognitive abilities, thereby creating a more optimal learning environment (Hasibuan et al., 2025). Additionally, the MBG program in Pekanbaru is reported to effectively improve students' learning focus and reduce the need for pocket money. Despite its significant benefits, the short duration of food distribution—approximately 20 minutes—poses a challenge that may disrupt students' learning time (Hana Afifah Rahmah et al., 2025). Although the impact is positive, the issue of food waste has become a key concern in the implementation of MBG. A report from WRI Indonesia states that since the program's implementation, there has been a potential increase in food waste from the consumption side due to differences in menu items compared to students' eating habits at home. For example, the consumption of vegetables and fruits, which were previously uncommon, has led to some food not being fully consumed (Panggabean et al., 2025). There are still no specific written regulations from schools regarding the implementation of the Free Nutritious Meal Program (MBG), so teachers play a crucial role in supporting the program, such as providing understanding and support to help students finish their meals without leaving any leftovers (Febryanti et al., 2025). In this situation, students' consumption patterns are a key factor to consider. Consumption patterns include the frequency of food consumption, the types of food left over, the appropriateness of meal times, the comfort of the dining area, hunger levels when food is served, and the distribution of distractions during meals. Analyzing students' consumption patterns not only provides insight into the extent to which the MBG program has succeeded in meeting nutritional needs but also helps identify the causes of food waste.

Food waste itself is defined as processed food that is not fully consumed and is subsequently discarded. If not stored for later consumption, such food becomes food waste (Aloysius et al., 2023). Thus, although the MBG program has a significant positive impact on the nutritional quality of Indonesian children, managing food surpluses is an important aspect of ensuring the program's sustainability. Good management will contribute to a more sustainable and environmentally friendly food system (Badan Pangan Nasional, 2025).

METHODS

This study uses a quantitative descriptive approach. This design is used to describe the food consumption patterns of students in the Free Nutritious Meals Program, including: types of food left over, meal timing, dining comfort, frequency of finishing meals, hunger when meals are served, and distribution of disturbances during meals.

The study was conducted at elementary, junior high, and senior high schools in Gorontalo City, where the Free Nutritious Meal Program is implemented. Data collection was scheduled to take place from June to July 2025. The research sample consisted of 150 students from 3 schools participating in the Free Nutritious Meal Program (MBG), calculated using the Slovin formula. This determination met the minimum requirements for descriptive analysis and allowed for a representative picture of student consumption patterns.

RESULTS AND DISCUSSION

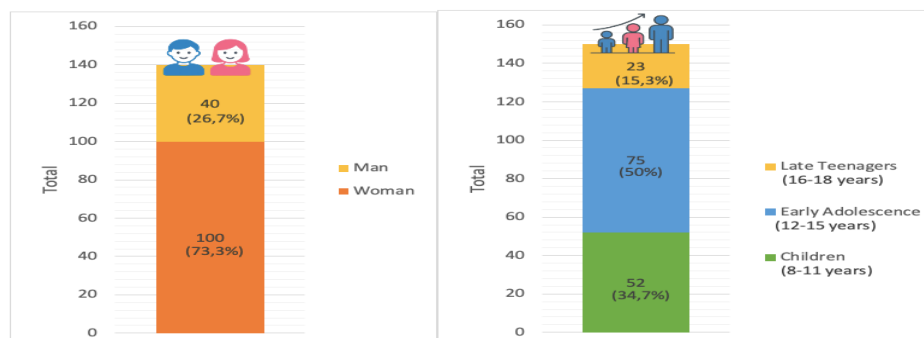


Figure 1. Individual Characteristics : a) Gender b) Age

Figure 1 shows the distribution of student characteristics based on gender and age group. Of the total 150 students, the majority were female, numbering 100 students (73.3%), while male students numbered 40 students (26.7%). This indicates that female students were more dominant in this study than male students. Based on age group, the largest number of students are in the 12–15 age range, totaling 75 students (50%), followed by the 8–11 age group with 52 students (34.7%), and the 16–18 age group with 23 students (15.3%). This distribution reflects that most participants in the Free Nutritious Meal Program involved in the study were in early adolescence, a critical period for the formation of eating habits and nutritional status.

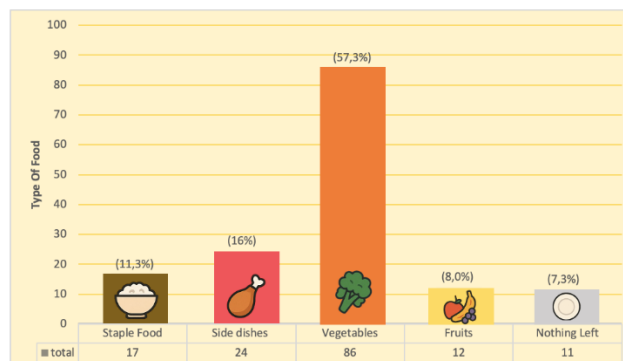


Figure 2. Types of food left over

Figure 2 shows the distribution of food types left behind by students participating in the Free Nutritious Meal Program in Gorontalo City. The data shows that the food type left behind the most was vegetables, with 86 students (57.3%). The high percentage of leftover vegetables indicates that students' acceptance of vegetable-based menus remains low, which may be attributed to factors such as taste preferences, eating habits, or food preparation methods. The next most commonly left-behind food type is protein-rich dishes (24 students, 16.0%), followed by staple foods such as rice or tubers (17 students, 11.3%). Meanwhile, fruits were left by 12 students (8.0%). Interestingly, 11 students (7.3%) reported not leaving any food at all, indicating a group of students with good food acceptance levels. This finding suggests that food waste primarily occurs in the vegetable category, making it a focus for improvement in menu planning and nutrition education strategies within the program.

In addition, other studies have found that, in general, students waste little food at lunch except for vegetables. At the same time, vegetables are the least frequently chosen, confirming that, even though students do not leave much other food, vegetables remain the type of food that is most often ignored, a finding consistent with the high percentage of vegetable waste in Gorontalo. The triggering factors include taste and presentation. The study noted that taste is an important factor when deciding what to choose and eat (USDA, 2016). This means that taste preferences play a major role; if vegetables do not have an appealing taste, students are likely to avoid them or leave them uneaten.

Other research also shows that the level of liking for fruits and vegetables correlates with lower food waste. Children who express liking for fruits or vegetables produce the least food waste, while those who dislike or have never tried them produce more waste (Shanks et al., 2021).

In addition, innovations in processing also have the potential to reduce vegetable waste. Research shows that blanching (brief boiling) accompanied by the addition of sauce can reduce the bitterness and “grassy” aroma of vegetables, thereby increasing students' acceptance of the menu (Yu Tien et al., 2024).

Table 1. Distribution of Meal Time Suitability

Category	n	%
Very suitable	16	10,7
Suitable	29	19,3
Neutral	85	56,7
Not suitable	15	10,0
Very unsuitable	5	3,3
Total	150	100,0

The results of the study indicate that the majority of students fall into the neutral category, with 85 students (56.7%) assessing the suitability of the MBG Program meal times. This indicates that the majority of students have not yet experienced the optimal benefits of the meal schedule, although some others rated the meal times as appropriate (29 students, 19.3%) and only a small proportion stated that they were inappropriate or very inappropriate (13.3%). This finding is important because students' perceptions of the meal schedule can influence their eating patterns, appetite, and the amount of food waste generated.

Previous research confirms that meal duration and timing significantly influence nutrient intake and the amount of food left over by students. Ethan A. Bergman et al. (2004) found that when students had a longer lunch break, they consumed significantly more food and nutrients compared to when the lunch break was shorter. Similarly, plate waste decreased from 43.5% to 27.2%. This indicates that insufficient or inappropriate meal times can increase food waste. Another study also confirmed that adequate meal times of 25 minutes or more can reduce food waste,

particularly vegetables. Cohen et al. (2016) stated that children with meal times of less than 20 minutes consumed fewer main meals, milk, and vegetables compared to children with meal times of 25 minutes or more.

In addition, school policy recommendations also emphasize the importance of providing sufficient effective meal times. Schwartz et al. (2015) concluded that school policies that encourage lunch breaks with a minimum sitting time of 25 minutes can reduce food waste and increase food intake. Thus, the research results in Gorontalo City, which still show that there are groups of students who consider the meal schedule to be inappropriate, can be interpreted as an indication of the need to adjust meal serving times. Determining meal schedules that take into account the rhythm of learning activities, as well as providing a minimum of 20–25 minutes for meals, is expected to increase consumption, reduce food waste, and maximize the nutritional benefits of the MBG Program.

Table 2. Distribution of Dining Place Comfort

Category	n	%
Very comfortable	18	12,0
Comfortable	55	36,7
Average	62	41,3
Somewhat uncomfortable	9	6,0
Uncomfortable	6	4,0
Total	150	100,0

Table 2 shows students' perceptions of the level of comfort when eating in class under the Free Nutritious Meal Program in Gorontalo City. Most students rated comfort as average, with 62 students (41.3%) falling into this category. This indicates that while eating in class is generally acceptable, the classroom environment or conditions are not yet fully optimized to support comfortable eating. A total of 55 students (36.7%) stated that eating in the classroom felt comfortable, and 18 students (12.0%) rated it as very comfortable. However, there were 9 students (6.0%) who felt somewhat uncomfortable, and 6 students (4.0%) who considered eating in the classroom to be uncomfortable. These results indicate that although eating in the classroom is generally acceptable, the classroom environment or conditions are not yet fully optimized to support comfort during meals.

This finding is in line with research stating that the school eating environment, including seating arrangements, cleanliness, and social interaction, plays an important role in shaping students' eating and consumption experiences (Chapman et al., 2025). This means that physical and social comfort while eating directly affects students' experiences and the amount of food consumed.

Furthermore, a systematic observation states that environmental strategies, such as improving the dining room atmosphere and cleanliness, have been proven effective in reducing plate waste and increasing student satisfaction (Elnakib et al., 2021). This shows that the comfort of the dining room, in this case the classroom, can influence students' behavior in consuming the food served. Thus, the perception of MBG students in Gorontalo City, who mostly rate the comfort of eating in the classroom as “average,” indicates the need for improvements in spatial layout, cleanliness, air circulation, and social atmosphere. A more conducive classroom layout during mealtimes has the potential to enhance comfort, improve the dining experience, and indirectly reduce food waste.

Table 3. Distribution of Frequency of Finishing Food, Hunger When Food is Served and Distribution of Disturbances While Eating

Category	Frequency of Eating		Distribution of Hunger		Distribution of Disturbances during Mealtimes	
	n	%	n	%	n	%
Very often	20	13,3	8	5,3	2	1,3
Often	37	24,7	34	22,7	5	3,3
Sometimes	62	41,3	80	53,3	20	13,4
Rarely	29	19,3	22	14,7	48	32
Never	2	1,3	6	4,0	75	50
Total	150	100,0	150	100	150	100

Table 3 illustrates three important aspects related to students' consumption patterns in the Free Nutritious Meal Program in Gorontalo City, namely the frequency of finishing meals, the level of hunger when meals are served, and the presence of distractions during meals. Based on the table regarding the frequency of finishing meals, the highest category is “sometimes” with 62 students (41.3%), indicating that most students do not always finish the meals provided. The lowest percentage is “never” with 2 students (1.3%), showing that only a small number of students never finish their meals.

This phenomenon aligns with the results of parallel field observations on plate waste patterns among students. For example, elementary school students were reported to discard more than one-third of the staple foods, fruits, and vegetables from the menu served (Smith & Cunningham-Sabo, 2014). This provides an indication that the majority of students not finishing their meals is a common occurrence and a serious concern. This observation is in line with

findings from the School Nutrition and Meal Cost Study (SNMCS), which notes that plate waste is a quantitative indicator of student acceptance of food. Factors such as mealtime and meal duration are cited as elements that can influence the amount of food consumed and the resulting food waste, underscoring the importance of adequate time in determining whether students finish their meals or not (Mary Kay Fox et al., 2019). Regarding hunger when meals are served, the highest category is sometimes hungry, with 80 students (53.3%), which may indicate that meal times are not fully aligned with students' biological clocks. The lowest category is never hungry, with 6 students (4.0%), meaning that only a few students do not feel hungry at all when meals are served.

This is in line with the study by (Barker et al., 2025), which states that if meals are served too early, some students may not feel hungry enough and tend to leave food uneaten. Additionally, other research confirms that the body has an anticipatory mechanism for mealtimes. An experimental study found that hunger scores in a consistent routine increase before the expected mealtime (Isherwood et al., 2023). This finding explains that hunger increases as the consistent mealtime approaches. Thus, inconsistent MBG distribution times (sometimes in the morning, sometimes at noon) have the potential to disrupt students' hunger patterns, ultimately affecting their appetite and food waste levels. These findings emphasize that aligning meal distribution times with students' biological rhythms and maintaining a consistent schedule are important strategies to make the MBG program more effective in increasing consumption and reducing food waste.

Regarding disturbances during meals, the highest category was “never experienced disturbances” with 75 students (50.0%), indicating that most students could eat calmly in class. The lowest category was “very often experienced disturbances” with 2 students (1.3%), showing that meal disturbances were relatively rare. Research shows that a noisy dining environment can have a negative impact on food intake. A study found that overall fruit and vegetable consumption was negatively associated with noise exposure (Graziose et al., 2019). This means that the higher the noise level, the lower the fruit and vegetable consumption among students. This occurs because noise can disrupt concentration, reduce appetite, and cause students to want to finish their meals more quickly without fully consuming their food.

CONCLUSION

The Free Nutritious Meal Program (MBG) aims to have a positive impact on improving students' nutritional quality, despite still facing challenges related to food consumption patterns. Most students do not always finish the food provided, with vegetables being the most commonly leftovers. This indicates the need for innovation in food preparation and presentation to attract students' interest. Many students perceive mealtime as “neutral,” indicating that the current schedule is not optimal. Adjusting serving times to better align with students' biological rhythms could help increase appetite and reduce food waste.

The comfort of the dining area is also a concern, with many students feeling that the comfort of eating in the classroom is still average. Creating a more conducive environment is crucial to improving the dining experience, and a quiet atmosphere can enhance concentration and comfort during meals.

RECOMMENDATIONS

Based on these findings, it is recommended to innovate in food processing and presentation, especially vegetables, to make them more appealing to students. Adjusting meal schedules to suit students' preferred meal times is crucial. Additionally, improving facilities to create a comfortable and quiet environment should be prioritized. Nutrition education needs to be improved to help students understand the importance of healthy eating habits, so that they are more receptive to the menu provided. By implementing these recommendations, it is hoped that the MBG Program can be more effective in improving students' nutritional quality and supporting their overall health.

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