

Factors Associated with Satisfaction with the Implementation of the Free Nutritious Meal (MBG) Program in Public Senior/Vocational High Schools

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ABSTRACT

The Free Nutritious Meal (MBG) Program is one of the government's strategies to improve the nutritional status of school-age children. The success of the program is assessed not only from the technical aspects of its implementation but also from the level of satisfaction among students as beneficiaries. This study aimed to determine the factors associated with satisfaction regarding the implementation of the MBG Program in Public Senior/Vocational High Schools in Bandar Lampung City in 2026. This study employed a cross-sectional design with a quantitative approach. The study population consisted of all 10,730 public senior/vocational high school students receiving MBG in Bandar Lampung City, with a sample of 99 respondents selected through proportional random sampling from eight schools. Data were collected using a closed-ended questionnaire and analyzed univariately, bivariately (chi-square), and multivariately (multiple logistic regression). The results showed that 61 respondents (61.6%) expressed dissatisfaction with the program's implementation. The chi-square test results indicated significant associations between food doneness ($p=0.004$), cleanliness of eating utensils ($p=0.037$), menu variety ($p=0.018$), taste ($p=0.049$), and food appearance ($p=0.000$) with satisfaction regarding MBG program implementation. Multivariate analysis showed that food appearance was the most dominant factor associated with satisfaction, with a PR of 8.291 (95% CI 0.487–0.878; $p=0.000$). It was concluded that food appearance is the dominant factor influencing student satisfaction with the implementation of the MBG Program, so improving the aesthetic and presentation aspects of food should be prioritized in program evaluation.

Keywords: Student satisfaction, Free nutritious meal, Food appearance

INTRODUCTION

Adequate nutrition for school-age children is a critical factor in supporting students' cognitive, affective, and psychomotor growth and development, since this age group is still undergoing rapid physical and neurological development that requires an optimal intake of macro- and micronutrients.⁽¹⁾ Nutritional deficiencies in students can lead to reduced concentration, weakened immunity, and lower learning motivation, which in turn may affect their academic achievement and overall quality of life. The Indonesian Ministry of Health has recorded a national stunting prevalence of around 21%, above the WHO threshold of 20%, and continues to monitor these indicators through periodic national nutrition status surveys.^(1,11) Provincial health profile data further indicate that malnutrition problems among children and adolescents remain a persistent public health concern in Lampung Province, underscoring the need for continuous nutrition intervention at the school level.⁽¹⁰⁾

The Free Nutritious Meal (MBG) Program is one of the government's strategic efforts to improve the nutritional status of the community, particularly vulnerable groups such as school children.⁽²⁾ The program forms part of a broader national development agenda aimed at strengthening human resource quality through improved child nutrition, and is expected to simultaneously support local economic empowerment through the involvement of small and medium food enterprises in food production and distribution.⁽¹²⁾ The success of the program's implementation is determined not only by food availability but also by the quality of its execution, including food doneness, taste, menu variation, food appearance, and the cleanliness of eating utensils used, all of which directly shape how beneficiaries experience and evaluate the program in practice.

Satisfaction is an important indicator for assessing the extent to which a program's services meet the needs and expectations of students.⁽³⁾ A national survey conducted in January 2026 found that overall public satisfaction with the MBG Program was relatively high, at 72.8%, with the strongest support reported among younger

respondents.⁽¹³⁾ Yet there remain reports of food poisoning, low budget absorption, and calls for more rigorous technical evaluation of program implementation at the operational level. This gap between the generally favorable public perception captured at the national level and the specific, day-to-day experience of student beneficiaries in the school setting suggests that satisfaction may vary considerably depending on how directly a group interacts with the food actually served, making school-based evaluation particularly important.

A number of foodservice studies support the notion that satisfaction with meal programs is shaped by several interrelated technical attributes. Assessments of institutional catering services have shown that taste, food appearance, portion size, punctuality, and cleanliness are the main indicators consumers use to judge whether a foodservice meets their expectations, with cleanliness in particular found to strongly undermine overall satisfaction when it is lacking.⁽¹⁴⁾ Similarly, studies on food acceptability among institutionalized populations have found that food appearance, taste, and the manner of food presentation are significantly associated with how much food is actually consumed versus left over, reflecting the practical consequences of poor food quality attributes on program outcomes.⁽¹⁵⁾ These findings reinforce the relevance of examining food doneness, taste, menu variety, food appearance, and utensil cleanliness as determinants of satisfaction within the MBG Program.

Previous research has largely focused on the social role of MBG in relation to student interaction and learning motivation, while student satisfaction with the quality of program implementation at the senior/vocational high school level has not been extensively studied.^(4,5) A recent study using a data-mining approach among senior high school students in Manokwari similarly reported considerable variation in satisfaction linked to food-related attributes, but was conducted in a different regional and sociocultural context and did not specifically examine the multivariable relationships among food doneness, cleanliness, menu variety, taste, and food appearance.¹⁶ Based on the above, this study aims to analyze the factor associated with satisfaction regarding the implementation of the MBG Program in Public Senior/Vocational High Schools in Bandar Lampung City in 2026, covering food doneness, taste, menu variety, food appearance, and cleanliness of eating utensils.

METHODS

This study is a quantitative study with a cross-sectional design, aimed at identifying the factors associated with satisfaction regarding the implementation of the MBG Program.⁽⁶⁾ The study was conducted from February 19–26, 2026, in eight public senior/vocational high schools in Bandar Lampung City, representing three regional characteristics: coastal, urban, and suburban areas.

The study population consisted of all 10,730 public senior/vocational high school students receiving MBG in Bandar Lampung City. The sample size was calculated using the Slovin formula with a 10% margin of error, yielding a sample of 99 respondents. Sampling was conducted using a proportional random sampling technique based on school regional strata, with inclusion criteria requiring willingness to sign informed consent, being an MBG recipient student, and being able to read and write.

The independent variables in this study included food doneness, taste, menu variety, food appearance, and cleanliness of eating utensils, while the dependent variable was student satisfaction with the implementation of the MBG Program. Data were collected using a closed-ended questionnaire that had been categorized based on the mean value of each variable. This study received ethical approval from the Health Research Ethics Committee of the Faculty of Health, Universitas Mitra Indonesia, with approval number S.25/005/F.Kes10/2026.

Data Collection

Data collection was carried out directly at each of the eight participating schools by the research team, assisted by trained field enumerators who received a briefing on the study procedures and questionnaire content beforehand. Prospective respondents who met the inclusion criteria were approached, given an explanation of the study's purpose and procedures, and asked to sign an informed consent form before participating. The self-administered closed-ended questionnaire, developed based on indicators of food doneness, cleanliness of eating utensils, menu variety, taste, food appearance, and student satisfaction, had been tested for content validity and reliability prior to use in the field. Respondents completed the questionnaire independently in the classroom under the supervision of the enumerators to minimize social desirability bias and ensure completeness of responses, and completed questionnaires were checked on the spot for missing items before the respondent was released. Data collection took place over one week, from February 19–26, 2026, following the food distribution schedule of the MBG Program at each school. Respondents were assured that their responses would be kept confidential, used solely for research purposes, and would not affect their eligibility to continue receiving the MBG Program, in order to encourage honest and voluntary participation.

Instrument and Measurement

The instrument used in this study was a structured, closed-ended questionnaire consisting of items measuring the five independent variables (food doneness, cleanliness of eating utensils, menu variety, taste, and food appearance) and the dependent variable (student satisfaction with MBG implementation). Respondents' scores for each variable were classified into two categories (favorable/unfavorable) based on a cut-off point derived from the mean score of that variable, consistent with the categorization approach commonly applied in cross-sectional health research.⁽⁶⁾ This mean-based cut-off approach allows relative comparison within the study sample, although it means that the classification of "done," "clean," "high," "good," and "attractive" in this study is sample-specific rather than based on an externally validated standard, a consideration that should be taken into account when comparing these proportions with those reported in other studies that apply different cut-off criteria.

Data Analysis

Data analysis was conducted in stages: univariate analysis to describe the frequency distribution of each variable, bivariate analysis using the chi-square test to determine relationships between variables, and multivariate analysis using multiple logistic regression to identify the most dominant factor associated with satisfaction regarding the implementation of the MBG Program.⁽⁶⁾

RESULTS

Univariate Analysis

Respondent characteristics showed the highest proportion in the 17-year-old age group (35.4%), with the majority being female (53.5%). The distribution of respondents across the four age groups (15–18 years) was relatively even, and the proportion of male and female respondents was also fairly balanced, indicating that the sample broadly reflected the demographic composition of MBG-recipient students at the senior/vocational high school level. The complete frequency distribution of the study variables is presented in Table 1 and Table 2.

Table 1. Frequency distribution of respondent characteristics (n=99)

Category	Frequency	Percentage (%)
Age 15 years	19	19.2
Age 16 years	31	31.3
Age 17 years	35	35.4
Age 18 years	14	14.1
Male	46	46.5
Female	53	53.5

Table 2. Frequency distribution of study variables (n=99)

Category	Frequency	Percentage (%)
Food doneness — done	41	41.4
Food doneness — not done	58	58.6
Utensil cleanliness — clean	46	46.5
Utensil cleanliness — not clean	53	53.5
Menu variety — high	45	45.5
Menu variety — low	54	54.5
Taste — good	42	42.4
Taste — poor	57	57.6
Food appearance — attractive	43	43.4
Food appearance — unattractive	56	56.6
Satisfied with MBG implementation	38	38.4
Dissatisfied with MBG implementation	61	61.6

Table 2 shows that the majority of respondents rated the cleanliness of eating utensils as not clean (53.5%), menu variety as low (54.5%), taste as poor (57.6%), food as not properly cooked (58.6%), and food appearance as unattractive (56.6%). A total of 61 respondents (61.6%) reported dissatisfaction with the implementation of the MBG Program. Across the five technical indicators, more than half of the respondents gave an unfavorable rating for four of them, with food doneness receiving the least favorable overall rating (41.4% rated as properly done) and food appearance receiving the comparatively most favorable rating among the five indicators (43.4% rated as attractive). This pattern of predominantly negative perceptions across multiple technical indicators is consistent with the relatively high overall dissatisfaction rate observed among respondents in this study.

Bivariate Analysis

The chi-square test results showed that all independent variables had a statistically significant association ($p < 0.05$) with satisfaction regarding the implementation of the MBG Program, as presented in Table 3.

Table 3. Bivariate analysis of factors associated with satisfaction regarding MBG program implementation

Variable	Satisfied, n (%)	Dissatisfied, n (%)	Total	p-value	OR/PR (95% CI)
Food doneness (done)	14 (14.1)	27 (27.3)	41	0.004	0.735 (0.320–1.685)
Utensil cleanliness (clean)	15 (15.2)	31 (31.3)	46	0.037	0.631 (0.278–1.345)
Menu variety (high)	21 (21.2)	24 (24.2)	45	0.018	1.904 (0.839–4.325)
Taste (good)	14 (14.1)	28 (28.1)	42	0.049	0.688 (0.300–1.576)
Food appearance (attractive)	32 (32.3)	11 (11.1)	43	0.000	24.242 (8.157–72.045)

The highest OR value was found for the food appearance variable (OR=24.242; 95% CI 8.157–72.045), indicating that students who rated food appearance as attractive were far more likely to be satisfied compared to those who rated it as unattractive. Among the remaining variables, menu variety showed the widest confidence interval and therefore the least precise estimate, while food doneness, utensil cleanliness, and taste showed more modest associations with satisfaction, with p-values closer to the 0.05 threshold. This suggests that, although all five variables were statistically significant at the bivariate level, food appearance exerted a substantially larger influence on satisfaction than the other four attributes.

When examined by category, only 34.1% of respondents who rated food doneness as properly done reported satisfaction, and comparable proportions were found for utensil cleanliness (32.6% satisfied among those who rated it as clean) and taste (33.3% satisfied among those who rated it as good). A higher proportion of satisfaction was observed among respondents who rated menu variety as high (46.7%), while the largest gap was seen for food appearance, where 74.4% of respondents who rated the food as attractive reported being satisfied. This pattern illustrates that, although a favorable rating on any of the five indicators was associated with a higher likelihood of satisfaction, the strength of this relationship varied considerably across indicators, being most pronounced for food appearance.

Multivariate Analysis

Bivariate selection with a p-value cutoff of ≤ 0.25 resulted in all five variables being included as candidates for the multivariate model. Through a stepwise multiple logistic regression modeling process, the variables food doneness, taste, utensil cleanliness, and menu variety were removed from the model due to p-values > 0.05 . The final model showed that food appearance was the most dominant factor associated with satisfaction regarding the implementation of the MBG Program (Table 4).

Table 4. Final results of multiple logistic regression analysis

Variable	PR	p-value	95% CI
Food appearance	8.291	0.000	0.487–0.878

A PR value of 8.291 (95% CI 0.487–0.878; $p = 0.000$) indicates that food appearance is the strongest predictor of student satisfaction regarding the implementation of the MBG Program in Public Senior/Vocational High Schools in Bandar Lampung City. After adjusting for the other candidate variables in the stepwise model, food doneness, utensil cleanliness, menu variety, and taste no longer showed statistically significant independent

associations with satisfaction, suggesting that their bivariate associations with satisfaction may be substantially explained by their relationship with food appearance, which appears to function as the central driver of students' overall evaluation of the MBG Program.

DISCUSSION

The results showed that the majority of respondents (61.6%) were dissatisfied with the implementation of the MBG Program. This finding is consistent with several studies indicating that students' perceptions of the quality of MBG implementation at the secondary school level remain varied and serve as an important indicator for ongoing program evaluation.⁽⁴⁾ It is also comparable to findings from a study among senior high school students in Manokwari, which similarly reported considerable variation in student satisfaction linked to food-related attributes rather than uniformly high acceptance.⁽¹⁶⁾ The dissatisfaction level found in this study is notably higher than the 72.8% overall public satisfaction rate reported in a national survey of the MBG Program,⁽¹³⁾ which may reflect the fact that national surveys tend to capture broader public perception of the policy itself, whereas the present study measured the direct, first-hand experience of student beneficiaries with the actual food served at their own schools. This distinction suggests that satisfaction with a government nutrition program should not be generalized from public opinion alone, but should also be evaluated directly at the point of service delivery.

The significant associations between food doneness, utensil cleanliness, menu variety, and taste with satisfaction indicate that the technical aspects of food presentation also determine students' acceptance of the program. Limited menu variation risks causing monotony and reducing students' acceptance of the food served.⁽⁷⁾ These results are consistent with foodservice satisfaction studies showing that taste, cleanliness, and punctuality are core indicators consumers, including institutional beneficiaries, use to judge whether a food service meets their expectations, and that unmet cleanliness expectations in particular can substantially undermine consumer satisfaction even when other attributes are rated favorably.⁽¹⁴⁾ Likewise, evidence from institutional catering settings shows that poorly presented or improperly prepared food is associated with lower acceptance and higher rates of food being left uneaten, reinforcing the practical importance of maintaining consistent food quality across all these technical dimensions rather than focusing on a single attribute alone.⁽¹⁵⁾

Food appearance was found to be the most dominant factor associated with satisfaction regarding the implementation of the MBG Program. This finding is consistent with research showing that food appearance plays an important role in enhancing acceptability, as visual aspects such as color, shape, and neatness of presentation can stimulate appetite before the food is even consumed.⁽⁸⁾ Because visual evaluation occurs before students taste the food, an unattractive appearance may create a negative first impression that colors their perception of the entire meal, even when food doneness or taste is otherwise adequate. This suggests that food appearance functions not merely as one of several equally weighted attributes, but as an initial filter through which students evaluate the overall quality of the MBG Program before other sensory attributes are assessed.

This finding has implications for MBG program managers and catering providers to pay greater attention to the aesthetic aspects of food presentation, while still maintaining nutritional and food safety standards, in order to improve satisfaction and sustain student participation in the program.⁽⁹⁾ Improving student satisfaction is not merely a matter of program image; prior research has linked satisfaction with school feeding programs to better nutritional status and improved academic performance among student beneficiaries, suggesting that attention to food presentation may carry benefits that extend beyond immediate acceptance of the meal itself.⁽¹⁷⁾ Simple, low-cost interventions such as standardized plating guidelines, attention to color combinations in the menu, and neat packaging could therefore be considered practical steps to improve the perceived quality of the MBG Program without requiring substantial additional budget.

Strengths and Limitations

This study has several strengths, including the use of proportional random sampling across eight schools representing three distinct regional characteristics (coastal, urban, and suburban), which helps ensure that the findings reasonably reflect the diversity of MBG implementation contexts within Bandar Lampung City. Nevertheless, several limitations should be acknowledged. First, the cross-sectional design does not allow causal inferences to be drawn between the independent variables and student satisfaction; the observed associations should therefore be interpreted as correlational rather than causal. Second, data were collected using a self-administered questionnaire, which may be subject to social desirability bias or subjective variation in how students interpreted terms such as "attractive" or "properly done." Third, because the mean-based categorization used in this study is sample-specific, direct numerical comparison of satisfaction proportions with other studies using

different measurement approaches should be made cautiously. Finally, as the study was conducted in a single city during a one-week period, the findings may not be fully generalizable to MBG implementation in other regions or at other points in the program's rollout, particularly given that the program was still in a relatively early phase of nationwide implementation at the time of data collection.

CONCLUSION

There is a significant association between food doneness, utensil cleanliness, menu variety, taste, and food appearance with satisfaction regarding the implementation of the Free Nutritious Meal (MBG) Program in Public Senior/Vocational High Schools in Bandar Lampung City. Food appearance is the most dominant factor associated with satisfaction, with a PR of 8.291 (95% CI 0.487–0.878; $p=0.000$). Program managers and catering providers are advised to improve the aesthetic quality of food presentation as well as menu variety in order to increase student satisfaction with the implementation of the MBG Program. Future studies are recommended to employ longitudinal or multi-city designs, incorporate direct observation of food quality alongside student self-report, and examine additional determinants such as portion size and meal timing, in order to build a more comprehensive evidence base for improving the quality of MBG Program implementation nationwide.

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Competing Interests

All the authors declare that there are no conflicts of interest.

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