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EFFECTIVENESS STUDY OF THE FREE NUTRITIONAL MEAL PROGRAM ON IMPROVING THE NUTRITION OF PUBLIC ELEMENTARY SCHOOL CHILDREN IN JAMBI CITY BASED ON BAYESIAN REGRESSION

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ABSTRACT

The Free Nutritious Meals (MBG) Program was launched as a national strategy to improve the nutritional status of elementary school children and to support the Golden Indonesia 2045 vision. Its effectiveness at the implementation level still requires scientific proof, especially in Jambi City, which faces both undernutrition and overnutrition. This study evaluates the association between MBG consumption and children's nutritional status using a hierarchical ordinal Bayesian regression, complemented by short-term trend projections with the Exponential Smoothing method. Primary data were collected from 764 children in 4 schools over 4 time periods, yielding 3,056 observations in a fully balanced panel with no missing data. After the model included a child-level random effect, none of the four predictors had a 95% Highest Density Interval (HDI) excluding zero, including the frequency of MBG consumption ($\beta = 0.16$, 95% HDI −0.56 to 0.89) and family socioeconomic condition ($\beta = 0.42$, 95% HDI −0.28 to 1.10). Variance decomposition indicated that approximately 94.7% of the total variability in nutritional status was attributable to stable between-child differences (intraclass correlation coefficient, ICC), compared with roughly 2% attributable to between-school differences, which leaves little residual variation for these predictors to explain over such a short window. Trend analysis showed stable nutritional status with no clear direction of change. The effectiveness of the MBG Program therefore cannot be established in the short term, and a longer evaluation period and attention to family socioeconomic factors are essential for the program's sustainability.

Keywords: Free Nutritious Meals, Child Nutritional Status, Bayesian Regression, MBG, Jambi City.

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PRELIMINARY

Nutritional problems among elementary school children remain a significant issue in many countries, particularly Indonesia. Nutrition shapes children's health, immunity, and intelligence (Fitriana et al., 2022), and an adequate intake of energy, protein, vitamins, and minerals is a prerequisite for optimal child health (Tambunan et al., 2025). This matters all the more because today's school-age generation will form the productive workforce that determines whether the Golden Indonesia 2045 vision is achieved. Within this framework, the Free Nutritious Meal Program (MBG) was launched by President Prabowo Subianto as a strategic step to address nutritional problems and improve the quality of Indonesia's human resources.

The program, launched in January 2025, deserves a critical reading, not merely as an administrative achievement but as a real test of claims about successful stunting reduction. Azzahra and Marmoah (2026) found that despite positive effects on student attendance and motivation, the program in Indonesian elementary schools still faces implementation problems, including menus that do not match nutritional standards, low menu variety, and limited supporting infrastructure. National stunting prevalence fell from 21.5 percent in 2023 to 19.8 percent in 2024, but this aggregate figure can mislead because prevalence remains at 29.8 percent among the poorest economic groups, nearly one and a half times the national average (Badan Kebijakan Pembangunan Kesehatan Kementerian Kesehatan RI, 2025).

This inequality is also visible at the regional level. Astuti and Sakitri (2018) reported a significant relationship between family socioeconomic status, measured by maternal education, maternal occupation, and family income, and the nutritional status of school-age children. Jambi City, as a provincial capital with relatively better access to health services, still faces serious nutritional challenges. The 2022 Indonesian Nutrition Status Survey (SSGI) recorded a stunting prevalence of 18 percent in Jambi Province, which has improved but remains above the WHO threshold for a public health problem (Priyatno & Wikandari, 2025). The 2023 Jambi City Health Profile also recorded a malnutrition prevalence of around 13.5 percent among schoolchildren (Khairani, 2025).

The problem cannot be reduced to stunting alone. The same Health Profile data show overnutrition and obesity among school-age children, consistent with the double burden of malnutrition that is increasingly observed in developing countries, including Indonesia (Maehara et al., 2019). An evaluation of the MBG Program should therefore consider not only reductions in undernutrition but also possible shifts toward overweight and obesity as consumption patterns change. For this reason, the outcome in this study is Body Mass Index-

for-Age (BMI-for-age), which captures the double burden directly. The stunting figures above serve only as regional background and are not the outcome measured here.

Jambi City was selected because of its empirical urgency and not only for ease of access. As a provincial capital that is actively implementing distribution, school kitchens, and nutrition monitoring under the MBG framework (Rahmah et al., 2025), it is a relevant setting for assessing how the national program performs at the level of actual implementation. The central question is whether the program, which targets thousands of public elementary school (SDN) and Islamic elementary school (MI) students in the city, has produced measurable improvements in nutritional status. A meta-analysis of school feeding in low- and middle-income countries found significant gains in weight and height over 12 months (Wang et al., 2021), which makes the recent rollout of the MBG an important consideration when interpreting short-term results. Primary data-based evidence on this question remains very limited in the Indonesian literature.

Evaluating a policy of this scale should not rely only on implementation indicators such as beneficiary numbers, budget realization, or school coverage, because these show how far the program has been delivered and not whether it has changed nutritional status. Direct quantitative evidence is needed. Studies of child nutritional status in Indonesia, however, are often limited methodologically. Many rely on frequentist ordinal logistic regression estimated by maximum likelihood, which does not accommodate model uncertainty or the nesting of children within schools and may therefore produce less accurate estimates. Examples include Pangaribuan (2001), who examined determinants of toddler nutritional status in Central Java with conventional logistic regression, and Nurfida (2014), who classified the nutritional status of children aged 6 to 12 years in Indonesia using ordinal logistic regression and Support Vector Machine. Bayesian regression offers an alternative that yields credible intervals and handles multilevel structures. Widyastuti (2018) and Muharisa et al. (2015) report its advantage over maximum likelihood in small samples, and it has been applied to spatial modeling of stunting risk (Muthahharah & Mar'ah, 2024) and to body mass index analysis in school nutrition interventions (Nurmasyita et al., 2016). These studies generally still assess program effectiveness through simple mean difference tests, and no study has been found that evaluates the MBG Program in Jambi City with a hierarchical Bayesian approach.

This study addresses that gap by examining the association between the MBG Program and the nutritional status of public elementary school children in Jambi City through a hierarchical ordinal Bayesian regression, complemented by short-term trend

projections using Exponential Smoothing. Because the study has no comparison group and no pre-program baseline, a causal claim of effectiveness cannot be fully supported. Bayesian regression identifies the variables associated with the nutritional status of children receiving MBG, while Exponential Smoothing shows the direction of nutritional trends during implementation. Together they offer a basis for local and central governments to consider the sustainability, improvement, or expansion of the program. The objectives of this study are:

1. To examine the association between the MBG Program and the nutritional status of elementary school children in Jambi City using Bayesian regression.
2. To analyze the trend in the nutritional status of public elementary school children in Jambi City using the Exponential Smoothing method.
3. To identify the factors that significantly influence changes in the nutritional status of elementary school children in Jambi City during the program.

METHODS

This research is quantitative research with primary data obtained through direct measurements of 764 children from 4 schools in Jambi City (SDN 02, SDN 09, SDN 15, SDN 45), which were observed for 4 time periods (month 1 to month 4), resulting in a total of 3,056 observations. The resulting panel is fully balanced, with every child contributing exactly 4 observations and no missing data or attrition across the observation window. The response variable used is the nutritional status of children (Y) which is ordinal in nature by grouping the nutritional status of children into 4 categories based on the Z-score value of the Body Mass Index according to Age (BMI/U) referring to the Regulation of the Minister of Health of the Republic of Indonesia Number 2 of 2020. These categories consist of Undernutrition (Z-score $<$ -2 SD), Normal Nutrition (-2 SD $\leq$ Z-score $\leq$ +1 SD), Overnutrition (+1 SD $<$ Z-score $\leq$ +2 SD), and Obesity (Z-score $>$ +2 SD). Because Normal Nutrition falls in the middle of this ordering rather than at an endpoint, the proportional-odds assumption underlying the ordinal model below is treated as an empirical question and tested explicitly

Meanwhile, the predictor variables are the frequency of MBG consumption (X1), the child's age in months (X2), gender (X3), and the family's socioeconomic conditions (X4). The selection of independent variables in this study is based on factors generally known to be related to the nutritional status of school-age children. Sebataraja (2014) stated that the family's socioeconomic status is closely related to the fulfillment of household food needs,

where families with low socioeconomic status tend to have limitations in meeting children's nutritional needs, thus risking causing children to experience malnutrition. The research data analysis used Bayesian Ordinal Logistic Regression analysis with Google Colab software. The stages of the data analysis process carried out in this study are as follows:

1. Rearranging the data structure from wide format to long format, where the weight and height measurement data for 4 time periods (months 1 to 4) which were originally presented in separate columns, were rearranged into one row of observations per child per time period, resulting in a panel data structure with 3,056 observations (764 children × 4 periods).
2. Conducting descriptive exploration of nutritional status data of elementary school children in Jambi City, including the distribution of MBG consumption frequency, age, gender, and family socio-economic conditions.
3. Calculate the Body Mass Index (BMI) of each child in each observation period using the formula:

$$IMT = \frac{Weight\ (kg)}{Height\ (m)}$$

4. Converting BMI values into Z-score Body Mass Index for Age (BMI/U) based on the anthropometric standards of the Indonesian Minister of Health Regulation Number 2 of 2020, taking into account the age (in months) and gender of the child, then categorizing nutritional status into 4 ordinal classes: Undernutrition, Normal Nutrition, Overnutrition, and Obesity.
5. Conduct a multicollinearity test between independent variables using the Variance Inflation Factor (VIF) value to ensure there is no excessive correlation between predictors before the model is estimated.
6. Determining a Bayesian ordinal logistic regression model based on predetermined variables, taking into account the hierarchically nested data structure, namely repeated measurements at time nested within children, and children nested within schools. In general, the cumulative ordinal logistic regression model can be stated as follows

$$P(Y_{ijt} \leq k) - log_{it}^{-1}\ (T_k - n_{ijt})$$

with linear predictor:

$$n_{ijt} - \beta_1 X1_{ij} + \beta_2 X2_{ijt} + \beta_3 X3_{ij} + \beta_4 X4_{ij} + \beta_5 Months_t + u_j$$

where u_j is a random effect of school that accommodates the hierarchical data structure (children nested within schools), where u_j is a random effect of school at the second level that accommodates variation in nutritional status between schools, and $v_{i(j)}$ is a random effect of child at the third level nested within the jth school, to accommodate correlation between repeated measurements on the same child over the four observation time periods. Both random effects are assumed to be normally distributed with a mean of zero, that is $u_j \sim N(0, \sigma^2 school)$ and $v_{i(j)} \sim N(0, \sigma^2 child)$, so that the nested panel data structure can be fully accommodated in the model.

7. Determine the prior distribution for each parameter. The priors used are weakly informative as follows:

$$\beta_k \sim N(0,1), k = 1, \dots, 5$$
$$t \sim N(\mu_t, 2), with\ T_1 < T_2 < T_3$$
$$\sigma_{school} \sim Half\text{-}Normal(1)$$

8. Performing model parameter estimation through Markov Chain Monte Carlo (MCMC) simulation with the No-U-Turn Sampler (NUTS) algorithm, using 4 chains of 2,000 iterations each after 1,500 tuning iterations, target acceptance rate of 0.98, with a non-centered parameterization for both random effects to improve sampling efficiency.
9. Performing model convergence tests using statistics (R-hat) and Effective Sample Size (ESS). The model is declared convergent if the value R-hat ≤ 1.01 for all parameters, with zero divergent transitions.
10. Conduct a model goodness of fit test using a Posterior Predictive Check (PPC), by comparing the proportion of nutritional status categories from observations to the proportion of model prediction results, disaggregated by school and by month, and supplemented by a within-child category-stability statistic comparing the observed and predicted proportion of children whose category remains unchanged across all four months. Model comparison between the specification with and without the child-level random effect was additionally conducted via Leave-One-Out Cross-Validation (LOO-CV).
11. Determining the significance of the influence of each independent variable based on the 95% credible interval of the posterior distribution. A variable is considered to have a significant influence if the 95% credible interval does not include the value of zero. This criterion is applied only to the fixed-effect coefficients (β);

because the variance components σ_school and σ_child are non-negative by construction, their exclusion of zero is not interpreted as statistical significance in the conventional sense. Instead, these variance components are summarized as intra-class correlation coefficients (ICC = σ^2_j / (σ^2school + σ^2child + $\pi^2/3$)) to describe how much of the total variability in nutritional status occurs between schools versus between children.

12. Testing the proportional-odds assumption underlying the cumulative ordinal model by fitting three separate binary logistic models corresponding to each cumulative cutpoint, with cluster-robust standard errors by child, and comparing the resulting coefficients across cutpoints; a coefficient that varies substantially or reverses sign across cutpoints indicates a violation of this assumption for that predictor.
13. Conducting an analysis of children's nutritional status trends during the research period using the Simple Exponential Smoothing method on the average monthly BMI/U Z-score, with the equation:

$$S_t = \alpha Z_t + (1 - \alpha) S_{t-1})$$

where is the smoothing value at time t, is the average actual BMI/U Z-score in the th month, and is the smoothing level parameter estimated from the data. Given that only four monthly time points are available, this trend analysis is presented as a descriptive illustration of the observed pattern rather than a validated forecast.

RESULT AND DISCUSSION

Results

1. Data Characteristics

This study involved 764 primary school pupils from four schools in Jambi City (SDN 02, SDN 09, SDN 15, and SDN 45), who were selected at random and observed over four time periods, yielding 3,056 observations in a fully balanced panel with no missing data. The mean age was 111.82 months (SD = 22.76), with a relatively balanced gender composition of 52.09 percent girls and 47.91 percent boys. Most observations (64.43 percent) fell in the Normal Nutrition category, followed by Overnutrition (14.95 percent), Undernutrition (14.79 percent), and Obesity (5.82 percent).

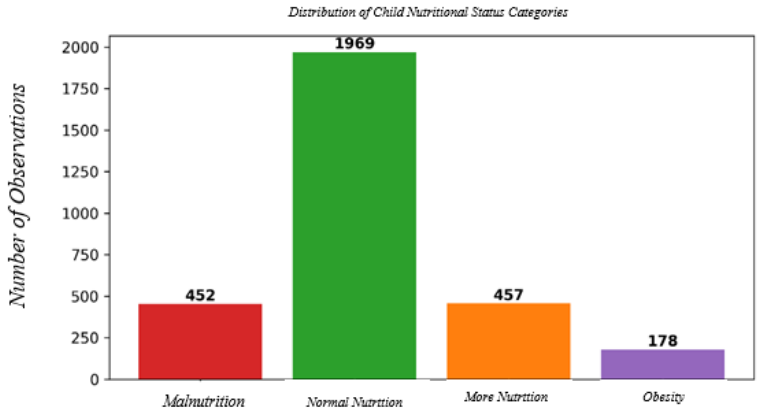


Figure 1. Distribution

2. Effectiveness of the MBG Program

Before the coefficients are interpreted, diagnostic tests were conducted. The multicollinearity test yielded VIF values of 1.01 to 1.02 for all predictors, indicating no excessive correlation among them (Table 1).

Table 1. Variance Inflation Factor Test Results

Variables	VIF
MBG Frequency (X1)	1.02
Age (X2)	1.02
Gender (X3)	1.01
Socio-Economic (X4)	1.01

The LOO-CV comparison confirmed that adding the child-level random effect is well founded. The model with this effect has a much higher expected log predictive density than the model without it (elpd_loo −300.34 versus −3,100.58, a difference of about 2,800), which indicates a substantial improvement in out-of-sample predictive performance. Convergence diagnostics for the final model show R-hat values from 1.00 to 1.01 for all parameters, effective sample sizes from about 800 for the fixed-effect coefficients to over 2,600 for the variance components, and no divergent transitions across the four chains. Three visual diagnostics support this: trace plots with random movement and no systematic trend (Figure 2), an autocorrelation plot that falls close to zero from the first lag (Figure 3), and ergodic means that stabilize after about 250 iterations (Figure 4).

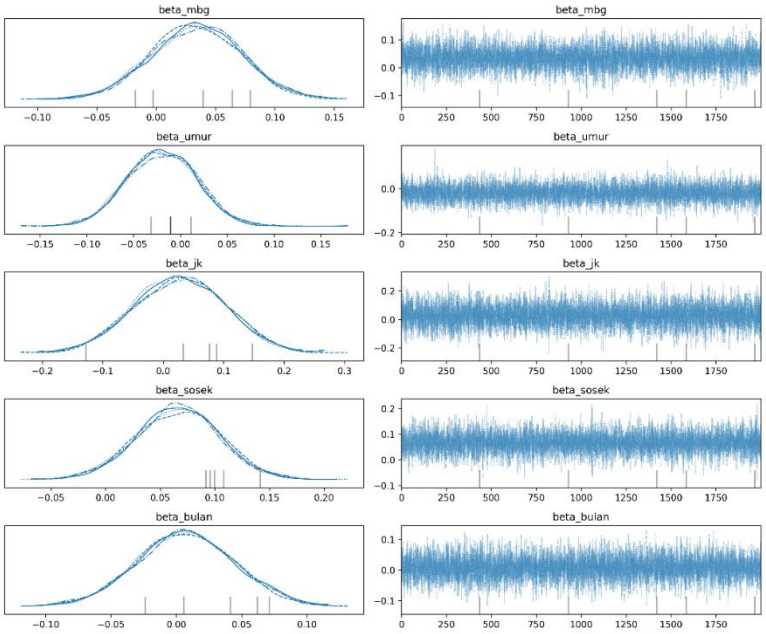


Figure 2. Trace Plot

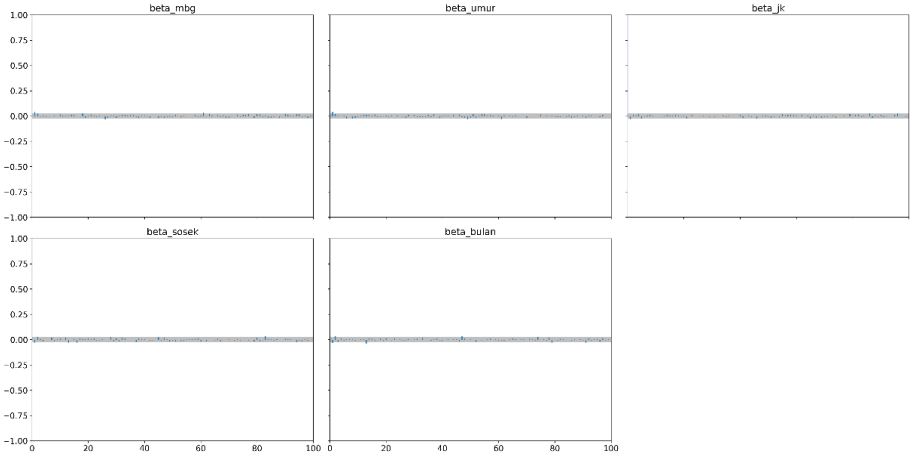


Figure 3. Autocorrelation plot

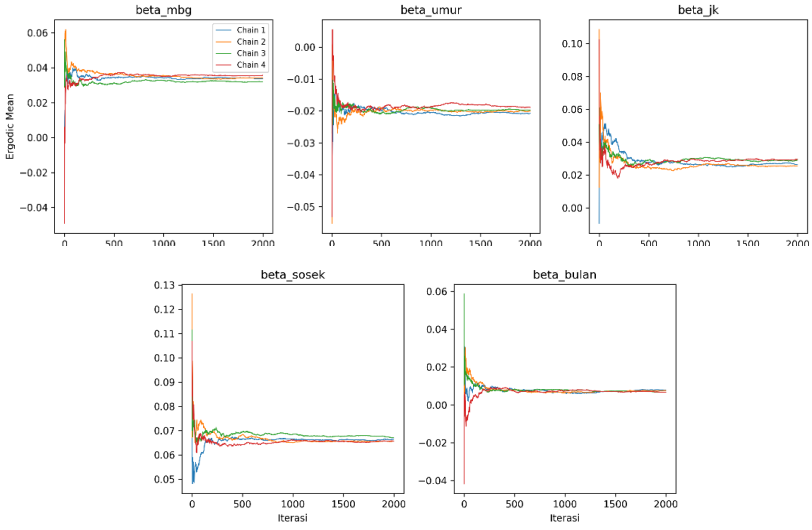


Figure 4. Ergodic Mean Plot

The Posterior Predictive Check showed close agreement between the observed and predicted category proportions, with differences of no more than 0.1 percentage points in each category (Table 2), and similar agreement by school and by month. However, the proportion of children whose category never changed over the four months was 95.5 percent in the data against 85.4 percent in the posterior predictive replications (95% CI: 83.0 to 88.1 percent). The model therefore reproduced the overall distribution well but underestimated the month-to-month stability of individual children's categories.

Table 2. Comparison of Category Proportions: Observed vs. Model Predictions

Category	Observation	Predicted mean	95%CI
Undernutrition	0.148	0.149	[0.143, 0.155]
Normal Nutrition	0.644	0.643	[0.634, 0.652]
Overnutrition	0.150	0.149	[0.141, 0.157]
Obesity	0.058	0.059	[0.055, 0.064]

The coefficient for the frequency of MBG consumption (X1) had a posterior mean of 0.16 with a 95% credible interval from −0.56 to 0.89 (Table 5). Because the interval includes zero, MBG consumption frequency does not show a credible relationship with nutritional status during this observation period.

3. Forecasting Trends

The mean BMI-for-age Z-score per month was relatively stable throughout the observation period (Table 3).

Table 3. Average Z-score BMI/U

Month	Mean Z-score	Elementary School	N
1	-0.369	1, 663	764
2	-0.378	1, 656	764
3	-0.366	1,638	764
4	-0.368	1, 624	764

Projections for months 5 to 7 were made with Simple Exponential Smoothing and Holt's Linear Trend to compare the direction of the trend should the observed pattern continue (Table 4). Because only four time points are available, the results are a descriptive illustration and not a validated forecast.

Simple Exponential Smoothing produced a smoothing parameter (α) of 1.49×10^{-8} and a constant projection of −0.369 for the next three months, so no trend component was detected. Holt's Linear Trend projected a slight increase, but its trend smoothing parameter (β) of 0.712 shows that this result is highly sensitive to minor fluctuations when only four data points are available.

Table 4. Comparison of Simple Exponential Smoothing and Holt's Linear Trend Projection Results

Method	α	β	5th month	6th month	7th month
Simple Exponential Smoothing	1.49×10^{-8}	-	-0.369	-0.369	-0.369
Holt's Linear Trend	0.712	0.712	-0.365	-0.362	-0.359

Table 5. Results of the Bayesian Logistic Ordinal Regression Model

Variables	Mean (β)	SD	HDI 2.5%	HDI 97.5%	R-hat
MBG Frequency (X1)	0.16	0.37	−0.56	0.89	1.00
Age (X2)	−0.20	0.37	−0.93	0.53	1.00
Gender (X3)	−0.37	0.60	−1.60	0.77	1.00
Socio-Economic (X4)	0.42	0.36	−0.28	1.10	1.00
Time	−0.032	0.095	−0.22	0.15	1.00
σ (school)	1.24	0.68	0.10	2.70	1.01
σ (child)	9.74	0.41	8.90	11.0	1.00

After the child-level random effect was included, none of the four predictors had a 95% credible interval that excluded zero (Table 5). Family socioeconomic condition (X4) had the largest coefficient (β = 0.42), but its interval ranged from −0.28 to 1.10. This illustrates why the repeated-measures structure matters. When the four monthly observations of each child are treated as independent, correlation that belongs to stable child characteristics can be wrongly attributed to predictors such as socioeconomic condition and to the school-level variance component.

Rather than testing σ_{school} by whether its interval excludes zero, which is inappropriate for a non-negative variance parameter, the variance components were decomposed into the ICC. About 94.7% (95% CI: 90.0 to 96.8%) of the total variation in nutritional status came from stable differences between children, and only about 2.0% (95% CI: 0.01 to 6.9%) from differences between schools. Over this four-month span, a child's nutritional status is therefore largely a stable individual characteristic, which leaves little variation for predictors at either level to explain.

Prior sensitivity checks showed that the posterior estimate of σ_{school} changed with the prior scale (0.58 under Half-Normal(0.5), 1.24 under Half-Normal(1), and 2.06 under Half-Normal(2)), which is reasonable because only 4 schools inform this parameter. The fixed-effect coefficients, including X4, were relatively unchanged across the three priors.

The proportional-odds check showed that the Age and Gender coefficients reverse sign between the lowest cutpoint and the higher cutpoints (Table 6), indicating that the assumption is violated for these two predictors. The implications are discussed below.

Table 6. Proportional-Odds Diagnostics based on Cumulative Cutpoints

Predictors	Y≤0 vs Y>0	Y≤1 vs Y>1	Y≤2 vs Y>2
MBG Frequency	−0.105	0.015	0.037
Age	−0.197	0.099	0.497
Gender	−0.393	0.193	0.414
Socio-Economic	−0.205	−0.020	−0.114

Discussion

After the repeated-measures structure was modeled appropriately, none of the four predictors, including family socioeconomic condition, showed a credible relationship with the nutritional status of elementary school children in Jambi City over the four months of observation. The model is suitable for interpretation. It converged well (R-hat 1.00 to 1.01 with no divergent transitions), it was far superior to the specification without a child-level random effect in the LOO-CV comparison (Δelpd ≈ 2,800), and the posterior predictive check showed good agreement with the data, although the model underestimated how stable individual children's categories are from month to month.

The absence of a credible relationship between MBG consumption frequency and nutritional status (β = 0.16, 95% HDI −0.56 to 0.89) could be read as evidence that the program has had no impact, but this reading requires caution given the short study duration. In their systematic review and meta-analysis of school feeding in low- and middle-income countries, Wang et al. (2021) found that school feeding significantly increased weight by 0.58 kilograms and height by 0.32 centimeters over 12 months relative to control groups, which suggests that anthropometric benefits are better judged over annual than monthly horizons. Zenebe et al. (2018) reported higher dietary diversity and higher BMI-for-age and height-for-age Z-scores among beneficiaries of a school feeding program in Southern Ethiopia. Their comparative cross-sectional design, however, differs from the short repeated-measures design used here and cannot show how quickly such differences emerge. Taken together, the absence of credible effects in this study is more likely due to the limited observation period than to a lack of nutritional potential in the program, although a design without a comparison group cannot settle this question.

This interpretation is reinforced by the variance decomposition. About 94.7% of the total variation in nutritional status comes from stable differences between children, so little variation is left for any short-term predictor, including MBG consumption frequency, to explain over four repeated measurements, whatever the true nutritional benefit of the program.

The trend analysis shows a similar pattern. The mean BMI-for-age Z-score stayed between −0.366 and −0.378 across the four months. Simple Exponential Smoothing gave a near-zero α and a constant projection, so no trend was detected. Holt's Linear Trend gave a slightly rising projection, but its trend parameter of 0.712 estimated from only four data points signals high sensitivity to small fluctuations, so this increase should not be read as a stable trend.

Family socioeconomic condition had the largest coefficient among the predictors (β = 0.42, 95% HDI −0.28 to 1.10) but no credible relationship once the child-level random effect was included. The literature links socioeconomic status to children's nutritional status (Astuti & Sakitri, 2018 and Sebataraja et al., 2014), so the wide interval here is better read as limited precision over a short window than as evidence of no association. The double burden pattern reported by Maehara et al. (2019) and Lowe et al. (2021) in Central Java also remains a relevant framework for understanding the nutritional transition in this population.

Age and gender also showed no credible relationship, with both intervals including zero. This may reflect that, among the elementary school children studied, these characteristics do not consistently separate nutritional status, unlike in adolescents, whose body composition changes more dynamically with puberty. The proportional-odds test adds an important qualification. The Age and Gender coefficients reverse sign across cutpoints (Table 6), negative at the boundary separating Undernutrition from the higher categories and positive at the boundary separating Overnutrition and Obesity from the lower categories. This fits the double burden framework introduced earlier. A characteristic associated with a lower risk of undernutrition is not necessarily associated with a lower risk of overnutrition, so a single coefficient can blur two opposing relationships. Although the pooled coefficients did not reach the 95% HDI threshold, a multinomial specification with Normal Nutrition as the reference category may capture the effects of age and gender better and is recommended for future studies using this dataset.

The school-level ICC was about 2.0% (95% CI: 0.01 to 6.9%), far smaller than the 94.7% attributable to children, and the estimate was sensitive to the choice of prior, which is expected because only 4 schools inform it. The hierarchical approach remains justified

because the LOO-CV comparison and the posterior predictive checks show that the nested structure matters, especially at the child level. Differences in implementation between schools, such as the consistency of food distribution or the quality of MBG kitchens, should be treated as hypotheses for future studies with greater statistical power and not as confirmed findings.

CONCLUSION

The frequency of MBG consumption was not shown to have a credible association with the nutritional status of public elementary school children in Jambi City ($\beta = 0.16$, 95% HDI −0.56 to 0.89), so the program's effectiveness over a four-month observation period still requires further evidence. Simple Exponential Smoothing and Holt's Linear Trend indicated a relatively stable nutritional status with no clear direction of change over the next three months, which should be read as descriptive given that only four time points were available. None of the predictors, including family socioeconomic condition ($\beta = 0.42$, 95% HDI −0.28 to 1.10), age, gender, and time, showed a credible relationship. Nutritional status differed mainly between children (ICC about 94.7%) and only marginally between schools (ICC about 2.0%), which supports the use of a hierarchical approach with a child-level random effect.

Future research should use a longer observation period, ideally 12 months or more, and include a comparison group and a pre-program baseline so that program effects can be identified causally. A multinomial or partial proportional-odds specification should also be considered because the proportional-odds assumption was violated for age and gender.

DECLARATIONS

Author Contribution	:	Nayla Desviona: Methodology, Formal Analysis, Writing - Original Draft, and Project Administration. Amelia Retno Eka Putri: Investigation, Validation, Data Curation, Formal Analysis, and Writing - Review & Editing. Lizabeth Sari Dewi: Resources, Project Administration, Investigation, and Writing - Review & Editing. Yolanda Sari: Investigation, Data Curation, and Writing - Original Draft. Viola Novaryca: Investigation, Data Curation, Formal Analysis, Writing - Original Draft, and Writing - Review & Editing.
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Additional Information	:	Additional information is available for this paper.

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