

Effectiveness of the School-Based Feeding Program on Nutritional Status of Elementary Learners in Tangub City Division: A Quantitative Analysis of Baseline and Endline Assessments of SY 2023-2026

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DOI: <https://doi.org/10.47772/IJRISS.2026.100600933>

Received: 14 June 2026; Accepted: 20 June 2026; Published: 09 July 2026

ABSTRACT

This study evaluated the effectiveness of the School-Based Feeding Program (SBFP) in improving the nutritional status of learner-beneficiaries in the Tangub City Division across three consecutive school years (2023–2024, 2024–2025, and 2025–2026). A quantitative, one-group pre-test post-test design was employed using secondary data from existing DepEd records, including baseline and endline nutritional assessments of SBFP beneficiaries. The nutritional status of learners was classified into five categories: Severely Wasted, Wasted, Normal, Overweight, and Obese. Data were analyzed using frequency counts, percentages, means, standard deviations, Chi-Square tests, and Cramer's V for effect sizes, with all statistical computations performed using JAMOV.

The findings revealed that the SBFP consistently improved the nutritional status of learners across all three school years. The proportion of learners with normal nutritional status increased from 80.49% to 86.23% in SY 2023–2024, from 67.18% to 94.89% in SY 2024–2025, and from 69.06% to 87.61% in SY 2025–2026. Chi-Square tests confirmed that these improvements were statistically significant ($p < 0.05$ across all years), with Cramer's V effect sizes ranging from 0.18 to 0.29, indicating small to moderate practical impacts. All grade levels from Kindergarten to Grade 6 showed significant improvements, with Kindergarten learners demonstrating the largest gains (+27.2 percentage points, Cramer's V=0.31). Both male and female learners benefited significantly, with females showing marginally greater improvements. The prevalence of overweight and obese learners remained consistently low and stable, indicating that the SBFP improved nutrition without contributing to overnutrition.

The study concludes that the School-Based Feeding Program is an effective intervention for improving the nutritional status of learners in Tangub City Division, with the strongest impact observed among younger learners and during the school year with the highest baseline malnutrition rates. The findings support the continued implementation and strengthening of the SBFP as a key strategy for addressing child malnutrition in the Philippines, consistent with the EDCOM II recommendation to prioritize nutrition interventions as a foundation for addressing the national learning crisis. Recommendations include sustaining the program, providing targeted support for Grade 1 learners, strengthening parental engagement, and allocating local government funds through the Special Education Fund to support SBFP implementation.

Keywords: School-Based Feeding Program, nutritional status, severely wasted, wasted, SBFP effectiveness, Tangub City Division, Chi-Square test, Cramer's V

INTRODUCTION

The School-Based Feeding Program (SBFP) is a flagship intervention of the Department of Education aimed at addressing undernutrition among public school children. Implemented for 120 feeding days per school year, the program targets wasted and severely wasted learners from Kindergarten to Grade 6. Despite national implementation, evidence on its effectiveness remains inconclusive. The EDCOM II Final Report (2026) highlights that "no significant differences exist in the proportion of children aged 3-4 meeting total energy and protein intake requirements between program participants and non-participants" based on PIDS research.

Child malnutrition, particularly undernutrition, remains a significant public health concern in the Philippines, directly affecting children's physical growth, cognitive development, and academic performance. The Department of Education's School-Based Feeding Program (SBFP) aims to address short-term hunger and improve the nutritional status of undernourished learners. However, evidence on the program's effectiveness at the division level—using rigorous baseline and endline comparisons—is still limited.

This study aims to quantitatively evaluate the effectiveness of the School-Based Feeding Program by comparing baseline and endline BMI-based nutritional status indicators among elementary learners in the Division of Tanguib City. Specifically, the research analyzes changes in the prevalence of severely wasted, wasted, normal, overweight, and obese categories, with particular focus on the impact among the original beneficiaries. Findings will provide empirical evidence on the program's impact on acute undernutrition, inform resource allocation, and support policy refinements to optimize the SBFP for Filipino schoolchildren.

REVIEW OF RELATED LITERATURE

Nutritional Status of Filipino Schoolchildren. Malnutrition remains a persistent public health challenge in the Philippines. The Food and Nutrition Research Institute (FNRI) has consistently reported high prevalence rates of undernutrition among school-aged children. In the 2013 National Nutrition Survey, 31.1% of children aged 5–10 years were stunted, 31.2% were underweight, and 8.4% were wasted (Oro et al., 2018). For the age bracket 10–19 years, stunting was reported at 31.9% and wasting at 12.5% in 2015. The Department of Education's (DepEd) own Nutritional Status Baseline Report for School Year 2015–2016 identified 1,845,687 severely wasted and wasted learners from Kindergarten to Grade 6 (Oro et al., 2018).

The School-Based Feeding Program (SBFP) in the Philippines. The DepEd has been conducting supplementary feeding in public schools since 1997, initially to address short-term hunger. In 2012, the program was renamed the School-Based Feeding Program and its focus shifted to rehabilitating severely wasted and wasted children (Oro et al., 2018). The primary goal is to rehabilitate at least 70% of severely wasted beneficiaries to normal nutritional status after 100–120 feeding days. Secondary goals include ensuring 85–100% classroom attendance and improving children's health and nutrition behaviors (Tabunda et al., 2016; Oro et al., 2018).

Effectiveness of SBFP on Nutritional Status (BMI-Based Outcomes). Several local studies have evaluated the impact of SBFP on wasting and severe wasting, though many have focused on process indicators or academic outcomes rather than rigorous BMI-based effect sizes.

Tabunda, Albert, and Angeles-Agdeppa (2016) conducted an impact evaluation of the SY 2013-2014 SBFP using a mixed-methods design with a counterfactual group. Among 287 children verified to be severely wasted prior to feeding, 62% attained at least normal nutritional status at the end of the 100–120 feeding days. This fell short of the 70% target. Moreover, only 46% of those who achieved normal status maintained it 12 months after the program. Logistic regression showed that improvement was significantly associated with having access to a safe water supply (OR = 3.5) and eating meals with rice/corn and vegetables only (negative factor). The study concluded that while the program was generally well-implemented, nutritional gains were not sustained without continued support, and that factors outside the school (household water access, dietary diversity) strongly influenced outcomes.

Cubio (2025) evaluated the SBFP in Tandag City Division for SY 2023-2024 among 192 severely wasted learners. Using a mixed-methods approach (surveys, focus groups, document analysis), the study found a rehabilitation rate of 65.10% (125 out of 192 severely wasted learners recovered to normal BMI). Attendance improved from 96.57% to 98.86% after implementation. Paired t-test results showed a significant improvement in academic performance (mean grade increased from 81.4 to 83.2, $p < .001$). The study identified challenges such as inadequate feeding facilities, occasional food preference issues (children disliking vegetables), and limited parental involvement. The rehabilitation rate, though below the 70% national target, still demonstrated substantial positive impact.

Cambal and Digo (2025) conducted an action research in Irosin District, Sorsogon. Baseline data showed 17.41% (1,644 out of 9,438 learners) were wasted or severely wasted. After the SBFP, the number of beneficiaries decreased to 1,255 (13.30%), representing a 4.11 percentage point reduction in combined wasted and severely wasted prevalence. The study emphasized that budget allocation depended on the number of beneficiaries per school, and that best practices included orientation of parents, engagement of barangay leaders, and support for school gardens (“gulayan”). The decrease in wasting prevalence confirmed that the feeding program contributed to eradicating malnutrition.

Lu and Dacal (2020) examined SBFP implementation in Sta. Maria District, Pangasinan. Among 75 underweight beneficiaries, after feeding all were still underweight (96% remained underweight; only 4% became normal). However, weight and BMI increased significantly ($p = 0.000$). Height also increased ($p = 0.000$). Academic performance improved from a mean of 81.35 (Satisfactory) to 83.24 (Satisfactory), also statistically significant. The authors concluded that the feeding program had an effect on physical growth and academic performance, but the effect on BMI was modest—most children remained underweight even after the program, suggesting that 120 feeding days may be insufficient to fully rehabilitate many children, especially if household food insecurity persists.

Corpuz and Bantulo (2023) assessed SBFP effectiveness and sustainability during the COVID-19 pandemic in East Maitum District. Using a cross-sectional design with 44 school heads and 40 SBFP coordinators, they reported that the program was rated “very high” in alignment with objectives and “very high” in delivery of nutritious food packs, inventory of resources, and monitoring and evaluation. However, nutritional components (e.g., ability to implement regardless of resource availability) were rated only “medium.” Among 202 learners, none were severely wasted, 11% were wasted, and 88% had normal nutritional status. Academic performance was mostly “satisfactory” to “very satisfactory.” The study recommended continued implementation and stronger stakeholder involvement.

Claros, Cruz, and Bacang (2024) investigated the relationship between teachers’ knowledge of SBFP and its implementation on pupils’ academic performance in Valencia District, Negros Oriental. Though the primary outcome was academic performance, the study confirmed that SBFP coordinators were “very knowledgeable” (mean 4.48) and implementation was “very well implemented” (mean 4.38). A significant correlation was found between implementation and pupils’ academic performance ($r = 0.4559$). The study highlighted that physical facilities received the lowest implementation score, suggesting that infrastructure improvements are needed.

Gahite (2024) examined SBFP implementation in Santa Cruz District, Laguna, focusing on learning outcomes rather than nutritional status. Nevertheless, the study reported that the extent of implementation was “very high” in nutritional content, feeding frequency, precautionary measures, and program monitoring. Regression analysis showed a significant effect of SBFP implementation on students’ creativity, communication, literacy, and social skills. This supports the broader benefits of the program beyond BMI improvement.

Lacbayen (2024) used a descriptive correlational design in San Jose del Monte, Bulacan, and found that SBFP implementation was “fully implemented” in delivery, food safety, and health protocols. Learners’ academic performance improved from a mean of 80.62 to 82.64 after the program, with a computed t-value of 5.39 (critical value 2.00), indicating a significant influence of feeding on academic performance. These findings indirectly support the notion that improved nutrition (through feeding) enhances children’s ability to learn.

Oro et al. (2018) reported on an integrated school nutrition model (school garden + feeding + nutrition education) in 58 lighthouse schools in CALABARZON. They found that timely submission of beneficiary lists, use of calibrated anthropometric tools, and training of teachers were critical for accurate baseline assessment. The study noted that schools using the integrated approach had higher adoption of FNRI recipes (from 7.19 to 9.70 recipes) and increased parent volunteer engagement (from 2.76 to 3.33 per school). The integrated model helped bridge gaps between feeding, gardening, and nutrition education, leading to better diet diversity and potentially better BMI outcomes.

Challenges and Sustainability of BMI Improvements. A recurring theme across the literature is that while SBFP produces short-term improvements in BMI and reduction in wasting, long-term sustainability is problematic. Tabunda et al. (2016) found that only 46% of children who reached normal BMI maintained it 12 months later. Lu and Dacal (2020) observed that despite significant weight gain, most children remained underweight post-program. Cubio (2025) reported a rehabilitation rate of 65.10% for severely wasted learners, still below the 70% national target. Cambal and Digo (2025) showed a reduction in combined wasted/severe wasted prevalence from 17.41% to 13.30%, but noted that malnutrition remained prevalent.

Factors influencing BMI improvement include: adequate water supply at home, family meal composition (rice/vegetables only being detrimental), age of the child (younger children improved more), and severity of wasting at baseline (Tabunda et al., 2016). Poor documentation of baseline and endline measurements, lack of calibrated weighing scales, and inconsistent use of BMI-for-age standards have also been identified as major methodological weaknesses that affect program evaluation (Tabunda et al., 2016; Oro et al., 2018).

Research Gap

While existing literature provides evidence that SBFP can reduce wasting and severe wasting, most studies have focused on rehabilitation rates at the end of the feeding cycle (100–120 days) without a rigorous baseline-endline comparison using complete population data. Few studies have quantified the change in prevalence of each BMI category (severely wasted, wasted, normal, overweight, obese) before and after the 120-day program using actual division-wide data. Furthermore, none of the reviewed studies specifically examined the Tangub City Division context. This research aims to fill that gap by comparing the baseline and endline status with a specific focus on learners identified as severely wasted and wasted who received the 120-day SBFP.

THEORETICAL FRAMEWORK

This study is anchored on three complementary theories that explain how the School-Based Feeding Program (SBFP) can lead to improved nutritional status among learners: Maslow's Hierarchy of Needs, Human Capital Theory, and the Health and Nutrition-Learning Nexus.

First, Abraham Maslow's Hierarchy of Needs (1943) provides the foundational justification for school feeding programs. As cited in the attached literature by Dausin (n.d.) and Fontanilla et al. (n.d.), Maslow's theory posits that before higher-level needs such as belongingness, esteem, and self-actualization can be achieved, basic physiological needs—including food, water, and nutrition—must first be satisfied. Food is considered a basic need because it builds, protects, and repairs the body. A hungry or malnourished child cannot focus, participate actively in class, or benefit fully from educational experiences. Therefore, the SBFP directly addresses this foundational physiological need by providing regular, nutritious meals to learners, thereby preparing them to be "ready to learn" and establishing the essential groundwork for all subsequent developmental and academic outcomes.

Second, Gary Becker's Human Capital Theory (1964) provides the economic and developmental rationale for investing in school feeding programs. As cited in Barnabas et al. (2024), this theory recognizes that nutrition plays a fundamental role in the development and maintenance of human capital. Investments in human beings—particularly in their health and nutrition—enhance their productivity, cognitive abilities, and future economic potential. The SBFP is viewed as a specific form of investment in learners' health, which in turn positively affects their educational performance, attendance, and long-term productivity. Children who are adequately nourished

develop stronger cognitive abilities, attend school more regularly, and achieve better learning outcomes. This theory justifies why government resources should be allocated to feeding programs, as the returns on such investments—improved health, enhanced learning capacity, and future workforce productivity—are substantial and long-lasting, aligning with the Heckman Equation cited in the EDCOM II report that early childhood interventions generate annual returns of 7 to 10 percent.

Third, the Health and Nutrition-Learning Nexus establishes the direct causal mechanism linking the SBFP to improved nutritional status and, subsequently, to better developmental outcomes. Supported by multiple studies in the attached literature (Gahite, 2024; Llamas & Oco, unpublished; Barnabas et al., 2024), this nexus demonstrates that poor nutrition leads to impaired cognitive development, reduced physical growth, and low academic performance, while adequate nutrition improves brain development, enhances concentration, and leads to better learning outcomes. By providing regular access to nutritious meals, the SBFP improves learners' nutritional status—measured through Body Mass Index (BMI) and standardized Z-scores for Weight-for-Age (WAZ), Height-for-Age (HAZ), and BMI-for-Age (BAZ)—which then enhances their ability to concentrate, retain information, participate in class activities, and achieve developmental milestones. This theory directly links the independent variable (SBFP implementation) to the dependent variable (improved nutritional status) by explaining the biological and cognitive mechanisms through which nutrition affects child development.

Together, these three theories provide a comprehensive and integrated justification for this study. Maslow's Hierarchy establishes why feeding is necessary before learning can occur, framing nutrition as a fundamental human right and prerequisite for all other forms of development. Human Capital Theory establishes the value and economic justification for government investment in school feeding programs, framing such investments as strategic expenditures with high returns. The Health and Nutrition-Learning Nexus establishes the mechanism of action, explaining how improved nutrition translates into measurable improvements in children's physical growth, cognitive function, and overall developmental outcomes. The integration of these theories supports the central hypothesis of this study: that the School-Based Feeding Program, when properly implemented, leads to statistically significant improvements in the nutritional status of learner-beneficiaries, as measured by the difference between baseline and endline anthropometric assessments.

Statement of the Problem

The general aim of this study is to determine the effectiveness of the School-Based Feeding Program (SBFP) in improving the nutritional status—based on Body Mass Index (BMI)—of elementary learners in the Division of Tangub City for School Year 2023–2026.

Specifically, this study answers the following questions:

1. What is the nutritional status of learners at baseline (pre-feeding) and endline (post-feeding) across SY 2023–2026?
2. What differences exist in the prevalence of severely wasted, wasted, normal, overweight, and obese learners before and after SBFP implementation?
3. Are there significant differences in SBFP effectiveness across grade levels?
4. Are there significant differences in SBFP effectiveness between male and female learners?
5. What trends can be observed in learners' nutritional status across three consecutive school years?

Scope and Limitations of the Study

Scope of the Study. This study focused on evaluating the effectiveness of the School-Based Feeding Program (SBFP) in improving the nutritional status of learner-beneficiaries in the Tangub City Division. Specifically, the study analyzed the baseline and endline nutritional assessments of SBFP beneficiaries to determine whether there was a statistically significant improvement in their nutritional status after completing the 120-day feeding program for school year 2023-2026

The study covers the following specific parameters:

Geographic Scope. The study is confined to the Tangub City Division, which encompasses all public elementary schools implementing the SBFP within the city. Tangub City is a component city in the province of Misamis Occidental, and the findings of this study will be specific to this locality. No schools or learners outside this division will be included in the analysis.

Population Scope. The respondents of this study were the learner-beneficiaries of the SBFP in Tangub City Division who were identified as wasted or severely wasted based on their initial nutritional assessment at the beginning of the school year. Only those learners who have complete baseline and endline anthropometric data (weight and height measurements) were included in the analysis. Learners who transferred out during the feeding period, those with incomplete records, or those who participated in less than 80 percent of feeding days were excluded from the study.

Temporal Scope. The study covered the duration of one complete SBFP implementation cycle, which typically run for 120 feeding days within the three succeeding school years. The baseline nutritional assessment data were taken at the start of the feeding program, while the endline data were collected upon completion of the 120 feeding days.

Variable Scope. The primary variables of this study were the baseline and endline nutritional status of SBFP beneficiaries. Nutritional status were measured using anthropometric indicators, specifically Weight-for-Age (WAZ), Height-for-Age (HAZ), and Body Mass Index-for-Age (BAZ), computed using the WHO Anthro software. The study did not include other potential outcomes of the SBFP such as academic performance, school attendance, classroom behavior, or dietary diversity, as these are beyond the specified research objectives.

Methodological Scope. The study employed a quantitative, one-group pre-test post-test design (quasi-experimental). Data were obtained solely from secondary sources, specifically the existing records maintained by the Tangub City Division, including School Form 8 (Learner's Basic Health and Nutrition Report), SBFP Form 1 (Master List of Beneficiaries), SBFP Form 3 (Record of Daily Feeding), and consolidated nutritional status reports. No primary data collection were conducted, and no interviews or surveys were administered to learners, parents, teachers, or program implementers.

Limitations. The study acknowledges the following inherent limitations that affect the interpretation and generalizability of the findings:

Absence of a Control Group. This study employed a one-group pre-test post-test design without a comparison or control group of non-beneficiaries. As such, any observed improvements in nutritional status cannot be solely attributed to the SBFP intervention with absolute certainty, as other confounding factors—such as household food security, seasonal variations in food availability, family income changes, or health interventions outside the school—may have contributed to the observed changes. The absence of a control group limits the study's ability to establish causality.

Secondary Data Dependence. The study relied entirely on existing records and secondary data provided by the Tangub City Division. The accuracy, completeness, and consistency of these records were beyond the researcher's control. Potential issues such as recording errors, missing data, inconsistent measurement techniques across different schools or measurers, and variations in the timing of measurements may affect the reliability and validity of the findings. The researcher had no means to verify or correct any inaccuracies present in the source documents.

Short Observation Period. The SBFP intervention spans only 120 feeding days, which is approximately four months. While this duration aligns with national program guidelines, it may be insufficient to capture long-term or sustained improvements in nutritional status, particularly for height-related indicators (HAZ) which typically require longer periods to show meaningful change. The study can only measure short-term outcomes immediately following the intervention and cannot assess whether any improvements are maintained after the program concludes.

Single Locality Limitation. The study was confined to Tangub City Division only. Consequently, the findings were generalize to other divisions, regions, or contexts with different socioeconomic conditions, implementation capacities, cultural practices, or levels of local government support. The unique characteristics of Tangub City—including its urban-rural mix, predominant livelihood activities, and local policy environment—influenced SBFP outcomes in ways that differ from other areas.

Lack of Dietary Intake Data. The study did not measure actual dietary intake, meal quality, or nutritional content of the food served to beneficiaries. While the SBFP guidelines specify nutritional requirements, the study cannot verify whether the meals actually provided met these standards consistently throughout the 120-day period. Variations in meal preparation, portion sizes, ingredient substitutions, and local food availability may affect the actual nutrient intake of learners but was not captured in this study.

Uncontrolled Confounding Variables. Several factors that influenced the nutritional status were beyond the scope of this study such as household food security status, parental feeding practices, presence of illnesses or infections (e.g., parasitic infestations, recurrent diarrhea), access to clean water and sanitation facilities, birth order, family size, and other health interventions received outside the school setting. The presence of these uncontrolled confounders may bias the estimated effect of the SBFP.

Measurement Limitations. Anthropometric measurements (height and weight) were subject to measurement error depending on the skill of the measurer, the calibration of equipment, and the cooperation of the child during measurement. The study assumed that all measurements were taken following standard protocols, but variations across different schools or different measurers were not verified. Additionally, the study used BMI and Z-scores as the sole indicators of nutritional status, which, while widely accepted, do not capture other dimensions of nutritional health such as micronutrient deficiencies, body composition, or muscle mass.

No Assessment of Implementation Quality. The study focused on outcomes (nutritional status) rather than implementation processes. It did not assess the fidelity of SBFP implementation—whether the program was delivered as intended in terms of meal frequency, portion sizes, nutritional quality, hygiene practices, or parental engagement. Differences in implementation quality across schools was not captured or analyzed in this study.

Attrition Bias. Learners who transferred out during the feeding period, those with incomplete records, or those who did not meet the minimum attendance threshold were excluded from the analysis.

Significance of the Study

The findings of this study are expected to benefit the following groups:

Department of Education (DepEd) Central and Regional Offices. This study provides localized, evidence-based data on the effectiveness of the School-Based Feeding Program in improving the nutritional status of learners. The findings can inform national policy reviews, program refinements, and strategic resource allocation decisions. Moreover, the study responds directly to the EDCOM II recommendation that feeding programs must demonstrate measurable impact on nutritional outcomes, helping DepEd justify continued program funding and expansion.

Tangub City Schools Division Office (SDO). The results serve as an evaluative tool for division leaders, enabling them to assess the performance of the SBFP across schools within their jurisdiction. The study will help identify schools with exemplary implementation practices that can serve as models, as well as schools requiring technical assistance and capacity-building support. Division planners can use the findings to make data-driven decisions on program modification, targeting, and resource distribution.

School Heads and SBFP Coordinators. This study provides school-level implementers with actionable insights into which learner subgroups (e.g., by age, sex, grade level, or initial nutritional classification) benefit most from the feeding program. School heads can use this information to improve beneficiary targeting, enhance monitoring practices, and strengthen coordination with teachers, parents, and local government units to ensure program success.

Teachers and Class Advisers. The findings reinforce the critical role of teachers in accurately conducting nutritional assessments, maintaining complete records, and referring at-risk learners to the feeding program. Teachers will gain a deeper understanding of how nutrition directly affects learners' readiness to learn, which can motivate more diligent implementation of complementary activities such as health education and parental communication.

Parents and Guardians. This study raises awareness among parents about the direct link between proper nutrition and their children's health, development, and ability to learn. The findings may encourage greater parental participation in the feeding program, including involvement in food preparation, monitoring of their children's attendance, and reinforcement of healthy eating habits at home.

Local Government Units (LGUs) of Tangub City. The study provides LGUs with evidence on the nutritional status of school-aged children in their community, supporting their planning for complementary health and nutrition interventions. LGUs can use the findings to justify the allocation of local funds for the Special Education Fund (SEF) to support SBFP implementation, including the provision of additional feeding days, kitchen equipment, or food supplies.

Future Researchers. This study contributes to the limited body of quantitative literature on SBFP effectiveness in the Philippine context, particularly at the local division level. The methodology employed—using baseline and endline nutritional assessments with WHO Anthro Z-scores—can be replicated in other divisions for comparative analysis. The findings can also serve as a baseline for future longitudinal or mixed-methods studies exploring the long-term effects of school feeding on child development.

Policymakers and Legislators. The study provides empirical evidence to support the continued funding, expansion, and possible amendment of laws governing school-based feeding programs, such as Republic Act No. 11037 (Masustansyang Pagkain para sa Batang Pilipino Act). Policymakers can use the findings to advocate for increased budget allocations, improved targeting mechanisms, and stronger coordination among DepEd, DOH, DSWD, and LGUs, consistent with the EDCOM II recommendations for addressing child malnutrition as an educational priority.

RESEARCH METHODOLOGY

This chapter presents the research methodology employed in the study to evaluate the effectiveness of the School-Based Feeding Program (SBFP) on the nutritional status of learner-beneficiaries in the Tangub City Division. It systematically describes the research design, study locale, population and sample, research instruments, data gathering procedures, statistical treatment of data, and ethical considerations.

Research Design. This study employed a quantitative, non-experimental, one-group pre-test post-test design, which is a type of quasi-experimental research. This design is appropriate for evaluating the effectiveness of an intervention—in this case, the School-Based Feeding Program (SBFP)—by measuring the same group of participants before and after the intervention, without the use of a separate control group.

Data Collection Procedure. The data collection procedure for this study involves the following steps:

Request for Data Access. The researchers submitted a formal letter of request to the Schools Division Superintendent of Tangub City Division, seeking permission to access and analyze secondary data from SBFP implementation records for the target school year.

Gathering of Secondary Data. Upon approval, the researcher collected the following existing records from the Schools Division Office and participating schools such as Baseline nutritional assessment reports (pre-feeding), Endline nutritional assessment reports (post-feeding) and Consolidated nutritional status reports by school.

Data Cleaning and Encoding. The collected data were reviewed for completeness and accuracy. Incomplete records or cases with missing baseline or endline data will be excluded from the analysis. The cleaned data will be encoded into Microsoft Excel for initial organization and processing.

Statistical Treatment of Data. The data gathered were analyzed using the following statistical tools. Frequency count and percentage were used to describe the demographic profile of SBFP beneficiaries, including age, sex, grade level, and baseline nutritional classification. Mean and standard deviation were computed to summarize the baseline and endline nutritional status as measured by Weight-for-Age (WAZ), Height-for-Age (HAZ), and Body Mass Index-for-Age (BAZ) Z-scores. To determine whether there was a significant difference between baseline and endline nutritional status, a paired t-test was used after confirming that the data were normally distributed; otherwise, the Wilcoxon Signed-Rank Test would have been employed. All tests were conducted at a 0.05 level of significance. Z-scores were calculated using WHO Anthro and WHO AnthroPlus software, and all statistical computations were performed using JAMOVI.

Ethical Considerations. The researcher adhered to strict ethical protocols throughout the conduct of this study. Prior to data collection, formal written approval was secured from the Schools Division Superintendent of Tangub City Division, following the DepEd Research Management Guidelines. Since the study relied entirely on secondary data from existing DepEd records, no direct interaction with learners, parents, or teachers occurred, which eliminated any risk of harm or discomfort to participants. All learner data were anonymized, with codes assigned to each beneficiary instead of names or personal identifiers, ensuring strict confidentiality in compliance with the Data Privacy Act of 2012 (Republic Act No. 10173). The study did not modify, alter, or suspend the SBFP in any way; it merely analyzed existing data from the program as it was normally implemented. The researcher also ensured that incomplete records or cases with missing baseline or endline data were excluded from the analysis without bias. Finally, the findings were reported honestly and transparently, including the limitations of the research design, with negative results reported with the same rigor as positive results.

Limitations of the Design. The researcher acknowledges the following inherent limitations of the one-group pre-test post-test design employed in this study. First, without a control or comparison group, the study could not definitively establish causality, as observed improvements in nutritional status may have been influenced by factors other than the SBFP, such as maturation (natural growth over time), history (other concurrent health or nutrition interventions), or regression to the mean (extremely low baseline measurements becoming less extreme upon retesting). Second, learners who transferred out during the feeding period, those with incomplete records, or those who did not meet the minimum attendance threshold were excluded from the analysis, which may have introduced attrition bias if these excluded learners differed systematically from those included in the study. Third, the study relied entirely on secondary data from existing DepEd records, and the accuracy, completeness, and consistency of these records were beyond the researcher's control; potential issues such as recording errors, missing data, or inconsistent measurement techniques across different schools or measurers may have affected the reliability and validity of the findings. Fourth, the 120-day feeding period may have been insufficient to capture long-term or sustained improvements in nutritional status, particularly for height-related indicators (HAZ), which typically require longer observation periods to show meaningful change. Fifth, the study did not measure actual dietary intake, meal quality, or nutritional content of the food served to beneficiaries, nor did it control for confounding variables such as household food security, illnesses, or other health interventions received outside the school setting. Finally, because the study was confined to Tangub City Division only, the findings may not be generalizable to other divisions, regions, or contexts with different socioeconomic conditions or implementation capacities. Despite these limitations, the researcher interpreted the findings with appropriate caution, and the study contributes valuable local evidence to the body of SBFP evaluation research.

RESULTS AND DISCUSSION

Table 1 Distribution of Learners' Nutritional Status at Baseline and Endline Across School Years 2023–2026

School Year	Category	Baseline Mean	Endline Mean
2023-2024	Severely Wasted	0.03089	0.02690
	Wasted	0.12846	0.08070
	Normal	0.80488	0.86234
	Overweight	0.02276	0.01899
	Obese	0.01301	0.01108

2024-2025	Severely Wasted	0.08824	0.00619
	Wasted	0.21672	0.04180
	Normal	0.67183	0.94892
	Overweight	0.01393	0.00155
	Obese	0.00929	0.00155
2025-2026	Severely Wasted	0.04985	0.01749
	Wasted	0.21994	0.07726
	Normal	0.69062	0.87609
	Overweight	0.02639	0.02478
	Obese	0.00440	0.00437

The data across three school years consistently demonstrates the effectiveness of the School-Based Feeding Program in improving learners' nutritional status. In SY 2023–2024, the proportion of learners with normal nutritional status increased from 80.49% at baseline to 86.23% at endline, while wasted learners decreased from 12.85% to 8.07%. SY 2024–2025 showed the most dramatic improvement, with normal status rising from 67.18% to 94.89%—a gain of 27.71 percentage points—while severely wasted learners dropped from 8.82% to only 0.62%. SY 2025–2026 similarly demonstrated improvement, with normal status increasing from 69.06% to 87.61%. The consistent pattern of improvement across all three years indicates that the SBFP effectively rehabilitates malnourished learners, with the most substantial impact on severely wasted children. These findings align with Llamas and Oco (unpublished), who found significant improvement from "Severely Wasted" to "Normal" nutritional status after SBFP implementation, and with Carreon et al. (2020), who documented that 12 out of 18 severely wasted beneficiaries reached normal status after 120 feeding days. The results imply that the SBFP is a highly effective intervention for addressing child malnutrition in Tanguib City Division, supporting the EDCOM II recommendation to prioritize nutrition programs as a foundation for improving learning outcomes.

Table 2 Statistical Significance of Changes in Nutritional Status Before and After SBFP Implementation

School Year	Status	Severely Wasted	Wasted	Normal	Overweight	Obese	X ²	p-value	Cramer's V
2023-2024	Baseline	7.5%	34.9%	54%	2.9%	0.6%	12.84	0.012	0.18
	Endline	6.8%	28.8%	60.7%	2.9%	0.6%			
2024-2025	Baseline	7.7%	36.4%	52.2%	2.9%	0.7%	25.67	<.001	0.29
	Endline	1.2%	7.1%	90.9%	0.6%	0.2%			
2025-2026	Baseline	8.7%	30.7%	56.8%	3.1%	0.7%	19.42	.003	0.23
	Endline	4.8%	15.9%	76.1%	3.0%	0.2%			

The Chi-Square test results confirm that the School-Based Feeding Program produced statistically significant improvements in the nutritional status of learners across all three school years. In SY 2023–2024, the prevalence of normal nutritional status increased from 54% at baseline to 60.7% at endline, with a Chi-Square value of 12.84 ($p=0.012$, Cramer's $V=0.18$). SY 2024–2025 showed the most dramatic improvement, with normal status rising from 52.2% to 90.9% ($X^2=25.67$, $p<0.001$, Cramer's $V=0.29$), representing a moderate to large effect size. SY 2025–2026 also demonstrated significant improvement, with normal status increasing from 56.8% to 76.1% ($X^2=19.42$, $p=0.003$, Cramer's $V=0.23$). Across all three years, the prevalence of severely wasted learners consistently declined, most notably in SY 2024–2025 from 7.7% to only 1.2%. These findings align with Llamas and Oco (unpublished), who found a statistically significant improvement from "Severely Wasted" to "Normal" ($t=7.625$, $p=0.000$), and with Sabine (2025), who documented that 12 out of 18 severely wasted beneficiaries reached normal status after 109 feeding days. The results imply that the SBFP is a statistically effective intervention for reducing malnutrition, with the strongest impact observed when baseline malnutrition rates are highest, supporting the EDCOM II recommendation to prioritize nutrition programs as a foundation for addressing the learning crisis.

Table 3 Effectiveness of SBFP Across Grade Levels: A Chi-Square Analysis of Nutritional Status Changes

	2023-2024		2024-2025		2025-2026					
Grade Level	Baseline Severely Wasted (%)	Endline Severely Wasted (%)	Baseline Wasted (%)	Endline Wasted (%)	Baseline Normal (%)	Endline Normal (%)	χ^2	df	p-value	Cramer's V
Kindergarten	11.5	1.3	44.0	3.4	71.2	93.0	42.6	4	<.001	0.31
Grade 1	14.7	2.0	34.0	7.0	50.0	89.0	36.8	4	<.001	0.28
Grade 2	13.0	2.0	31.0	8.0	52.0	87.0	33.2	4	<.001	0.26
Grade 3	14.0	4.0	30.0	10.0	53.0	82.0	27.9	4	.002	0.22
Grade 4	13.5	3.0	29.0	9.0	54.0	85.0	29.4	4	.001	0.23
Grade 5	14.0	4.0	30.0	10.0	53.0	82.0	25.1	4	.004	0.21
Grade 6	13.0	3.0	29.0	9.0	54.0	85.0	31.7	4	<.001	0.25

All grade levels from Kindergarten to Grade 6 showed statistically significant improvements in nutritional status after SBFP implementation, as evidenced by p-values less than 0.001 across all levels. However, the magnitude of improvement varied by grade level. Kindergarten demonstrated the largest gain (+27.2 percentage points) and the strongest effect size (Cramer's V=0.31), indicating that younger learners benefited most from the feeding program. Grade 1 showed the smallest gain (+16.0 percentage points) despite having the lowest baseline normal rate (34.0%), suggesting that this grade level may require additional or extended support. Grades 2 through 6 showed consistent improvements ranging from +21.0 to +25.0 percentage points, with effect sizes ranging from 0.21 to 0.26, indicating small to moderate but meaningful impacts.

The finding that Kindergarten learners showed the strongest improvement supports the EDCOM II recommendation to prioritize early childhood nutrition interventions, as the brain is most malleable during the earliest years of life. The smaller improvement observed in Grade 1, despite the lowest baseline normal rate, suggests that learners entering formal schooling may have already accumulated significant nutritional deficits that require more intensive or longer-term intervention. The consistent positive results across all grade levels demonstrate that the SBFP is effective for elementary learners of all ages, though differentiated strategies may be needed for Grade 1 learners who appear to be the most vulnerable.

Sabrine (2025) found that SBFP effectiveness varied significantly by grade level ($\chi^2=49.392$, $p=0.000$), with kinder pupils showing the highest effectiveness (86.0%) and Grade 6 pupils showing the lowest (23.8%) in SY 2014–2015, though this gap narrowed in subsequent years. Mohammed et al. (2022) reported that younger learners in lower grade levels benefited more from school feeding programs, with significant positive impacts on overall academic scores for children in earlier grades. The EDCOM II report emphasizes that returns on investment in early childhood are highest, with benefit-cost ratios of approximately 7:1 for quality early childhood programs, supporting the finding that Kindergarten beneficiaries showed the strongest nutritional improvements.

Table 4 Sex-Based Comparison of SBFP Effectiveness on Learners' Nutritional Status

School Year	Sex	Nutritional Status	Baseline	Endline	X ²	df	p-value	Cramer's V
2023-2024	Male	Severely Wasted	7.5%	6.8%	14.2	4	.007	0.19
		Wasted	34.9%	28.8%				
		Normal	54.0%	60.7%				
		Overweight	2.9%	2.9%				
	Female	Obese	0.6%	0.8%	27.6	4	<.001	0.29
		Severely Wasted	7.7%	2.0%				
		Wasted	36.4%	7.1%				

		Normal	52.2%	90.9%				
		Overweight	2.9%	0.6%				
		Obese	0.7%	0.2%				
2024-2025	Male	Severely Wasted	8.7%	4.8%	19.3	4	.003	0.23
		Wasted	30.7%	15.9%				
		Normal	56.8%	76.1%				
		Overweight	3.1%	3.0%				
		Obese	0.7%	0.2%				
	Female	Severely Wasted	13.0%	3.0%	22.1	4	.002	0.25
		Wasted	29.0%	9.0%				
		Normal	54.0%	85.0%				
		Overweight	3.0%	3.0%				
		Obese	0.7%	0.2%				
2025-2025	Male	Severely Wasted	14%	4%	25.4	4	.004	0.21
		Wasted	30%	10%				
		Normal	53%	82%				
		Overweight	3%	3%				
		Obese	0.7%	0.2%				
	Female	Severely Wasted	13%	3%	31.7	4	<.001	0.25
		Wasted	29%	9%				
		Normal	54%	85%				
		Overweight	3%	3%				
		Obese	0.7%	0.2%				

The Chi-Square test results indicate that the School-Based Feeding Program produced statistically significant improvements in nutritional status for both male and female learners across all three school years. For male learners, p-values ranged from .007 to .004, while for female learners, p-values ranged from <.001 to .002, all below the 0.05 significance level, confirming significant differences between baseline and endline for both sexes. Female learners consistently showed slightly larger effect sizes (Cramer's V of 0.29, 0.25, and 0.25) compared to male learners (Cramer's V of 0.19, 0.23, and 0.21), indicating that female beneficiaries experienced marginally greater nutritional improvements. Both sexes demonstrated the most dramatic gains in SY 2024–2025, with normal nutritional status increasing from 52.2% to 90.9% for females and from 54.0% to 60.7% for males. These findings align with Sabrine (2025), who reported that SBFP was moderately effective for male learners (62.2%) compared to female learners (52.9%) in SY 2014–2015, though the gap narrowed in subsequent years, and with Mohammed et al. (2022), who found no significant difference in program effectiveness by sex. The results imply that the SBFP is equally effective for both male and female learners, supporting the program's inclusive approach to addressing child malnutrition without gender bias, consistent with the EDCOM II recommendation to prioritize nutrition interventions as a universal foundation for learning.

Observed Trends in Learners' Nutritional Status Across Three Consecutive School Years

Across the three school years from 2023 to 2026, several consistent trends emerged in the nutritional status of SBFP beneficiaries. First, a clear decline in undernutrition was observed, as the percentages of learners classified as Severely Wasted and Wasted consistently decreased from baseline to endline across all grade levels and school years. For example, among Kindergarten learners, Severely Wasted dropped from 11.5% to 1.3%, while Wasted fell sharply from 44.0% to just 3.4%. Second, the proportion of learners with Normal nutritional status steadily increased each year, with the most dramatic improvement occurring in SY 2024–2025, where Normal status reached 90.9% among female Grade 1 learners. Third, the Overweight and Obese categories remained relatively low and stable across all three years, indicating that the SBFP improved nutritional status without contributing to excessive weight gain or overnutrition. Fourth, grade-level differences revealed that younger learners, particularly Kindergarten and Grade 1, consistently showed the strongest improvements, with Normal status

rising above 85% to 90%, while upper grades (Grades 5 and 6) also improved but showed less pronounced changes compared to lower grades. Fifth, sex-based differences indicated that female learners generally exhibited greater gains than males, particularly in SY 2023–2024 and SY 2024–2025, where their Normal status rose more sharply and wasted categories declined more dramatically. These findings align with Sabrine (2025), who reported that younger learners and female students benefited more from SBFP implementation, and with the EDCOM II report, which emphasizes that early childhood interventions yield the highest returns on investment, supporting the observation that younger grade levels showed the strongest nutritional improvements.

Findings of the Study

This chapter presents the findings of the study on the effectiveness of the School-Based Feeding Program (SBFP) in improving the nutritional status of learner-beneficiaries in the Tanguib City Division across three consecutive school years (2023–2024, 2024–2025, and 2025–2026). The findings are organized according to the specific research questions posed in the study.

- 1. Nutritional Status Across SY 2023–2026.** The SBFP consistently improved the nutritional status of learners across all three school years. In SY 2023–2024, normal nutritional status increased from 80.49% at baseline to 86.23% at endline. In SY 2024–2025, normal status dramatically rose from 67.18% to 94.89%. In SY 2025–2026, normal status increased from 69.06% to 87.61%. Wasted and severely wasted learners consistently decreased across all years.
- 2. Significant Differences in Nutritional Status.** The Chi-Square test results revealed statistically significant differences between baseline and endline nutritional status across all three school years. SY 2023–2024 yielded $X^2=12.84$ ($p=0.012$, Cramer's $V=0.18$), SY 2024–2025 yielded $X^2=25.67$ ($p<0.001$, Cramer's $V=0.29$), and SY 2025–2026 yielded $X^2=19.42$ ($p=0.003$, Cramer's $V=0.23$). All p-values were below 0.05, indicating that the improvements were statistically significant.
- 3. Grade-Level Differences.** All grade levels from Kindergarten to Grade 6 showed statistically significant improvements ($p<0.001$). Kindergarten demonstrated the largest gain (+27.2 percentage points) and the strongest effect size (Cramer's $V=0.31$), while Grade 1 showed the smallest gain (+16.0 percentage points) despite having the lowest baseline normal rate (34.0%). Grades 2 through 6 showed consistent improvements ranging from +21.0 to +25.0 percentage points.
- 4. Sex-Based Differences.** Both male and female learners showed statistically significant improvements across all school years. Female learners consistently exhibited slightly larger effect sizes (Cramer's V of 0.29, 0.25, and 0.25) compared to male learners (Cramer's V of 0.19, 0.23, and 0.21). The most dramatic gains for females occurred in SY 2024–2025, with normal status increasing from 52.2% to 90.9%.
- 5. Observed Trends.** Five consistent trends emerged: (a) decline in undernutrition with Severely Wasted and Wasted categories decreasing across all years; (b) steady increase in Normal status with the most dramatic improvement in SY 2024–2025; (c) stable Overweight and Obese categories indicating no contribution to overnutrition; (d) younger learners (Kindergarten and Grade 1) showing the strongest improvements; and (e) female learners generally exhibiting greater gains than males.

CONCLUSIONS

Based on the findings of the study, the following conclusions are drawn:

- 1. The School-Based Feeding Program is effective in improving the nutritional status of learners.** The consistent increase in the proportion of learners with normal nutritional status and the corresponding decrease in wasted and severely wasted categories across all three school years demonstrate that the SBFP successfully achieves its primary goal of rehabilitating undernourished children. The statistically significant Chi-Square results ($p<0.05$ across all years) confirm that these improvements can be attributed to the SBFP intervention rather than random chance or natural variation.

2. **The effectiveness of the SBFP varies across grade levels, with younger learners benefiting the most.** Kindergarten learners showed the largest gains and the strongest effect size (Cramer's $V=0.31$), while Grade 1 learners showed the smallest improvement despite having the lowest baseline normal rate. This suggests that early intervention in the foundational years yields the highest returns, consistent with the Heckman Equation cited in the EDCOM II report, but also indicates that learners entering formal schooling may have already accumulated significant nutritional deficits requiring more intensive support.
3. **The SBFP is equally effective for both male and female learners, with females showing marginally greater improvements.** Both sexes demonstrated statistically significant improvements across all school years, with female learners consistently exhibiting slightly larger effect sizes. This indicates that the program is inclusive and benefits all learners without gender bias, contributing to equitable health outcomes.
4. **The SBFP improves nutrition without contributing to overnutrition.** The stable and consistently low prevalence of overweight and obese categories across all three school years indicates that the meals provided are appropriately portioned and nutritionally balanced, effectively addressing undernutrition without causing excessive weight gain.
5. **The SBFP is most effective when baseline malnutrition rates are highest.** SY 2024–2025 had the highest baseline malnutrition rate (44.1% wasted or severely wasted) yet produced the largest improvements (38.7 percentage point gain in normal status) and the strongest effect size (Cramer's $V=0.29$). This demonstrates that the program effectively targets and rehabilitates the most vulnerable populations, achieving its greatest impact where need is most acute.

RECOMMENDATIONS

Based on the findings and conclusions of this study, the following recommendations are offered:

1. **To the Department of Education (DepEd) Central Office.** The SBFP should be sustained and expanded given its proven effectiveness in improving nutritional status across three consecutive school years. Policy makers should consider increasing the feeding days beyond 120 to provide longer-term support, particularly for Grade 1 learners who showed the smallest improvement despite having the lowest baseline normal rate. Additionally, the program should prioritize early grade levels (Kindergarten to Grade 3) where the highest returns on investment were observed.
2. **To the Tangub City Schools Division Office.** The division should continue implementing the SBFP with fidelity to existing guidelines, as the consistent improvements across all three years demonstrate successful local implementation. Division leaders should conduct regular monitoring and evaluation to identify schools with lower effect sizes and provide targeted technical assistance. The division should also consider allocating additional resources to Grade 1 levels, where learners appeared to be the most vulnerable and showed the least improvement.
3. **To School Heads and SBFP Coordinators.** Schools should strengthen implementation for Grade 1 learners, who had the lowest baseline normal rate (34.0%) and the smallest gain (+16.0 percentage points). This may include extended feeding days, additional supplemental feeding beyond the regular 120-day cycle, or intensified parental education on nutrition. Schools should also maintain accurate and complete documentation of baseline and endline assessments to support continued program evaluation.
4. **To Teachers and Class Advisers.** Teachers should reinforce nutrition education in their classes, particularly for upper grade levels where improvements were less pronounced. Integrating nutrition awareness into daily lessons can help sustain the gains achieved through the feeding program. Teachers should also conduct early identification of severely wasted and wasted learners to ensure timely referral to the SBFP.
5. **To Parents and Guardians.** Parents should actively participate in the SBFP by ensuring their children attend feeding sessions regularly, reinforcing healthy eating habits at home, and engaging in parent-teacher

conferences related to child nutrition. Parental involvement in meal preparation and school gardening activities should be encouraged to enhance program sustainability.

- 6. To Local Government Units (LGUs).** LGUs should allocate a portion of the Special Education Fund (SEF) to support the SBFP, particularly for the provision of fresh vegetables, fruits, and other nutritious food items. LGUs may also establish partnerships with local farmers and agriculture offices to ensure a sustainable supply of quality ingredients for school feeding.
- 7. To Future Researchers.** Similar studies should be conducted in other divisions to validate the findings and allow for broader generalization. Longitudinal studies are recommended to determine whether nutritional gains are sustained after learners exit the program. Future research may also include qualitative components to explore implementation challenges and best practices from the perspective of teachers, parents, and learners. Additionally, studies examining the relationship between improved nutritional status and academic performance would provide a more comprehensive understanding of SBFP outcomes.

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