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Unpacking the role of school-based feeding program on elementary learners' nutritional and academic growth

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ABSTRACT

This study examined the influence and implementation of the School-Based Feeding Program (SBFP) on the learners' nutritional status and academic performance in six upland public elementary schools in the District of Argao II, Division of Cebu Province. A sequential explanatory mixed-methods design was employed involving 31 SBFP beneficiaries in the quantitative phase and selected learners, teachers, parents, and school implementers in the qualitative phase. Quantitative data were obtained from School Form 8 (SF 8) for nutritional status and School Form 5 (SF 5) for academic performance across three consecutive school years. The qualitative data were gathered through semi-structured interviews. Descriptive statistics, Wilcoxon Signed-Rank Test and Spearman rho were used to analyze the quantitative data, while Braun & Clarke's Thematic Analysis was applied to the qualitative findings. The findings revealed significant improvements in learners' Body Mass Index (BMI) and academic performance following participation in the SBFP. However, although both variables improved, it showed that the relationship between nutritional status and academic performance was weak and not statistically significant. This indicates BMI improvements were not directly associated with academic gains. Qualitative findings supported that improved food intake, reduced hunger, increased energy levels and enhanced classroom engagement were observed among the beneficiaries. Teacher support and parental involvement were the most influential factors affecting academic performance. In addition, implementation challenges such as delays in food delivery, limited funding and resource constraints affected feeding program consistency. This finding highlights the importance of effective program management, systematic monitoring and strong stakeholder partnership in SBFP implementation. Based on the results, an expanded and sustainable SBFP implementation plan focusing on monitoring, stakeholder engagement and resource management is proposed to strengthen long-term program sustainability.

Keywords: School-based feeding program (SBFP), nutritional status, academic performance, body mass index (BMI), elementary learners, mixed-methods.

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INTRODUCTION

Hunger has been a serious problem worldwide. According to the latest report of the State of Food Security and Nutrition in the World (SOFI) as of 2023, seven hundred thirty-three million (733,000,000) people faced hunger. Globally, studies indicate that both short-term and long-term hunger negatively affect children's cognitive functioning, including task performance, attention span, memory retention, and overall cognitive development (Lowe et al., 2023). Additionally, school-aged children experiencing undernutrition and micronutrient deficiencies are at risk of delayed physical growth, impaired cognitive development, and poorer social and educational outcomes. These nutritional challenges may hinder children's overall health and learning potential (Caulfield et al., 2006; dela Luna et al., 2021). Stunting among children is often linked to chronic undernutrition and inadequate micronutrient intake during the early years of life, which may negatively affect physical growth, cognitive development, and long-term health outcomes (Leroy et al., 2020; DiGirolamo et al., 2020). The increase in cases of malnutrition is the highlight of the United Nations' program to provide undernourished children with proper nutrition.

In the Philippines, hunger remains a growing concern. According to the December 2024 survey conducted by Social Weather Stations (SWS), released in January 2025, the annual hunger rate in 2024 has increased compared to 2023 following the COVID-19 pandemic. Data show that Metro Manila recorded a hunger rate of 22.2%, slightly higher than its previous rate of 21.7%. Luzon experienced a significant increase to 25.3% from 18.1%, while the Visayas showed a slight decrease from 26.0% to 24.4%. Meanwhile, Mindanao recorded the highest hunger rate at 30.4%. These statistics indicate that a significant number of Filipinos continue to experience hunger, placing many children at risk of malnutrition.

Malnutrition among school-aged children remains a critical barrier to effective learning and holistic development, particularly in low- and middle-income countries like the Philippines. According to the Department of Education (DepEd), learners identified as wasted and severely wasted remain among the priority beneficiaries of the School-Based Feeding Program (SBFP), emphasizing the continuing need to strengthen interventions addressing child hunger and poor nutritional status in schools (Department of Education, 2020)

In response, DepEd has implemented the School-Based Feeding Program (SBFP), which aims to improve the nutritional status of undernourished learners by providing daily nutritious meals for at least 60 – 120 days. According to DepEd Order No. 39, s. 2017, the School-Based Feeding Program (SBFP) is expected to contribute to increased classroom attendance, improved health and nutrition values, and better learner well-being, which may support greater classroom participation and academic engagement among beneficiaries. The Department of Education recognizes the importance of good nutrition for the improvement of academic performance of learners. It is a sound investment in education as it is associated with increased enrolment, improved attendance, better performance, decreased repetition and decreased dropout. Hence, the Department of Education (DepEd) implemented the School-Based Feeding Program (SBFP) to address undernutrition among wasted and severely wasted learners nationwide. This initiative was further strengthened through Republic Act No. 11037, enacted in 2018, which institutionalized school feeding programs for K–12 learners.

Although the School- Based Feeding Program already exists and was implemented, there is still limited access as to how the program affects the academic performances of the learners basically in the local setting. There were only few studies which focused on the implication of SBFP to the nutritional and academic status of beneficiaries in the District of Argao

II. It is therefore important to further widen the study in this setting to understand more of its effects and implications.

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In the Argao II District, the School-Based Feeding Program (SBFP) learners are identified using the result of the nutrition index of every learner. Those who have nutritional status that lies between stunted and wasted are given at most attention as feeding learners. The implementation of the School-Based Feeding Program (SBFP) is done through the Schools Feeding Coordinators. Each School Coordinator is responsible for the monitoring and distributing of feeding supplies to their respective school feeding learners. Feeding supplies are given by the Department of Education through the district feeding focal person. Updated monitoring is required to properly track the progress of the learners' nutritional status.

With the existing data upon the implementation of the School-Based feeding Program in Argao II District, the researcher's aim is to analyze the impact of the program to the learners' academic performance with respect to their nutritional status as bases for crafting an implementation plan for an expanded and sustainable school feeding program.

Statement of the problem

This research explored the influence and implementation of the School-Based Feeding Program on the learners' nutritional status and academic performance in six different upland elementary schools in the District of Argao II, Schools Division of Cebu Province as the basis for an expanded and sustainable School Feeding Program.

Specifically, it sought to answer the following sub-problems:

1. What are the levels of nutritional status of the learners before and after the SBFP implementation?
2. What are the levels of academic performance of the learners before and after the SBFP implementation?
3. Is there a significant difference in the target learners' nutritional status before and after the implementation of the School-Based Feeding Program?
4. Is there a significant difference in the target learners' academic performance before and after the implementation of the School-Based Feeding Program?
5. Is there a significant correlation between the change in the target learners' nutritional status and their academic performance before and after the School-Based Feeding Program implementation?
6. How do learners and teachers explain the observed changes (or lack of changes) in nutritional status and academic performance following the implementation of the SBFP?
7. What factors do learners and teachers consider influencing the relationship between nutritional status and academic performance?
8. What challenges and implementation practices help explain the quantitative outcomes of SBFP?
9. How do the qualitative findings help explain and contextualize the quantitative results of the study?
10. Based on the integrated findings, what expanded and sustainable SBFP implementation plan can be proposed?

METHODOLOGY

This study utilized a mixed-method approach, specifically a sequential explanatory design, which is highly appropriate for unpacking the multifaceted role of the School-Based Feeding Program (SBFP) in improving learners' nutritional status and academic performance.

A mixed-methods design is a research approach in which researchers integrate both qualitative and quantitative methods within a single study to gain a more comprehensive understanding of a research problem (Creswell & Plano Clark, 2018). The sequential explanatory design is a mixed-methods approach where data collection and analysis are divided into two (2) phases but connected phases: the quantitative phase was conducted first to establish patterns and relationships between learners' nutritional status and academic performance within the SBFP context, and then the qualitative phase was conducted as a necessary follow-up to explain and contextualize the quantitative results.

For the quantitative approach, the researcher utilized a descriptive-correlational design to explore the influence and implementation of SBFP on learners' nutritional status and academic performance. The descriptive component enabled the researcher to distinguish the learners' level of nutritional status and academic performance based on variables such as Body Mass Index (BMI) and academic grades, while the correlational component examined whether there is a statistically significant relationship between these two variables. Participants in this phase were selected through purposive sampling focusing on the identified SBFP learners to ensure that the data directly reflected the target group of the intervention. Meanwhile, the descriptive qualitative design was used during the qualitative phase. A descriptive qualitative design provided a detailed and systematic explanation of the rich experiences of the participants during the intervention. This generic qualitative design was used because the researcher was not solely after the lived experiences of each group, but to merge their experiences to create a comprehensive explanation of the quantitative results. Participants for this phase were also selected using purposive sampling, including participants that were directly involved in or affected by the program, to ensure rich and relevant experiences. The connection between the two phases was established at the interpretation stage, where qualitative findings were used to explain, support, and expand upon the quantitative results. This integration allowed the study to move beyond statistical relationships by linking outcomes with real-world implementation conditions. This design provides both outcome-based evidence and process-level insights which may support school administrators and program implementers in strengthening monitoring systems, improving coordination, and evaluation practices regarding program enhancement.

The study was conducted in the District of Argao II, which includes six public elementary schools, namely Anajao Elementary School, Apo Elementary School, Colawin Elementary School, Gutlang Elementary School, Lengigon Elementary School, and Tulang Elementary School. The researcher is a permanent teacher at Anajao Elementary School. All the identified schools were under the supervision of the Department of Education, Cebu Province. The respondents of this study consisted of 31 learners of the School Based Feeding Program (SBFP) for three consecutive school years since classes were back to face-to-face modality during school year 2022 – 2023 in selected public elementary schools in the District of Argao II, Division of Cebu Province. These respondents were drawn from a total population of 170 SBFP beneficiaries across the six identified elementary schools. Of the 31 respondents, 14 were classified as wasted learners, while 17 had normal nutritional status.

This study utilized two primary research instruments corresponding to the two phases of the sequential explanatory mixed methods design: a quantitative data extraction form and a qualitative interview guide. In the first phase, the researcher used a quantitative data extraction form to systematically gather quantitative data from existing official school records. The data extraction form was developed by the researcher to ensure uniformity, consistency, and completeness in retrieving relevant information from School Form 8 (SF8) and School Form 5 (SF5), which served as a standardized tool for organizing learners' longitudinal data across three school years. The data were obtained from official school documents; specifically, the SF8 (School Form 8) provided data on learners' nutritional status and their Body Mass Index

(BMI) classification, while the SF5 (School Form 5) provided learners' academic performance in terms of general average per grading period. These records were retrieved through the School-Based Feeding Program (SBFP) Coordinator and the School Guidance Designate Teacher, who are the official custodians of these school records, to ensure that the data collected were accurate, reliable, and officially documented.

In the second phase of the study, the researcher utilized a semi-structured interview guide to gather qualitative data. This approach was appropriate for the study as it allowed the participants to share their perspectives in their own words, enabling the researcher to capture rich and detailed experiences, and it also offered flexibility for the researcher to ask follow-up questions based on participants' responses. The formulation of the interview questions was anchored on the findings from the quantitative phase. The interview guide included open-ended questions designed to explore the lived experiences, perceptions, and insights of the participants, including learners, teachers, parents, and school implementers. Specifically, the questions focused on learners' nutrition and academic performance, factors contributing to these changes, challenges encountered during the implementation of the SBFP, and participants' views on the relationship between nutritional status and academic performance. The interview guide questions were carefully reviewed for content validation by three (3) panels of experts. The instrument achieved a high level of content validity (S-CVI = 1.00), indicating strong agreement among the validators, although this suggests that further refinement was still considered to enhance clarity and depth of the questions. After validation, the instrument was pilot-interviewed with two (2) learners, one (1) teacher, one (1) school principal, and two (2) parents. The results indicated that the interview questions were clear, relevant, and understandable to the participants in the actual data collection.

There were three stages to the data gathering procedure: preliminary preparation, administration and collection of data, and post data collection. It was important to emphasize that qualitative methods were implemented after the conclusion of the quantitative data gathering and analysis, on account of the fact that the analysis of responses was one of the criteria used to select participants. At the outset of the study, the researcher made certain that the variables were suitable for the investigation and made significant efforts to identify valid and reliable interview questions. The proposed instrument was validated and pilot-interviewed to ensure data validity and reliability. Following these steps, the researcher sent a letter to the office of the Schools Division Superintendent of DepEd-Division of Cebu Province to ask permission to administer the data-gathering procedure. Once approval was obtained, the researcher provided a brief orientation to the respondents and participants, both for the quantitative and qualitative parts of the study, and obtained their signed informed consent.

After the respondents agreed to participate in the study, the sequential collection of quantitative and qualitative data commenced. Quantitative data were obtained through document archiving and analysis, which included obtaining baseline and endline nutritional status (through SF8) and academic performance (through SF5) of the SBFP learners for the span of three school years. The baseline data refer to the records gathered during the school year 2022-2023, which served as the starting point of measurement, while the endline data refer to records collected during the school year 2024-2025, representing the outcomes after the implementation period. The researcher coordinated with the district supervisor of Argao II, school guidance designates, the school-based feeding program coordinator, and school principals of the six selected schools, and the information gathered was kept strictly confidential.

Prior to qualitative data collection, an assent form was given to the learners, signed by their parents or guardians, and informed consent was given to the teachers and parents before

gathering the data. The collection of qualitative data took place after completing the quantitative analysis. The researcher chose in-depth interviews as the main method of collecting qualitative data. The interview started with social interaction between the researcher and the participants, the purpose of which was to build trust and rapport that encouraged the participants to express their thoughts that they might not have been willing to disclose through other means. During the interview, the researcher also utilized probing questions to elicit more detailed responses, clarify statements, and gain deeper insights into the participants' perspectives. The one-on-one interviews were conducted in a quiet and peaceful environment to minimize possible destruction, and each session lasted approximately 15 to 20 minutes, allowing sufficient time for the participants to share detailed experiences. The interview sessions were scheduled according to the participants' preferred time and were of a duration that they were comfortable with. All interviews were digitally recorded for the purpose of transcription; nevertheless, the information obtained was treated with the highest level of confidentiality. Anonymization was strictly observed through the use of codes instead of participants' real names in all transcripts and reports, and the device storing the recordings, as well as the audio recordings themselves, was safeguarded and not distributed.

Following data collection, the researcher organized, examined, and interpreted both the quantitative and qualitative results to generate meaningful conclusions aligned with the objectives of the study, with the qualitative results used to further explain, support, and enrich the interpretations drawn from the quantitative data. For the quantitative data, the extracted data from SF8 and SF5 was encoded into tabular form and underwent thorough review using a data cleaning process; missing data, mistakes, or encoding errors were cross-checked against the original school records and corrected as necessary to maintain data reliability. For the qualitative data, all interviews were transcribed verbatim, after which the researcher conducted a member-checking process by returning the transcripts to the participants to confirm the accuracy of their responses and to obtain their consent, with necessary revisions made based on participants' feedback to ensure credibility and authenticity of the data.

The researcher utilized appropriate statistical tools to examine and interpret the quantitative data, while qualitative data were analyzed using Braun and Clarke's thematic analysis. The results were then interpreted and integrated to provide significant findings on the impact of the School-Based Feeding Program (SBFP) on learners' nutritional status and academic performance. Finally, based on the verified findings, conclusions were drawn and the implications of the study were identified. Furthermore, all collected data, including digital recordings, transcripts, and encoded datasets, were securely stored and handled with strict confidentiality. Upon completion of the study and after a designated retention period, all collected data were properly disposed of by deletion of electronic files and shredding of printed documents to ensure that participants' information remained protected.

RESULTS AND DISCUSSION

This chapter presents, analyzes, and interprets the data gathered from the 31 learners who participated as respondents in the quantitative phase of the study, together with the parents, teachers, school coordinators, and learners who served as participants in the qualitative phase. The study employed a sequential explanatory mixed methods design, in which a descriptive correlational quantitative approach was first used to examine learners' nutritional status and academic performance, followed by a descriptive qualitative approach intended to explain and enrich the quantitative results. Participants in both phases were selected through purposive sampling to ensure that the data directly reflected the target group of the School-Based Feeding Program (SBFP) intervention. Quantitative data were drawn from official school records, specifically School Form 8 (SF8) and School Form 5 (SF5), using a researcher-developed data

extraction form, while qualitative data were obtained through a validated and pilot-interviewed semi-structured interview guide. The quantitative data were analyzed using the Wilcoxon signed-rank test to determine differences before and after program implementation, and the Spearman rank-order correlation to determine the relationship between changes in nutritional status and academic performance, while the qualitative data were analyzed using Braun and Clarke's thematic analysis. The discussion that follows is grounded entirely in the data gathered from these respondents and participants, and all results are interpreted in direct relation to the objectives of the study, namely to determine the nutritional status and academic performance of the learners before and after the implementation of the SBFP, to test the significance of these changes, to examine the relationship between them, and to explore the lived experiences and contextual factors that shaped these outcomes.

Nutritional status before and after program implementation

The nutritional status of the respondents before and after the implementation of the feeding program in the six (6) elementary schools was categorized as Severely Wasted (SW), Wasted (W), Normal (N), Overweight (OW), and Obese (OB) based on Body Mass Index (BMI). The normal nutritional status category was included to allow for a more comprehensive assessment of learners' BMI over time, particularly in monitoring any potential shifts either toward improvement or decline, which enabled the researcher to determine whether learners maintained their nutritional status or experienced changes as a result of the SBFP. The total number of respondents was 31 from six randomly selected upland elementary schools, and the classification of their nutritional status was based on their BMI, following DepEd Order 39, s. 2017 Operational Guidelines. Before the implementation of the SBFP in the year 2022, 14 learners, which is 45% of the total respondents, were classified as wasted with a BMI range of –3SD to < –2SD, while 17 learners, which is 55% of the respondents, fell under the normal nutritional status category with a BMI range of –2SD to +1SD; no learners were identified as severely wasted, overweight, or obese. After three (3) years of consecutive implementation of the SBFP, which is year 2025, 4 learners, which is 13% of the respondents, were classified under the wasted nutritional status category, while 87% of the respondents, which is 27 learners, were classified under the normal nutritional status category, and it remained that there were no learners who fell into the severely wasted, overweight, and obese categories. The observed 32% shift in nutritional status distribution reflects an increase in the proportion of learners within the normal BMI category and a corresponding decrease in those classified as wasted, indicating an increase in nutritional status of the respondents over the SBFP implementation across three consecutive school years. The absence of learners classified as overweight or obese both before and after the implementation suggests that no cases of overnutrition were observed among the respondents during the period covered by the data, and this reduction in the number of learners in the wasted category may be associated with the three-year participation of the SBFP. This is aligned with the study of Reesor et al. (2018), which reported that participation in school-based feeding interventions contributes to the reduction of the number of undernourished learners thereby increasing the individuals in the normal nutritional status category.

Significant difference in nutritional status before and after implementation

While these descriptive results provide an overview of changes in nutritional status, further analysis was necessary to determine whether the differences in BMI before and after

the implementation are statistically significant. A Wilcoxon signed-rank test was used to determine whether the improvement in BMI was statistically significant, this statistical tool being appropriate since the data, specifically the BMI after the SBFP implementation, is not normally distributed. The statistical comparison of the learners' BMI before and after the implementation of the SBFP revealed that the mean BMI prior to implementation was 13.58 (SD = 1.01), which increased to 15.21 (SD = 1.29) after implementation, resulting in a mean difference of 1.63. The inferential analysis resulted in a p-value of < 0.001, indicating that the difference in BMI between the two measurement periods is statistically significant, meaning that the observed change in the learners' BMI is unlikely to have occurred by chance and reflects a measurable difference before and after the implementation of the SBFP. The results indicate that there is a significant difference in the learners' BMI from the pre-implementation period to the post-implementation period, suggesting that the nutritional status of the learners varied across the two time points measured in the study, and the increase in mean BMI after the implementation period reflects a change in the overall distribution of learners' BMI values when compared to the baseline data prior to the SBFP intervention. Regarding magnitude, the computed effect size ($r = 0.59$) indicates a large effect size, reflecting a considerable practical difference in BMI between the pre-implementation and post-implementation measurements, suggesting that the extent of change observed in the learners' BMI is not only statistically significant but also meaningful in terms of practical magnitude when comparing the two periods of assessment. These findings are consistent with related literature, which reports that SBFP are associated with improvements in nutritional outcomes, particularly increases in BMI and reductions in undernutrition among learners (Causapin & Obiso, 2025). The World Food Programme (2022) further explains that school feeding initiatives improve access to regular and nutritious meals by utilizing established school-based systems, supporting children's nutritional needs, and related literature suggests that nutrition-focused school interventions contribute to improved dietary intake and may support better learning conditions among school-aged children (World Health Organization, 2023; Khan et al., 2022). However, contrasting findings have been documented, indicating that some school feeding programs did not consistently yield significant improvements in BMI, with such variations attributed to differences in implementation quality, program duration, and the nutritional content of meals provided (Kristjansson et al., 2016; Wang et al., 2021).

Academic performance before and after program implementation

The academic performance of the respondents before and after the implementation of the SBFP was categorized as Outstanding (O), Very Satisfactory (VS), Satisfactory (S), Fairly Satisfactory (FS), and Did Not Meet the Expectation (DNME), and this section presents the level of academic performance of the 31 learners before and after the implementation of the feeding program in the six elementary schools of Argao District II. Prior to the implementation of the feeding program, 26% (8 learners) were classified as Outstanding (90–100), 26% (8 learners) as Very Satisfactory (85–89), 22% (7 learners) as Satisfactory (80–84), 26% (8 learners) as Fairly Satisfactory (75–79), and no learner fell under the Did Not Meet Expectations (below 75) category. This distribution indicates that all learners were already meeting the minimum academic standard, with 52% performing at higher levels (Outstanding and Very Satisfactory) and 48% performing at moderate levels (Satisfactory and Fairly Satisfactory), and the presence of learners in the Satisfactory and Fairly Satisfactory categories suggests that a portion of the group was performing at an average level, indicating potential room for academic improvement. After three school years of the implementation of the SBFP, the academic performance of the 31 learners showed modest improvements. The number of learners in the Outstanding category increased from 8 learners (26%) before implementation to

9 learners (29%) after implementation, indicating a gain of 3%. The Satisfactory category also went up from 7 learners (22%) to 8 learners (26%), displaying a 4% improvement. In addition, the Very Satisfactory category remained the same at 8 learners (26%), suggesting stability in this performance level of the learners. The number of learners under Fairly Satisfactory went down from 8 learners (26%) to 6 learners (19%), representing a 7% drop, and remarkably, no learner fell under the Did Not Meet Expectations category, thereby maintaining a 100% passing rate after the implementation of the SBFP. These changes suggest a slight shift in performance distribution, particularly a reduction in the number of learners in the Fairly Satisfactory category and a corresponding increase in higher categories, a pattern that may indicate slight improvement in learners' academic performance over time. The modest improvement in the distribution of academic performance, particularly the reduction of learners in the lower achievement categories, coincides with the three-year duration of the SBFP, and the implementation of this program represents one of the variables present during the period in which these academic gains were observed. This aligns with findings from Alcantara and Frontreras (2024), who noted that such programs are associated with improved classroom participation and decreased absenteeism, which may facilitate a more conducive learning environment. Although there is a modest improvement, further analysis was needed to determine whether these improvements are statistically linked to the feeding program.

Significant difference in academic performance before and after implementation

To determine whether the improvement in academic performance was statistically significant, a Wilcoxon signed-rank test was conducted to compare scores before and after the feeding program, this statistical method being suitable for analyzing data from the same group before and after an intervention because the post results of the academic grades are not normally distributed, which fails the assumption of using a parametric statistical tool. The comparison of learners' academic grades before and after the implementation of the SBFP across three consecutive school years revealed that the mean grade of the learners increased from 83.10 (before) to 85.90 (after), with a mean difference of 2.80, suggesting a slight improvement in learners' academic performance after participating in the SBFP. The null hypothesis is rejected since the calculated p-value of <0.001 is less than 0.05, suggesting that there is a statistically significant difference between the learners' academic performance before and after the implementation of SBFP, which implies that the feeding program has a significant positive effect on learners' academic growth. Furthermore, the effect size ($r = 0.59$) indicates a large effect, suggesting that the feeding program contributed meaningfully to the improvement of learners' academic performance. Even though the results are statistically significant, academic performance depends on many factors, and the improvement may not be due to the feeding program alone. This finding aligns with Gahite (2024), who suggested that variations in academic performance may be associated with multiple learner-related factors, such as motivation, cognitive abilities, and learning styles, beyond school-based interventions alone.

Relationship between changes in nutritional status and academic performance

Significant relationships were analyzed using Spearman rho, this test being used because one of the variables, the academic grades, is not normally distributed based on the normality test result, making Spearman rho more suitable in determining the relationship between BMI and academic performance. The change in scores was computed by subtracting the pre-implementation data from the post-implementation data for both BMI and academic

grades, and the difference scores were then subjected to Spearman rank-order correlation to determine whether increases in BMI correspond to increases in academic performance. The results indicate that both BMI and the academic grades increased following the implementation of the SBFP, with mean gains of 1.63 and 2.81, respectively. Despite these observed improvements, the computed Spearman rank-order correlation coefficient ($\rho = 0.086$) indicates a very weak relationship between the change in learners' BMI and the change in their academic performance, suggesting that changes in BMI are not consistently associated with changes in academic performance within the sample. Moreover, the computed p-value of 0.644 is greater than the established level of significance ($p < 0.05$), suggesting that the correlation is not statistically significant, and that the observed relationship in the sample may be due to chance and cannot be generalized to the population. Consequently, the null hypothesis (Ho) is not rejected, leading to the conclusion that there is no significant relationship between changes in learners' nutritional status and academic performance. The findings indicate that although both nutritional status and academic performance improved after the implementation of the SBFP, these improvements did not occur in a consistent or related manner across learners; the very weak correlation suggests that increases in BMI were not accompanied by proportional increases in academic performance, and learners who exhibited greater improvement in nutritional status did not necessarily demonstrate corresponding gains in academic performance. This lack of association implies that the observed improvements in BMI and academic outcomes likely developed independently rather than as directly linked changes, and therefore, while the SBFP may have contributed to general improvements in both variables, the results do not provide sufficient evidence to support a meaningful relationship between changes in nutritional status and academic achievement. The absence of a significant relationship between changes in BMI and academic performance may be explained by several limitations of the study. First, the small sample size of participants included in the study may have affected the statistical power of the analysis, thereby limiting the detection of meaningful relationships between the variables. Second, the participants may have had similar characteristics, such as age, grade level, and learning environment, which could result in only small differences in both BMI and academic performance, and this limited variation makes it harder to identify any clear pattern between the two variables. In addition, BMI was used as the only measure of nutritional status, which may not fully reflect a learner's overall health, as it does not consider factors such as the quality of food intake, vitamin and nutrient levels, or general well-being, which may have a stronger influence on learning. Lastly, academic performance is affected by many factors, including learners' motivation, teaching quality, parental support, and classroom environment, which were not included in this study, and these factors may have influenced the results and contributed to the lack of a significant relationship. The findings support related literature indicating that academic performance is influenced by multiple factors beyond physical health measures such as BMI. According to Suleiman et al. (2024), academic achievement may be associated with cognitive, behavioral, and environmental factors, including learner motivation, quality of instruction, and family support, which supports the result of the present study, where increases in BMI were not directly associated with the increase in academic performance. Similarly, according to the World Health Organization (2022), BMI serves primarily as a screening indicator and should not be interpreted as a complete measure of child health, as it does not capture other important dimensions such as nutrition quality, physical activity, and psychosocial well-being, which may also influence educational outcomes. These studies suggest that while nutritional programs may improve physical health, their direct impact on academic performance may not always be clearly observed, especially when other important factors are not considered.

Contribution of the feeding program to nutritional status and physical well-being

The qualitative findings further illuminate the quantitative results presented above. The SBFP has become an effective strategy in addressing undernutrition and promoting learners' physical well-being, and the increasing concern over learners' health and nutrition highlights the need for effective school-based interventions. The consistent provision of nutritious meals through the feeding program supports learners' growth and helps reduce hunger during school hours, thereby improving their overall health condition. Three main areas emerged in relation to the program's contribution to learners' nutritional and physical development: enhanced physical strength and increased energy levels, improved body growth indicators, and reduced hunger with developed appetite and eating habits, each illustrating how the feeding program contributes to learners' physical well-being and readiness to participate in school activities. Participants consistently described improvements in learners' physical strength and energy levels following the implementation of the SBFP, with learners showing improved energy levels, decreased tiredness, and enhanced engagement in classroom activities, improvements suggesting that the feeding program helped address short term energy deficiencies associated with inadequate nutrition. One learner shared, "I am healthier and more energetic" (Learner, P10), indicating personal improvement in energy level after receiving meals through the SBFP. In the same way, a teacher observed that "Learners appeared healthier, gained weight and showed increased energy during daily activities" (Teacher, P5), supporting that these improvements were evident both from the learners' perspectives and through classroom observations, while a parent shared that "my child is more energetic every day" (Parent, P10), further supporting the consistency of this finding across different stakeholders. These responses show that learners became more energetic and active after joining the SBFP, a finding supported by the increase in BMI noted above, which reflects an improvement in the nutritional status of the learners; while the change in BMI is gradual, the findings indicate that improvements in learners' nutritional status are associated with noticeable improvement in learners' energy levels and participation in school activities, particularly in terms of stamina and engagement in daily classroom tasks. These findings align with existing literature emphasizing the role of nutrition in supporting children's physical energy and activity levels, with the World Health Organization highlighting that adequate nutrition enhances energy availability necessary for daily functioning, and studies on school feeding programs reporting that regular access to nutritious meals improves physical well-being and reduces fatigue, even when anthropometric changes are gradual (Gelli et al., 2020; Aurino et al., 2022). Additional studies also confirm that feeding interventions contribute to improved physical strength and activity levels among learners (Assefa, 2025; Yussif et al., 2022).

One of the most visible outcomes of the SBFP is the improvement in learners' physical growth, such as gaining weight and increased BMI, with BMI as a standard measure providing a basis for identifying whether learners fall within severely wasted, wasted, normal, overweight, or obese categories, and these observations indicating positive changes in learners' physical development following regular participation in the feeding program. From the learners' perspective, one participant shared, "Yes, my weight increased and I feel better" (Learner, P9), reflecting a personal experience of improved physical condition. Teachers also shared that learners who consistently consumed the meals showed "nutritional improvement and increased BMI" (Teacher, P1), while parents confirmed these improvements, noting "my child gained weight" (Parent, P2 & P6), showing that the improvement could be seen both at school and at home. Across all groups, responses consistently point to visible physical changes, particularly in weight and overall body condition, and these qualitative accounts are consistent

with the quantitative findings showing the increase in BMI and the improvement in nutritional status categories noted earlier. Although the change in BMI is gradual, it aligns with participants' observations of improved physical growth among learners, and this convergence of perspectives indicates that improvements in nutritional status are reflected both in measurable indicators and in everyday observations reported by learners, parents, and school implementers. Relevant studies in the literature affirm these findings; studies have shown that school feeding programs contribute to improvements in children's nutritional status, particularly in promoting healthy weight gain and reducing undernutrition (Desiani & Syafiq, 2024). Similarly, Gelli et al. (2020) and Aurino et al. (2022) found that school feeding interventions are associated with improvements in weight-for-age and BMI indicators, especially among undernourished learners, and in the Philippine context, the SBFP of the Department of Education has been reported to improve the nutritional status of wasted and severely wasted learners, with observed increases in BMI after program participation (Morales et al., 2025). However, some studies have reported limited effects on BMI due to factors such as inconsistent implementation and insufficient nutritional content (Kristjansson et al., 2025). Despite this, the present findings indicate that consistent implementation of the SBFP is associated with observable improvements in learners' physical growth, as reflected in both participants' experiences and quantitative indicators.

Participants also observed a significant reduction in learners' hunger experience and noticed improvements in their eating habits after participation in the SBFP. Learners were reported to feel less hungry during school hours, allowing them to remain more focused and attentive throughout the day, and regular meal provision contributed to establishing regular eating patterns, which are essential in promoting healthier food practices among school-aged children, with improvements such as increased appetite and regular food intake commonly noticed among participants. A learner shared, "I don't feel as hungry anymore because I have already eaten" (Learner, P1), reflecting that the feeding program effectively addressed immediate hunger among the SBFP beneficiaries. Similarly, a parent shared, "sometimes, she is no longer very hungry because she eats at school" (Parent, P1), showing that the program affected the child's eating habits at home and in school, and participants commonly observed that learners improved their appetite and reduced hunger especially in school, reflecting changes in learners' daily eating experiences. The consistency of these observations across learners and parents suggests that the SBFP is associated with improvements in learners' short-term nutritional experiences, such as reducing hunger and supporting regular eating patterns. These qualitative findings align with the quantitative results, especially the improvement in nutritional status indicators and the increase in BMI noted earlier; while BMI indicates long-term changes in nutritional status, the reported reduction in hunger reflects immediate, day-to-day improvements in food intake, a pattern indicating that improvements in nutritional status are reflected not only in measurable indicators but also in learners' daily experiences of satiety and eating behavior. These findings are supported by existing literature on school feeding programs; Aurino et al. (2022) found that participation in feeding programs improves children's food consumption patterns and reduces hunger-related barriers to learning, while Gelli et al. (2020) reported that school feeding interventions contribute to improved dietary intake and promote healthier eating behaviors among school-aged children, particularly in resource-limited contexts. These studies support the results, showing that regular access to nutritious meals helps reduce hunger and improve learners' eating habits.

Contribution of the feeding program to academic engagement and classroom behavior

The growing recognition of the link between nutrition and learning underscores the importance of school-based feeding program interventions that support both physical and

academic development. The SBFP has significantly contributed to improving learners' academic engagement and classroom behavior; by addressing hunger and improving learners' energy levels, the feeding program creates a more conducive environment for learning, allowing learners to become more attentive, active, and motivated during classroom discussion. Three main areas emerged regarding how the SBFP influences learners' academic engagement and classroom behavior: improved focus and readiness to learn, active involvement in classroom activities and school participation, and increased confidence and motivation to engage in learning tasks, each highlighting how the feeding program supports learners' ability to engage meaningfully in classroom activities and develop positive learning behaviors. Participants observed that learners who participated in the SBFP showed improved focus and readiness to learn during classroom instruction, demonstrating increased attentiveness, reduced distraction, and readiness to engage in school activities, with the regular provision of nutritious meals helping learners reduce hunger during school hours, which was associated with improved concentration and active classroom participation; these observations imply that learners experienced greater cognitive readiness in their daily learning activities. A learner shared, "I can focus more on the lesson because I have already eaten" (Learner, P3), indicating improved concentration during class. The teacher also supported that "learners became more focused and less distracted after receiving food products" (Teacher, P5), a school coordinator noted that "the program improves learners' attention during lessons" (Coordinator, P1), while a parent stated that "she is now more focused on studying" (Parent, P3), responses that indicate enhanced attention and engagement among the learners. However, some participants expressed a different perspective, noting that improvements in focus were not always consistent among all learners; for instance, a teacher mentioned that "some learners still get distracted even after eating" (Teacher, P5), suggesting that factors other than nutrition may also influence attention, and this indicates that while many learners showed improved focus, the experience may vary depending on individual differences and classroom conditions. The consistency of positive responses across learners, parents, and school personnel suggests that improved nutritional intake is associated with enhanced focus and readiness to learn, while the presence of divergent views indicates that this improvement is not uniform for all learners. These qualitative findings are consistent with the quantitative results, particularly the improvement in academic performance and nutritional status noted earlier; while BMI reflects physical improvements, the reported increase in focus highlights learners' day-to-day classroom experiences, a pattern indicating that improvements in nutritional status are reflected not only in measurable outcomes but also in learners' observed attention and participation during instruction. These findings are supported by existing literature emphasizing the role of nutrition in cognitive functioning and learning; the World Health Organization (2020) states that adequate nutrition is essential for optimal brain function, attention, and learning capacity among children, and Aurino et al. (2023) reported that school feeding programs can contribute to improved school participation and learning engagement, as access to regular meals helps reduce hunger and supports learners' attention and involvement in classroom activities. These studies support the present findings that regular access to nutritious meals is associated with improved focus and readiness to learn, although individual differences may influence the extent of these effects.

The SBFP has also contributed to increasing learners' participation both inside and outside the classroom; learners who regularly received meals became more active, engaged, and willing to participate in discussions, group activities, and collaborative learning tasks, and the improvement in participation can be attributed to the reduction of hunger and increased energy levels which enabled learners to interact more confidently and contribute actively during lessons. One learner expressed, "Yes, I am active and always participate in discussions"

(Learner, P6), reflecting a personal experience of increased involvement in classroom activities. Similarly, a teacher observed that "the feeding program improved learners' participation, as they became more attentive and engaged during lessons" (Teacher, P5), indicating a noticeable change in learners' engagement, while from the perspective of the program implementer, it was noted that "teaching strategies become more interactive" (Coordinator, P5), suggesting that increased learner participation also influenced classroom dynamics and instructional approaches. Additionally, a parent shared that "she is more active in class and more interested in going to school" (Parent, P1), showing that the program's effects extended beyond the classroom and positively influenced learners' overall attitude toward school. Moreover, increased participation is not limited to academic tasks alone; learners were also reported to be more involved in school-related activities such as group work, school programs, and other co-curricular engagements. Adequate nutrition supports children's physical and cognitive functioning, enabling them to engage more actively in school tasks (World Health Organization, 2020), and with regular access to nutritious meals, learners feel stronger and more capable of keeping up with classroom demands; instead of feeling tired or weak, they are more alert and responsive, which allows them to actively interact with teachers and peers.

The SBFP also contributed to the development of learners' confidence and motivation to engage in learning tasks, with findings revealing that learners became more willing to participate, less hesitant to express themselves, and more eager to engage in classroom and school-related activities; this improvement in confidence and motivation can be attributed to the combined effects of improved nutritional status, increased energy, and a more positive learning environment created by the feeding program. One learner stated, "Yes, I am more active in group activities" (Learner, P7), reflecting increased confidence in participating with peers. Similarly, a teacher observed that "there was a noticeable increase in participation, especially among previously inactive learners" (Teacher, P4), indicating that learners who were once hesitant became more involved in classroom activities, and from the parents' perspective, "she is more interested in joining school activities" (Parent, P4), suggesting that the improvement in motivation extended beyond the classroom and influenced the learner's overall attitude toward school. These findings emphasize the link between nutrition, motivation, and learner engagement; school-based nutrition interventions may contribute to learners' psychosocial and educational well-being by supporting positive behavioral outcomes, motivation, and participation in school activities (Food and Agriculture Organization, 2021), and the World Food Programme (2021) also highlights that school feeding programs can improve learners' school participation and motivation by reducing hunger and creating a more supportive learning environment. The findings demonstrate that the SBFP plays an important role in enhancing learners' confidence and motivation; by addressing basic nutritional needs and creating a more supportive learning environment, the program encourages learners to become more active, engaged, and confident participants in their educational experiences, suggesting that the SBFP not only addresses learners' nutritional needs but also plays a significant role in strengthening their confidence and motivation, which are essential for meaningful participation in the learning process. This finding is supported by the theory of Maslow's Hierarchy of Needs, which emphasizes that physiological needs, such as food, must first be satisfied before higher-level needs like attention, learning, and self-development can be achieved (Huang, 2024); by addressing learners' basic need for food, the SBFP enables them to focus better on class, participate actively, and engage more effectively in the learning process.

Contribution of the feeding program to academic performance and learning outcomes

The SBFP not only improves learners' nutritional status but also creates a strong foundation for effective learning; as learners become healthier and more focused, they are able to participate more actively in class, better understand instructional content, and demonstrate improved academic performance, with the feeding program contributing to the holistic development of learners by supporting both their physical well-being and academic success. Two main areas emerged regarding how the SBFP influences learners' academic performance: improvement in academic performance outcomes, and increased engagement in academic tasks, each highlighting how the feeding program supports learners' academic growth and strengthens their task engagement. The findings indicate that when learners' nutritional needs are met, they are better able to focus during lessons, understand the content, and perform well in assessments, and as a result, improvements are reflected in their grades and overall academic performance, as learners who are no longer distracted by hunger can concentrate more effectively, which directly contributes to higher academic achievement. A learner shared, "Yes, it helps me focus and get higher scores in exams" (Learner, P3), showing how improved focus leads to better test performance. A parent also noted that "the grades have slightly increased" (Parent, P4), indicating observable improvement in academic results at home, and another parent stated that "his performance in class is better now" (Parent, P2), confirming overall improvement in the learner's academic achievement. These consistent responses suggest that the feeding program has a positive effect on learners' academic outcomes, supporting the idea that proper nutrition enhances cognitive functions such as attention, memory, and problem-solving. According to UNICEF (2023), adequate nutrition plays a crucial role in brain development and learning capacity, leading to improved school performance, and likewise, the Food and Agriculture Organization (2021) emphasizes that school-based nutrition programs contribute to better educational outcomes by improving learners' readiness to learn. The findings show that the SBFP is not only a health intervention but also an important support system for improving learners' academic performance; by addressing learners' nutritional needs, the program creates a strong foundation for academic success, and schools may consider strengthening and sustaining feeding programs as part of their strategy to improve learners' academic outcomes.

The SBFP also improves learners' engagement in the learning process, particularly in terms of participation, task completion, and attendance, with observed changes in learners' productivity, responsibility, and consistency in accomplishing school-related activities after participating in the feeding program indicating that learners who benefited from the feeding program demonstrated improved engagement in academic tasks. Teachers and parents observed that learners became more responsible in completing their schoolwork, more consistent in participating in classroom activities, and less likely to be absent; these changes suggest that learners are not only present in class but are also more engaged and productive in accomplishing their academic tasks. With reduced hunger and increased energy levels, learners were able to complete their assignments more efficiently, follow instructions more effectively, and participate more actively in classroom activities, and as a result, they became more responsible in managing their schoolwork and showed greater consistency in accomplishing academic requirements. A teacher noted that "there were slight improvements in academic performance especially in participation and completion of tasks" (Teacher, P2), highlighting increased involvement in learning activities, and another teacher shared that "academic performance improved after the program, particularly in terms of participation, task completion and less absenteeism" (Teacher, P5), emphasizing improvements in attendance and

engagement; these responses suggest that the feeding program not only enhanced learners' physical condition but also positively influenced their work habits and academic productivity. According to the World Health Organization (2020), adequate nutrition supports brain function, attention, and memory, which are essential for completing academic tasks effectively, and as a result, learners are more capable of completing assignments, following instructions, and contributing meaningfully during lessons. The World Food Programme (2021) also reported that school feeding programs improve learners' school participation, reduce absenteeism, and enhance their ability to complete academic work, and regular attendance and active involvement provide learners with more opportunities to practice skills, complete requirements, and improve their performance over time. These findings imply that the SBFP plays a vital role in enhancing learners' engagement by being productive and responsible in their academic tasks; by improving learners' physical condition and focus, the program enables them to complete tasks more efficiently and produce better-quality outputs, and ensuring consistent program delivery can help sustain learners' engagement and reduce absenteeism.

Other factors influencing academic performance beyond nutrition

The growing recognition of the complexity of learning outcomes highlights that improving academic performance cannot rely solely on nutritional interventions. While the SBFP plays a vital role in addressing hunger and enhancing learners' physical readiness for learning, findings from the qualitative data reveal that academic performance is shaped by multiple interconnected factors, including learners' home environment, teaching strategies, availability of learning resources, attendance, motivation, and support systems both in school and at home. Although the feeding program contributes positively to learners' energy levels and concentration, participants emphasized that nutrition alone is not sufficient to guarantee significant academic improvement; teachers and school heads noted that effective instruction, classroom engagement, and remediation programs are equally important in helping learners achieve better academic outcomes, while parents highlighted the role of home support, such as guidance in completing assignments and encouragement to study, in reinforcing what learners acquire in school. Three key areas were identified that influence academic performance beyond nutrition: the role of socio-environmental support systems, school-based interventions and instructional quality, and learners' readiness and study habits, demonstrating that academic success is a shared responsibility that extends beyond school feeding interventions and requires a holistic support system.

Socio-environmental support systems, specifically the home environment, parental guidance, and access to learning materials, play a major role in a student's success; the data suggest that while the SBFP prepares the student physically, the home environment acts as the foundation that allows that readiness to turn into actual learning, and when families are involved, students feel more secure and prepared to handle their schoolwork. A learner shared, "When my family supports me, I am more motivated to study" (Learner, P10), and parents also expressed their active role in their children's daily education, noting, "We support and help with assignments" (Parent, P1). From the perspective of educators, the impact is clearly visible in the classroom; Teacher P4 explained, "Learners with strong parental guidance and regular attendance usually perform better academically." Beyond emotional support, the availability of materials is also key, as Coordinators P2 and P3 stated, "Access to learning resources also enhances academic success." This implies that academic success is a shared responsibility between the school and the home; the SBFP addresses the physical barrier of hunger, but it is the follow-through at home that sustains a student's progress, and without parental interest or basic school supplies, even a well-nourished student may struggle to meet academic goals. Therefore, the feeding program is most effective when it is part of a larger system where parents

are active partners in the learning process. These findings align with established research which identifies the home as a primary driver of educational outcomes; according to Hill and Tyson (2009) and the OECD (2019), parental involvement and socio-economic status are among the strongest predictors of student achievement and long-term motivation, and when the home environment provides both emotional encouragement and the necessary tools for study, learners develop a higher sense of responsibility and better classroom behavior.

The quality of teaching and the availability of school-based interventions, such as remedial classes and reading interventions, also influence learners' academic outcomes. While a feeding program addresses physical needs, meaningful academic growth also depends on how lessons are delivered in the classroom; the findings show that having a full stomach is only the first step, as students also need clear explanations, engaging activities, and extra help when they face difficult topics, highlighting that the teacher's ability to lead the classroom is a central pillar of student achievement. Participants consistently identified the teacher's role as the bridge between being ready to learn and actually mastering the lesson. A learner shared, "My parents and teacher help me" (Learner, P9), while a teacher clarified, "No, nutrition helps learners become physically ready to learn but academic performance also depends on teaching strategies" (Teacher, P3), and a school coordinator reinforced this by stating, "Teacher effectiveness improves learning outcomes" (Coordinator, P1). Furthermore, the data showed that extra academic support is vital for those who are struggling; a learner noted, "I joined remedial and extra lessons" (Learner, P10), and a teacher explained that "remedial classes and reading interventions were implemented alongside the feeding program" (Teacher, P5). This implies that nutrition alone cannot drive academic success without effective teaching practices and extra academic safety nets; while the feeding program lays the foundation by improving a student's focus, it is the teacher's instruction and the school's remedial programs that turn that focus into actual knowledge, meaning that for a feeding program to truly work, schools must also invest in training their teachers and ensuring that students who fall behind have immediate access to extra help. These findings are supported by Hattie (2009) and Darling-Hammond (2017), who emphasize that teacher quality and structured support interventions are the most influential school-related factors affecting student achievement, and literature also suggests that targeted remedial education significantly improves outcomes for at-risk students (Slavin et al., 2011). Ultimately, integrating health programs like the SBFP with high-quality educational interventions leads to more complete and lasting success for learners.

Learners' independent study habits, personal discipline, and individual readiness to learn also contribute to their academic performance; even when parents and teachers provide great support, the student's own effort remains a deciding factor in their grades, and this highlights that personal responsibility and a positive mindset are what make all other support systems effective, suggesting that a student must be a partner in their own growth for any program to show long-term results. Participants recognized that the student's own commitment is a key part of the success equation; learners shared their daily efforts to keep up with their studies, saying, "I study and review my lessons" (Learners, P5, P6 & P8). Teachers also noticed that a student's personal drive is often what separates them from their peers, with one teacher observing that "study habits and learner motivation strongly influence grades" (Teacher, P5), and a school leader made it clear that academic achievement ultimately "depends on the students' readiness to learn" (Coordinator, P5), reinforcing the idea that the student must be mentally prepared for the work. The implication of this finding is that academic achievement is a shared responsibility that requires the active participation of the learner; the SBFP provides the physical vitality and concentration needed to study, but the learner must choose to use that energy through consistent study habits and self-discipline, and therefore programs that help

students build motivation and learn how to study on their own should be considered just as important as feeding or teaching programs. This finding is supported by the theory of Self-Regulated Learning (Zimmerman, 2002), which states that students who take charge of their own learning habits, such as setting goals and reviewing lessons, achieve higher academic results. Additionally, research by Bandura (1997) on Self-Efficacy shows that a student's belief in their own ability to succeed and their readiness to engage with tasks are essential for academic growth, and furthermore, Credé and Kuncel (2008) emphasize that study habits and study skills are as important as mental ability in predicting a student's performance in school. By fostering this internal discipline, schools can ensure that the physical readiness provided by the feeding program leads to lasting academic success.

Implementation challenges and support systems

The successful implementation of the SBFP depends not only on the provision of nutritious meals but also on how the program is managed, supported, and sustained within the school and community context. Findings from the qualitative data reveal that while the feeding program has clear benefits for learners, its overall effectiveness is significantly influenced by various implementation challenges and the strength of existing support systems, factors that determine whether the intended outcomes of improved nutrition and academic performance are consistently achieved. Participants highlighted several challenges encountered during the implementation of the program, including limited resources, delays in food delivery, insufficient funding, lack of proper facilities, and the additional workload placed on teachers who manage feeding activities alongside their instructional duties; in some cases, issues such as food shortages, inconsistent menu preparation, and irregular monitoring of learners' nutritional status affected the continuity and quality of the program. These challenges can hinder the program's ability to deliver sustained nutritional benefits, thereby indirectly affecting learners' readiness to learn. Despite these difficulties, the presence of strong support systems was identified as a key factor in enhancing the effectiveness of the feeding program; collaboration among school personnel, active involvement of parents, and support from local government units (LGUs) and other stakeholders contribute to smoother implementation. School heads and SBFP coordinators emphasized that proper planning, monitoring, and coordination help address operational issues and ensure that the program runs efficiently, and community participation, such as assistance in food preparation and resource mobilization, strengthens program sustainability. Five major areas were identified as influencing program effectiveness: implementation challenges and operational constraints, limited funding, resources and manpower, learner-related challenges, monitoring systems, coordination efforts and proper implementation practices, and the contribution of community and stakeholder support, illustrating that the success of the feeding program is not solely dependent on its design but largely on how it is executed and supported at different levels.

Logistical and delivery-related challenges emerged as a significant factor affecting the consistency and smooth implementation of the SBFP; the findings reveal that delays in the delivery of food supplies disrupt the feeding schedule, which in turn affects the regular provision of meals to learners, and these inconsistencies may limit the program's ability to achieve its intended outcomes, as continuous and timely feeding is essential in sustaining learners' nutritional gains and readiness to learn. Participants highlighted that delays in food supply are often caused by transportation difficulties and supplier-related concerns, particularly in geographically challenging areas such as upland schools. A teacher shared, "Delays occurred due to late delivery of supplies" (Teacher, P3), indicating that logistical inefficiencies directly interfere with the daily implementation of feeding activities, and similarly, a coordinator emphasized that "Delays in food delivery affected implementation" (Coordinator, P1),

reinforcing the idea that interruptions in supply chains can hinder the program's overall effectiveness. These disruptions not only affect the feeding schedule but may also influence learners' expectations and participation; when meals are not consistently provided, learners may experience irregular access to nutrition, which can impact their energy levels, concentration, and engagement in class, suggesting that the success of the SBFP is highly dependent on the reliability of its logistical systems. The findings are supported by existing studies which indicate that operational challenges, including delays in procurement and distribution of food supplies, are common barriers in school feeding programs, particularly in remote or underserved areas (Bundy et al., 2018; World Food Programme, 2020), and efficient supply chain management is therefore critical to ensure that feeding programs are implemented consistently and effectively. The implications of this finding highlight the need for improved planning and coordination in the delivery of food supplies; strengthening partnerships with suppliers, optimizing transportation systems, and establishing contingency plans can help minimize delays and ensure uninterrupted program implementation, and schools may also benefit from localized sourcing strategies to reduce dependency on distant suppliers. Without reliable and timely delivery of resources, even well-designed programs may struggle to achieve their goals, and ensuring consistency in implementation is therefore essential in maximizing the nutritional and academic benefits of the SBFP.

Limited funding, insufficient resources, and lack of manpower were also identified as major challenges that affect the effective implementation of the SBFP. The findings reveal that while the program is designed to support learners' nutritional needs, its success is often constrained by financial limitations and the availability of personnel to manage its operations, constraints particularly evident in geographically disadvantaged areas, where additional costs and logistical demands further strain available resources. A teacher shared, "Limited funding, especially for us in the upland areas where transportation fees are very expensive" (Teacher, P4), highlighting how financial constraints become more pronounced in remote locations, as increased transportation costs for food supplies reduce the overall budget available for meal preparation, which may impact both the quantity and quality of food provided to learners. In addition to financial challenges, the lack of manpower was also identified as a critical issue; a coordinator explained, "Lack of manpower created difficulties, especially that we need to pick up the food products in the designated drop-off schools" (Coordinator, P2), indicating that teachers and coordinators often take on multiple roles beyond their primary responsibilities, including procurement, preparation, and distribution of food, and such added workload can lead to fatigue and may affect both program implementation and instructional delivery. These findings suggest that the effectiveness of the SBFP is not solely dependent on its design but also on the adequacy of resources and personnel supporting its execution; when funding is limited and manpower is insufficient, program operations may become inconsistent, and the intended benefits for learners may not be fully realized. Existing literature supports these observations, noting that resource constraints and workforce limitations are common challenges in the implementation of school feeding programs, particularly in developing contexts (Bundy et al., 2018; World Food Programme, 2020), and adequate funding and dedicated personnel are essential to ensure efficient program management, consistent food provision, and proper monitoring of outcomes. The implications of this finding highlight the need for increased investment and stronger resource allocation for the feeding program; schools and policymakers may consider securing additional funding sources, optimizing budget utilization, and assigning dedicated personnel to manage feeding activities, while partnerships with LGUs, non-government organizations (NGOs), and community stakeholders can also help augment available resources and manpower. Overall, the sustainability and effectiveness of the

SBFP rely heavily on sufficient financial support, adequate resources, and well-distributed responsibilities among implementers, and strengthening these areas is crucial in ensuring that the program consistently delivers its intended nutritional and educational benefits to learners.

Learner-related factors, particularly absenteeism and food preferences, were identified as important challenges affecting participation in the SBFP. The findings reveal that even when the program is properly implemented, learners' attendance and acceptance of the provided meals significantly determine the consistency and overall effectiveness of the feeding initiative, highlighting that program success is not only dependent on logistical and administrative factors but also on learners' behaviors, preferences, and circumstances. Participants noted that some learners do not fully participate in the feeding program due to food preferences or unfamiliarity with the meals served; a teacher shared, "Yes, some learners refuse food due to unfamiliar taste or preference" (Teacher, P5), indicating that not all learners readily accept the food provided, a reluctance that may limit the nutritional benefits of the program, as learners who refuse to eat do not receive the intended dietary support needed to improve their health and energy levels. In addition, absenteeism was identified as a key barrier to consistent participation; a coordinator explained, "Irregular attendance of the students" (Coordinator, P2), emphasizing that learners who are frequently absent miss out on both the feeding program and classroom instruction, a concern also reflected by a parent who stated, "Sometimes she cannot join when absent, but usually attends regularly" (Parent, P6), suggesting that attendance patterns directly affect learners' access to the program's benefits. These findings suggest that the impact of the SBFP is closely tied to learners' consistent participation; when learners are absent or choose not to consume the meals provided, the program's ability to improve nutritional status and support academic performance becomes limited, underscoring the importance of considering learner-centered factors in program implementation. Existing studies support these observations, indicating that student attendance and food acceptability are critical determinants of the success of school feeding programs (Bundy et al., 2018; World Food Programme, 2020), and programs that fail to consider learners' food preferences or do not address attendance issues may experience reduced effectiveness, despite having adequate resources and planning. The implications of this finding suggest that schools should adopt strategies to improve both attendance and meal acceptability; enhancing menu planning by considering learners' cultural preferences, introducing variety in meals, and ensuring food quality may increase learners' willingness to participate, and strengthening attendance monitoring and engaging parents in promoting regular school attendance can help ensure that learners consistently benefit from the program. Addressing absenteeism and aligning food offerings with learners' preferences are therefore essential steps in maximizing the nutritional and educational impact of the SBFP.

Effective monitoring systems, strong coordination, and proper implementation practices emerged as key factors that enhance the success of the SBFP. The findings reveal that when schools establish structured processes for tracking learners' nutritional progress and ensure organized program delivery, the feeding program becomes more efficient, accountable, and impactful, practices that help ensure that the program achieves its intended outcomes of improving learners' nutritional status and supporting their academic readiness. Participants emphasized the importance of systematic monitoring, particularly in tracking learners' nutritional improvements; a coordinator shared, "BMI was measured at the beginning and end of the feeding program" (Coordinator, P3), indicating that baseline and endline data are used to assess the effectiveness of the intervention, a practice that allows schools to evaluate whether the program leads to measurable improvements in learners' health and provides evidence for decision-making and program adjustments. In addition to formal monitoring systems, participants highlighted the need for continuous oversight and evaluation; a parent suggested, "There should be regular monitoring of the program" (Parent, P9), reinforcing the idea that consistent tracking is necessary to maintain program quality and address emerging issues

promptly, as regular monitoring ensures that challenges, such as delays, shortages, or inconsistencies, are identified early and resolved effectively. Coordination among school personnel also plays a crucial role in ensuring smooth implementation; proper scheduling of feeding activities, clear assignment of responsibilities, and organized distribution systems contribute to efficient program delivery, and when teachers, coordinators, and school heads work collaboratively, the program is more likely to run consistently and meet learners' needs. These findings are supported by existing literature which highlights that strong monitoring and evaluation systems are essential components of effective school feeding programs (Bundy et al., 2018; World Food Programme, 2020); accurate data collection, regular reporting, and coordinated implementation enable program managers to assess progress, ensure accountability, and improve overall program performance. The implications of this finding suggest that schools should strengthen their monitoring and coordination mechanisms to maximize the effectiveness of the SBFP; establishing clear guidelines for data collection, conducting regular evaluations, and ensuring active collaboration among implementers can enhance program outcomes, and training personnel in monitoring procedures and maintaining accurate records are also important steps in sustaining program quality. Beyond resource provision, the success of the feeding program relies heavily on how well it is managed and monitored, and effective implementation practices, supported by strong coordination and systematic evaluation, ensure that the program delivers consistent and meaningful benefits to learners.

Stakeholder collaboration, including parental involvement and community partnerships, is essential for the sustainability of the program. The findings reveal that the success of the program is not solely dependent on school efforts but is significantly enhanced through the active involvement of parents, community members, and external partners such as LGUs and NGOs, a collaborative approach that ensures the program is supported with adequate resources, shared responsibilities, and continuous engagement from various sectors. Participants emphasized that strong partnerships among stakeholders contribute to the overall effectiveness and sustainability of the feeding program; a coordinator highlighted, "Stakeholder collaboration strengthens the program" (Coordinator, P2), indicating that collective efforts help address implementation challenges and improve program delivery, and through collaboration, schools are able to mobilize resources, share responsibilities, and create a more supportive environment for learners. In addition, external support from community partners was identified as essential in maintaining the continuity of the program; as stated by a coordinator, "Support from LGUs, NGOs, and the community is essential" (Coordinator, P2), emphasizing that the involvement of these stakeholders provides additional resources, logistical assistance, and policy support, which is particularly important in areas where schools face limitations in funding, manpower, and materials. Parental involvement also plays a significant role in sustaining the program, as parents contribute by supporting feeding activities, encouraging their children to participate, and reinforcing healthy practices at home, engagement that ensures the benefits of the program extend beyond the school setting and are maintained in the learners' daily lives. These findings are supported by existing literature which highlights that multi-sectoral collaboration is a key element in the success of school feeding programs (Bundy et al., 2018; UNESCO, 2021); partnerships between schools, families, and communities enhance resource availability, improve program management, and promote long-term sustainability, and collaborative efforts also foster a sense of shared ownership, which is essential for maintaining program continuity. The implications of this finding suggest that strengthening stakeholder engagement should be a priority in program implementation; schools may establish stronger partnerships with LGUs, NGOs, and community organizations, while

also encouraging active parental participation through regular communication and involvement in program activities, and building a collaborative network ensures that the feeding program is not only implemented effectively but also sustained over time. The SBFP thrives through collective effort, and the integration of school, family, and community support creates a strong foundation for sustainable implementation, ensuring that learners continuously benefit from improved nutrition and enhanced opportunities for academic success, while also strengthening accountability and shared responsibility among stakeholders in promoting the holistic well-being of learners.

Integration of quantitative and qualitative findings on nutritional status

Quantitative and qualitative data offer a valuable insight into the learners' nutritional status and academic performance toward the SBFP. This section presents the integration of quantitative and qualitative findings, with quantitative data weighing heavier than the qualitative data, while qualitative findings support and explain the quantitative findings; combining both data sets helps to understand how the SBFP shapes learners' nutritional status and helps them complete tasks more eagerly, and the quantitative data were explained comprehensively using the qualitative findings. A sequential explanatory analysis of learners' BMI before and after the SBFP was conducted by pairing their BMI with key qualitative themes to interpret how these factors collectively lead to observed gains in BMI. The findings of the study revealed that the learners' BMI improved after participating in the SBFP; before the implementation of the program the mean BMI was 13.58, and this increased to 15.21 after the intervention, with 87% of the learners already classified under the Normal nutritional status category. The Wilcoxon signed-rank test also showed a p-value of less than 0.001, indicating that the increase in BMI was statistically significant, a result that supports the study of Ayehu and Sahile (2021), which emphasized that feeding programs can positively influence the nutritional condition of learners. The qualitative findings further explained these improvements; based on the experiences shared by parents and teachers, many learners gradually developed better eating habits while participating in the program, and some participants also observed that the children became more eager to eat, showing increased appetite compared to before. Teachers and parents likewise noticed visible changes in the learners' physical appearance, particularly weight gain and improved energy during school activities, observations that support the quantitative results and show that the program created positive changes, not only in measurable health indicators but also in the daily behaviors of the learners.

Despite the positive outcomes, the study also identified several challenges encountered during the implementation of the program; some schools experienced difficulties related to limited resources such as insufficient funds, as well as shortages in feeding materials and delays in food preparation. There were also concerns regarding monitoring and documentation, especially in consistently tracking the progress of the learners and maintaining updated records, and coordination among stakeholders became challenging due to differences in availability, participation, and support from parents, teachers, and community members. These concerns suggest that while the program is beneficial, there are still operational issues that need to be addressed to sustain its effectiveness. From the perspective of administration and supervision, the findings point to the importance of strong leadership and proper program management; school administrators and coordinators have a vital role in ensuring that the program is well-organized, that resources are properly utilized, and that responsibilities among stakeholders are clearly communicated, and strengthening administrative oversight can also help improve monitoring systems, address implementation concerns, and encourage stronger collaboration among families, schools, and the community. The findings suggest that the SBFP is effective

in improving the nutritional status of learners while also encouraging healthier eating behaviors and positive physical development; the combination of regular feeding and habit formation contributed greatly to these improvements, which is also supported by the studies of Desalegn et al. (2022) and Bethmann and Cho (2022). The challenges identified in the study highlight the need for continuous evaluation and stronger administrative support to ensure that the program remains effective in the long run. It is recommended that the SBFP continue to be implemented and expanded to benefit more learners who are in need of nutritional support, that schools strengthen nutrition education activities so that healthy eating habits can be sustained even outside the feeding program, that administrators improve monitoring practices, resource management, and stakeholder coordination to address existing gaps in implementation, and that regular evaluations using both quantitative measures, such as BMI, and qualitative feedback from stakeholders be conducted to help ensure the continuous improvement and sustainability of the program.

Integration of quantitative and qualitative findings on academic performance

A sequential explanatory analysis of learners' academic performance before and after the SBFP was likewise conducted by pairing their academic performance with key qualitative themes. The findings showed that the learners' academic performance remained at a satisfactory level before and after the implementation of the SBFP, with noticeable improvement after participation in the program; before the implementation, the overall mean grade of the learners was 83.10, which was described as satisfactory, while after the program, the overall mean increased to 85.90, which still falls under the satisfactory level but reflects better academic performance among the learners. The Wilcoxon signed-rank test further confirmed that the increase was statistically significant, with a p-value of less than 0.001, results that indicate the SBFP contributed positively to the academic progress of the learners. The qualitative findings provided deeper explanations for the improvement in grades and classroom performance; many learners shared that they became more attentive, focused, and motivated to participate in class activities after joining the feeding program, explaining that they were able to concentrate better during lessons because they no longer felt distracted by hunger, while some learners also mentioned that they found it easier to complete assignments and participate in discussions because they had more energy throughout the day.

Teachers likewise observed several positive changes among the learners, noticing that students became more active during discussions, submitted their schoolwork more consistently, and showed greater participation in classroom activities; teachers played an important role by providing instructional support, encouragement, and close monitoring of the learners' progress inside the classroom. Parents, on the other hand, contributed through home reinforcement by encouraging their children to attend school regularly, complete assignments, and maintain healthy routines at home, and many parents also observed improvements in their children's grades, confidence, and sense of responsibility toward their studies. Meanwhile, school administrators and program coordinators were essential in managing the implementation of the SBFP, ensuring that feeding activities were organized properly and that the needs of the learners were addressed consistently. Despite these positive outcomes, some concerns and limitations were still evident during the implementation of the program; a few participants mentioned challenges related to sustaining learners' motivation and maintaining consistent support from all stakeholders, and there were also instances where monitoring of learners' academic progress and program implementation was not conducted regularly due to time constraints and workload among teachers and coordinators. These concerns suggest that

although the program is beneficial, continuous monitoring and stronger coordination among stakeholders are still necessary to maximize its impact on learners' academic development. The findings can also be understood through theoretical perspectives; in relation to Maslow's Hierarchy of Needs, the provision of food through the SBFP helped address the learners' basic physiological needs, allowing them to focus more on higher-level learning tasks and academic engagement, and the results may also be linked to Human Capital Theory, which emphasizes that investments in health and education contribute to improved individual performance and future productivity. In this context, support systems from teachers, parents, administrators, and the community functioned as enabling mechanisms that strengthened both the well-being and academic potential of the learners. The findings suggest that the SBFP does not only improve the nutritional condition of learners but also supports their academic growth and classroom participation; nutritious meals, combined with consistent support from families, teachers, and school administrators, helped learners become more engaged, motivated, and confident in their studies, findings that are supported by the studies of Castro et al. (2023), Yussif et al. (2022), and Davis et al. (2023), which emphasized the positive relationship between school feeding programs, learner participation, and academic achievement. Therefore, it is recommended that the SBFP be continuously implemented and further strengthened to sustain its positive effects on learners' academic performance, that schools continue building strong partnerships with parents and the community to provide consistent support for learners both at school and at home, that administrators improve monitoring systems and strengthen coordination among stakeholders to ensure effective program implementation, and that regular evaluation of both academic outcomes and learner experiences be conducted to identify challenges, improve strategies, and maintain the long-term effectiveness of the program.

Integration of quantitative and qualitative findings on the relationship between nutritional status and academic performance

A sequential explanatory analysis of the relationship between the change in learners' BMI and academic performance was also conducted, in which qualitative findings were used to explain the quantitative findings, consolidating the findings from the previous themes by presenting the overall impact of the SBFP on learners' health and academic performance. The quantitative results revealed that both BMI and academic performance improved after the implementation of the program; learners' BMI increased by a mean of 1.63, while academic performance increased by a mean of 2.80, findings that indicate the learners became healthier and performed better in school after participating in the SBFP. However, the test of relationship showed that BMI and academic performance were not significantly related, with a Spearman rho value of 0.086 and a p-value of 0.644, suggesting that although both variables improved, the increase in BMI alone did not strongly influence the improvement in academic performance.

The qualitative findings helped explain these quantitative results more clearly. Learners shared that after joining the feeding program, they became more focused and attentive, and they also became motivated during class discussions and activities; many of them explained that they were able to concentrate better because they no longer felt distracted by hunger. Teachers also observed that learners became more active in class and participated more during lessons, and the students also completed their tasks more consistently, while parents similarly noticed gradual improvements in their children's grades, confidence, and willingness to study. These experiences explain why academic performance improved even though its relationship with BMI remained weak. The findings also revealed that academic performance is shaped by several interconnected factors beyond nutrition alone; participants emphasized the importance of teacher support, parental guidance, study habits, access to learning materials, classroom

environment, and learner motivation. Teachers contributed through instructional support and encouragement inside the classroom, while parents reinforced learning through guidance and monitoring at home, and school administrators and program coordinators also played an important role in ensuring that the program was properly implemented and monitored. These support systems functioned as enabling mechanisms that helped learners maximize the benefits of the feeding program both academically and physically.

Participants identified several challenges that may have affected the full impact of the program, including delays in food delivery, limited budget allocation, shortages in supplies, and implementation concerns related to monitoring and coordination; some participants also mentioned that inconsistent support and limited resources sometimes affected the smooth delivery of the feeding activities. These concerns highlight the need for stronger administrative oversight, improved resource management, and more effective coordination among stakeholders to sustain the effectiveness of the program. From a broader perspective, the findings suggest that the SBFP operates not only as a health intervention but also as an educational support mechanism; while improved nutrition contributes to better energy and concentration, academic success is still influenced by multiple social, environmental, and educational factors working together, which explains why the relationship between BMI and academic performance remained very weak even though both variables improved after the implementation of the program. The findings support the studies of Karmaker (2021), Aldrup et al. (2022), and Nunes et al. (2023), which emphasized that learner achievement is influenced by a combination of nutritional, environmental, and psychosocial factors.

Taken together, these results show that the SBFP produced a statistically significant improvement in the learners' nutritional status, raising mean BMI from 13.58 (SD = 1.01) to 15.21 (SD = 1.29), with a mean difference of 1.63, $p < 0.001$, and a large effect size of $r = 0.59$, while also producing a statistically significant improvement in academic performance, raising the mean grade from 83.10 to 85.90, with a mean difference of 2.80, $p < 0.001$, and an equally large effect size of $r = 0.59$. Yet the very weak and non-significant correlation between these two changes, $\rho = 0.086$, $p = 0.644$, demonstrates that the two outcomes, while both favorable, developed through largely independent pathways rather than as a direct causal chain running from improved nutrition to improved grades. The qualitative findings explain this pattern by showing that the SBFP operates simultaneously as a health intervention and as an enabling condition for learning, working alongside, rather than in isolation from, teacher quality, parental involvement, learner motivation, study habits, and the broader implementation environment of the program itself, including its logistical, financial, and coordination challenges. In direct relation to the objectives of the study, the findings confirm that the SBFP is associated with measurable gains in both nutritional status and academic performance among the 31 learner respondents, that these gains are statistically significant when tested independently, and that the relationship between the two outcomes is best understood not as a simple linear effect but as a convergence of nutritional, instructional, familial, and administrative factors operating together. This contributes to the field by offering empirical evidence, grounded in both anthropometric and academic records and in the lived experiences of learners, teachers, parents, and program implementers, that school-based feeding interventions yield tangible benefits even when their academic effects cannot be reduced to BMI change alone, while also surfacing the operational vulnerabilities, such as funding, manpower, logistics, and monitoring, that must be addressed for these benefits to be sustained. These integrated findings provide the empirical and contextual foundation for the summary of findings, conclusions, and recommendations that follow in the next chapter, where the

implications of these results for program design, school-based implementation, and future research will be more fully articulated.

CONCLUSION

Based on the findings of the study, the School-Based Feeding Program (SBFP) was found to be effective in improving the learners' nutritional status as evidenced by the observed increase in the Body Mass Index (BMI) after implementation. This indicates that the program successfully addressed undernutrition among the identified beneficiaries in the six (6) upland elementary schools. In terms of academic performance, the findings showed improvements in learners' grades following the participation in the SBFP. However, statistical analysis revealed that the relationship between nutritional status and academic performance was very weak and not statistically significant. This implies that, despite improvements in BMI, such changes did not directly result in significant gains in academic performance. The findings suggest that SBFP appears to influence learning outcomes indirectly by enhancing learners' readiness to learn, increasing their attention and participation in class and improving school attendance. This interpretation is supported by Maslow's Theory of Human Motivation which explains that the fulfillment of physiological needs, such as adequate nutrition, is a prerequisite for learners to become cognitively ready for learning. In this context, the SBFP contributes to improving learners' basic needs, thereby supporting their capacity to engage in classroom activities. Moreover, the findings also support Human Capital Theory (Becker) which emphasizes that academic performance is influenced by various interrelated factors including overall health, teaching methods, family support and access to resources. The weak correlation observed in this study indicates that nutrition is only one of contributing factors to academic success. Furthermore, the study identified several implementation challenges such as inconsistency in food delivery, limited funding and resources constraints that may have influenced the effectiveness of SBFP. These limitations imply that the SBFP contributes positively to learners' well-being, but its full impact depends on the efficiency of program implementation and the presence of complementary support systems. The findings indicate that the SBFP effectively improved learners' nutritional status and was associated with the improvements in learners' academic performance. However, the relationship between variables was not statistically significant. Therefore, academic achievement cannot be attributed to nutrition alone. Sustained improvements in learners' academic performance required a holistic approach that integrates nutrition, quality of teaching instruction, family support and sufficient educational resources.

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