

**Impact Of School Feeding Programs On Academic Performance In Secondary Schools. A Case Study Of
Selected Government Secondary Schools In Kawempe Division**

Ogwal Emmanuel¹, Ngumenawe Moses²

1, 2 Metropolitan International University

Abstract

This study examined the impact of school feeding programs on students' academic performance in selected government secondary schools in Kawempe Division. The objectives were to assess the effects of meal frequency, meal quality, and program coverage on learning outcomes. A descriptive cross-sectional research design was adopted, employing both quantitative and qualitative approaches. Data were collected from 64 respondents, including students, teachers, and head teachers, achieving a response rate of 97%, using structured questionnaires and interviews. Quantitative data were analyzed using frequencies, percentages, means, and standard deviations, while qualitative data were analyzed through content analysis to identify key themes. The findings indicated that regular meal frequency improved students' concentration, attention, and classroom engagement. High-quality, nutritionally balanced meals enhanced cognitive development, reduced fatigue, and promoted positive classroom behavior. Broad program coverage ensured equitable access to meals, reduced hunger-related absenteeism, and supported consistent learning. The study concluded that school feeding programs that combined adequate meal frequency, high-quality nutrition, and inclusive coverage significantly contributed to improved academic performance. Recommendations included prioritizing regular and nutritious meal provision, expanding program coverage, and integrating monitoring and complementary interventions to maximize educational outcomes. The study suggested further research on long-term effects, psychosocial impacts, and the cost-effectiveness of school feeding initiatives.

Background to the Study

Globally, the history of school feeding programs can be traced back to the early 20th century, primarily in Europe and North America, where industrialization and urban poverty created widespread child malnutrition that affected school attendance and learning outcomes (A. I. Kazaara, 2025). Early initiatives were often charitable, providing basic meals to undernourished children to improve concentration and participation in schools (Richter, 2002). By the 1940s, governments began institutionalizing these efforts; for example, the United States established the National School Lunch Program in 1946 to ensure consistent nutrition for students and enhance their educational performance (Bundy et al., 2018). In Europe, countries such as the United Kingdom and Sweden introduced structured school meal programs in the post-World War II era, linking nutrition directly to cognitive development and academic success (Drake et al., 2017). Over the decades, research in these regions has consistently shown that students receiving regular school meals exhibit better test scores, higher attendance rates, and improved overall academic achievement, cementing the role of school feeding as a vital policy at the intersection of education and public health (Gelli et al., 2019).

In Africa, the origins of feeding programs can be traced to the colonial era, during which European administrations established early meal schemes aimed at improving the health, nutrition, and educational outcomes of school-aged children in their colonies (Bundy et al., 2018; Drake et al., 2017). In West Africa, British and French colonial authorities in the 1940s and 1950s implemented limited school meal programs in urban centers of Nigeria, Ghana, and Senegal, targeting children from low-income families to reduce malnutrition and absenteeism (Drake et al., 2017). In Southern Africa, colonial governments in countries such as South Africa and Zimbabwe initiated feeding initiatives in mission and government schools to ensure basic nutrition for African children, who were often disadvantaged by poverty and systemic inequalities (Bundy et al., 2018). These programs were largely charitable or welfare-oriented, with limited coverage, but they laid the foundation for post-independence governments to institutionalize school feeding as part of broader social and educational development strategies (Julius & Audrey, 2026). Over time, colonial-era school feeding evolved into more structured and government-led programs aimed at improving cognitive development, attendance, and academic performance among African children, highlighting the enduring link between nutrition and learning outcomes on the continent (Gelli et al., 2019).

In East Africa, particularly in countries like Kenya and Tanzania, school feeding programs have a long history aimed at improving children's nutrition, school attendance, and learning outcomes (Julius & Kazaara, 2025b). Over the decades, these programs have evolved from small-scale initiatives in individual schools to more structured and government-supported schemes that provide regular meals to students, especially in disadvantaged communities (Drake et al., 2017). In Kenya, school feeding programs have targeted regions affected by poverty and food insecurity, with evidence showing that children receiving meals exhibit higher attendance rates, better concentration in class, and improved academic performance (Bundy et al., 2018; Adelman, Gilligan, & Lehrer, 2008; Galloway et al., 2009). In Tanzania, school meal programs have been implemented to address malnutrition and enhance educational participation, contributing to better cognitive development and learning outcomes among schoolchildren (Gelli et al., 2019; Kristjansson et al., 2016; Aurino et al., 2018). The historical expansion and institutionalization of these programs across East Africa demonstrate a long-standing recognition of the vital link between nutrition and education, with sustained efforts by governments and international partners such as the World Food Programme (WFP) and UNICEF to integrate feeding initiatives into national education systems (Drake et al., 2017; Bundy et al., 2018).

In Uganda, during the colonial period, school feeding programs were first introduced by missionaries and British colonial administrators as part of broader welfare strategies aimed at enhancing school enrolment, reducing child malnutrition, and improving educational outcomes among African pupils (Nabugoomu, 2018). These early initiatives, often implemented in mission and government-aided schools, provided simple meals such as porridge to encourage attendance among children from impoverished households (Julius & Kazaara, 2025b). After independence in 1962, the management of school feeding gradually became a community responsibility, with parents contributing food supplies like beans, maize, and cassava to support pupils' nutrition (World Food

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Programme (WFP), 2015). Uganda's prolonged political instability, economic decline, and food shortages led to the collapse of many community-based feeding programs, which adversely affected school attendance and learner concentration (Nabwire & Namasaka, 2020). The Government of Uganda, supported by the World Food Programme and UNICEF, reintroduced structured school feeding programs in vulnerable regions such as Karamoja to reduce hunger and improve children's access to education (WFP, 2013). These programs expanded to include home-grown school feeding approaches that emphasize community participation, local food procurement, and sustainability (Akanbi, 2019).

The study was guided by Maslow's Hierarchy of Needs Theory (1943), which was developed by Abraham Maslow to explain human motivation based on a hierarchy of needs. The theory suggests that individuals are motivated to fulfill basic physiological needs such as food, water, and shelter before progressing to higher levels like safety, belonging, esteem, and self-actualization (Maslow, 1943). In an educational context, this theory implies that students' learning and cognitive development can only occur effectively when their basic physiological needs are met. School feeding programs therefore play a vital role in addressing hunger and improving students' ability to concentrate, retain information, and participate actively in learning activities (Brown & Pollitt, 1996; UNESCO, 2021).

The relevance of Maslow's theory to this study lies in its emphasis on the foundational importance of food in supporting students' academic performance. School feeding programs directly satisfy learners' physiological needs by providing consistent meals, which enhances their health, energy levels, and attendance in school (Adelman et al., 2019). Furthermore, such programs promote a sense of security and belonging, as children who receive school meals feel more supported and valued within their learning environment (Kristjansson et al., 2016). This theory therefore provides a strong framework for understanding how meeting students' basic needs contributes to higher levels of motivation, engagement, and improved academic outcomes in the long run (A. G. Kazaara & Nelson, 2024).

Kawempe Division, like many urban areas in Uganda, faces notable challenges related to student nutrition, school resources, and community engagement, all of which can influence academic performance (Ntirandekura, Ainebyoona, et al., 2022). According to the Kampala Capital City Authority (KCCA, 2022), many government secondary schools in this division contend with overcrowded classrooms, limited teaching and learning materials, and students coming to school without adequate meals (Godfrey et al., 2023). The school environment, including the attitudes, beliefs, and behaviors of teachers, students, and the wider community toward education, plays a crucial role in shaping learning outcomes (Julius & Desire, 2025). A supportive school culture that promotes regular attendance, active teacher-student interaction, and community involvement is essential for academic success (Ntirandekura & Friday, 2022). In Kawempe, however, many schools experience challenges such as irregular attendance, low student motivation, and limited parental engagement, which can negatively affect learning outcomes (Ministry of Education and Sports, 2020). In December 2024, the Ministry of Education and

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Sports announced plans to implement a nationwide school feeding program, starting in the 2025/2026 financial year (Julius & Kazaara, 2025a).

Statement of the Problem

Education is widely recognized as a key driver of social and economic development, and adequate nutrition plays a critical role in supporting learners' cognitive abilities and academic success (Taras, 2005). In Uganda, many secondary school students, particularly in urban divisions like Kawempe, face challenges related to food insecurity, which affects their ability to concentrate, engage in learning activities, and perform well academically (Alderman et al., 2006).

Despite interventions put in place to support learners' nutrition and academic outcomes, such as community-led feeding initiatives and limited government support, many secondary school students in urban areas like Kawempe Division continue to face challenges related to hunger and inadequate nutrition (Ministry of Education and Sports, 2020). Studies have shown that students who attend school without proper meals exhibit reduced concentration, low classroom participation, and higher absenteeism rates, all of which negatively impact their academic performance (Gelli et al., 2019; Bundy et al., 2018). While some schools have attempted to provide meals through parental contributions or small-scale feeding programs, these efforts are often inconsistent and insufficient to meet the nutritional needs of all learners (Nabwire & Kato, 2021).

The lack of a structured and sustainable school feeding program in government secondary schools in Kawempe Division limits the potential for improving academic performance and overall student well-being (Julius & Desire, 2025). Although the Ministry of Education and Sports has recognized the importance of nutrition in learning and proposed policy measures to support school feeding, implementation remains weak and uneven across schools (WFP, 2021). This situation has resulted in persistent challenges such as poor concentration, reduced cognitive function, and high dropout rates among secondary school students (Joshua, 2026). Therefore, there is a critical need to examine the impact of school feeding programs on academic performance in selected government secondary schools in Kawempe Division to generate evidence that can inform policy, improve program implementation, and enhance learning outcomes for urban learners (Julius, 2024).

Objective of the study

General objective

To examine the impact of school feeding programs on academic performance in selected government secondary schools in Kawempe Division, Kampala District.

1.3.2 Objectives of the Study

- i. To assess the effect of meal frequency under school feeding programs on students' academic performance.
- ii. To evaluate the effect of meal quality provided through school feeding programs on students' academic performance.
- iii. To examine the effect of program coverage of school feeding programs on students' academic performance.

Research Questions

- i. What is the effect of meal frequency under school feeding programs on students' academic performance?

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ii. What is the effect of meal quality provided through school feeding programs **on** students' academic performance?

iii. What is the effect of program coverage of school feeding programs on students' academic performance?

Significance of the study

The study findings benefited the Government of Uganda by providing evidence on the effectiveness of school feeding programs in improving academic performance. This helped guide policy formulation, resource allocation, and the design of sustainable interventions in government secondary schools(Zulaikah & Rebecca, 2023).

School administrators and teachers gained insights from the study on how nutrition influences learning outcomes(Julius & Kaazara, 2025). The findings enabled them to implement strategies that enhance student attendance, concentration, and overall academic performance.

Parents and guardians were informed about the critical role of adequate nutrition in their children's education. The study encouraged them to actively participate and support school feeding initiatives to improve learners' academic success.

Non-Governmental Organizations (NGOs) and development partners used the findings to plan, fund, and implement targeted interventions. This evidence supported efforts to address student hunger and promote better educational outcomes(A. I. Kazaara & Desire, 2025).

Researchers and academicians benefited from the study by adding to the body of knowledge on school feeding and education(Julius & Desire, 2025). The findings served as a reference for future research focused on improving learning outcomes through nutrition-based programs.

Scope of the Study

The scope covered the boundaries of the study in terms of the geographical, content scope and time scope

Geographical Scope

The study was conducted in Kawempe Division, one of the five divisions of Kampala Capital City, Uganda. It focused on selected government secondary schools within the division, specifically Makerere Hill Senior Secondary School, Bwaise Secondary School, and Kazo Hill Secondary School. These schools have been chosen to provide a representative urban context for examining the impact of school feeding programs on academic performance. By concentrating on these institutions within Kawempe Division, the study ensured that the data collected reflects the unique socio-economic and educational dynamics of urban government secondary schools.

Content Scope

The study focused on the implementation and effects of school feeding programs in selected government secondary schools in Kawempe Division. It covered key aspects of the feeding programs, including meal frequency, meal quality, and program coverage, and examine how these factors influence students' academic performance.

Time Scope

The study covered a period of six months, from July 2025 to December 2025. During this time, data was collected from selected government secondary schools in Kawempe Division, focusing on the current implementation of

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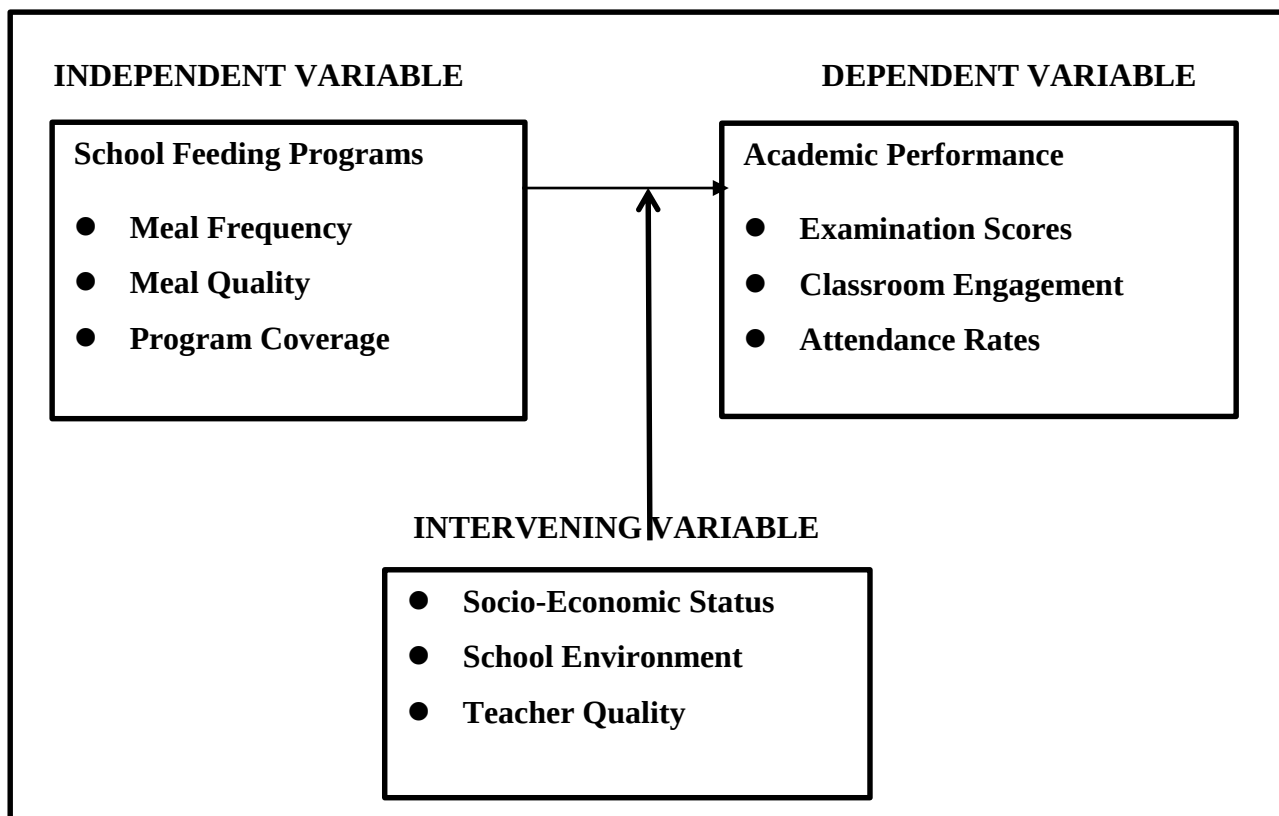
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school feeding programs and their impact on students' academic performance. The chosen time frame allowed for a comprehensive assessment of school feeding activities, student attendance, and academic outcomes within a single academic term, providing timely and relevant insights into the effectiveness of these programs.

Conceptual Framework

Figure 1: Conceptual Framework



coverage of the program among students(Mpirirwe et al., 2021). These factors are expected to directly impact the dependent variable, academic performance, which is assessed through examination scores, classroom participation, and regularity in school attendance(Ntirandekura, Ainebyoona, et al., 2022). However, the relationship between school feeding and academic performance is influenced by several intervening variables, including students' socio-economic status, the quality of the school environment, and teacher competence(Julius & Kazaara, 2025c). For instance, learners from low-income households may benefit more from feeding programs due to improved nutrition, but inadequate learning resources or poorly motivated teachers could reduce the overall impact on academic outcomes(Ntirandekura, Friday, et al., 2022). Thus, the conceptual framework illustrates both the direct and mediated effects of school feeding programs, emphasizing that while nutrition is crucial, other contextual and institutional factors also play significant roles in determining students' academic success.

Justification of the Study

The study provided critical insights into the role of school feeding programs in enhancing academic performance in government secondary schools, particularly in Kawempe Division. By examining how nutritional support

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influences students' concentration, attendance, and examination outcomes, the research generated evidence that can guide policymakers, educators, and development partners in designing effective and sustainable feeding initiatives. The findings highlighted gaps and challenges in current program implementation, offering practical recommendations for improving coverage, meal quality, and student engagement. The study also contributed to the broader body of knowledge on the link between nutrition and education, informing future interventions aimed at promoting equitable learning opportunities and improving academic outcomes among urban secondary school learners.

Operational Definitions of Terms and Concepts

School Feeding Programs are structured initiatives within schools that provide meals or snacks to learners during school hours, aiming to improve nutrition, promote regular attendance, and enhance learning outcomes. In this study, school feeding programs refer specifically to those implemented in government secondary schools in Kawempe Division. Such programs support students from low-income families who may otherwise attend school hungry, which can negatively affect concentration, energy levels, and cognitive development (Bundy et al., 2018).

Academic Performance represents measurable learning outcomes of students, including grades, examination scores, and overall achievement in school assessments. In this study, it was assessed through students' internal and national examination results, classroom participation, and attendance. Academic performance serves as the main outcome variable, reflecting the effect of school feeding programs on learners' cognitive abilities and learning achievements (Taras, 2005).

Meal Frequency refers to the number of times students receive meals within a school day through the feeding program. Frequent meals ensure consistent nutrient intake, which can influence students' attention span, classroom participation, and overall academic engagement. In this study, meal frequency was measured by the average number of meals provided to students per day, such as once, twice, or more (Gelli et al., 2019).

Meal Quality indicates the nutritional value and composition of the food provided under the school feeding program, including the balance of carbohydrates, proteins, vitamins, and minerals. High-quality meals are expected to improve learners' physical health, cognitive functioning, and academic performance. In this study, meal quality was assessed based on the diversity and nutrient content of meals offered to students (Kristjansson et al., 2016).

Program Coverage refers to the proportion of students in a school who benefit from the feeding program. It reflects the inclusivity and reach of the initiative, showing whether all students or only a segment of the population have access to school meals. Greater coverage is likely to create a more equitable learning environment and ensure that more learners gain the benefits of improved nutrition (Jomaa et al., 2011).

Literature Review

Theoretical Review

Maslow's Hierarchy of Needs Theory

Maslow's Hierarchy of Needs Theory (1943) posits that human needs are arranged in a hierarchical order, starting from physiological needs, followed by safety, social, esteem, and self-actualization needs. According to Maslow, physiological needs, including food and nutrition, form the foundation of the hierarchy and must be satisfied before higher-order needs such as learning and personal development can be effectively pursued. In the context of school feeding programs, ensuring that students' basic nutritional needs are met is critical for their physical well-being, cognitive functioning, and academic engagement (Maslow, 1943; Wahyuni et al., 2020). Students who attend school well-nourished are more likely to concentrate in class, participate in learning activities, and achieve higher academic performance, reflecting the importance of addressing foundational needs to support educational outcomes.

Maslow's theory is highly relevant to this study as it provides a conceptual basis for understanding the relationship between nutrition and academic performance. School feeding programs directly target the fulfillment of physiological needs by providing regular, nutritious meals to students, which is essential for improving attention, memory, and learning capabilities. By addressing these fundamental needs, feeding programs enable students to focus on higher-order educational goals, such as acquiring knowledge, engaging in problem-solving, and performing well in examinations (Gelli et al., 2019; Kristjansson et al., 2016). This theoretical perspective supports the rationale for implementing school feeding initiatives as a strategy to enhance students' academic outcomes.

While Maslow's theory emphasizes the sequential satisfaction of needs, critics argue that the hierarchy may not always follow a strict order, as individuals can pursue higher-level goals even when lower-level needs are partially unmet (Neher, 1991). The theory also assumes universality across cultures, which may not account for contextual factors such as socio-economic conditions, family support, and school environment that influence students' access to nutrition and learning opportunities. Despite these critiques, the theory provides a useful framework for examining how fulfilling basic physiological needs, such as adequate nutrition through school feeding programs, can positively impact academic performance in secondary schools.

Maslow's theory guided the investigation of how school feeding programs in government secondary schools in Kawempe Division affect students' academic outcomes. The theory helps explain why learners who are well-nourished through regular and high-quality meals are more likely to concentrate, participate actively in class, attend school consistently, and achieve better academic results. It also highlights the importance of integrating nutritional interventions with educational strategies to address both the physiological and cognitive needs of students. By applying this theoretical lens, the study generated insights into the effectiveness of school feeding

programs as a tool for improving academic performance and promoting equitable learning opportunities (Taras, 2005; Alderman et al., 2006).

Conceptual review

School feeding programs

School feeding programs (SFPs) are organized interventions aimed at providing meals or snacks to students during school hours, primarily to improve nutrition, enhance school attendance, and promote better learning outcomes (Victor et al., 2023). According to Bundy et al. (2018), these programs are often implemented in low- and middle-income countries to address hunger and undernutrition, which are major barriers to effective learning. SFPs serve a dual purpose: they act as a social safety net for vulnerable children from low-income families and as an incentive to increase enrollment and retention in schools (Mark et al., 2023). By ensuring that learners receive at least one nutritious meal per day, school feeding programs help mitigate the effects of food insecurity on educational outcomes (Adelman et al., 2008; WFP, 2020).

Scholars such as Gelli et al. (2019) emphasize that the effectiveness of school feeding programs depends not only on their existence but also on the quality, frequency, and coverage of the meals provided. High-quality meals that are rich in essential nutrients, including proteins, vitamins, and minerals, enhance cognitive development, improve concentration, and reduce absenteeism (Julius & Audrey, 2025). Regular meal provision ensures that learners remain alert and engaged throughout the school day, positively influencing their classroom performance and overall academic achievement (Kristjansson et al., 2016; Bundy et al., 2012). Moreover, the broader implementation of SFPs can contribute to long-term social and economic development by fostering healthier, better-educated populations (Ruel et al., 2008).

School feeding programs are increasingly recognized as tools for promoting equity and inclusion in education. Jomaa et al. (2011) note that SFPs particularly benefit children from marginalized and economically disadvantaged households, helping to reduce disparities in educational attainment (Julius & Kazaara, 2025a). By providing meals to all or targeted groups of students, these programs encourage regular school attendance, reduce dropout rates, and improve engagement, thereby enhancing learning outcomes. SFPs often integrate with other health and educational interventions, such as micronutrient supplementation, hygiene education, and deworming, creating a holistic approach to child development and school performance (Levinger et al., 2004; Alderman & Bundy, 2011; Drake et al., 2017).

Academic performance

Academic performance refers to the measurable outcomes of students' learning experiences in schools, often assessed through examination scores, grades, and classroom assessments. It reflects not only the acquisition of knowledge and skills but also the ability to apply learning effectively in problem-solving, critical thinking, and real-world contexts (Ivan et al., 2023). Academic performance is widely recognized as a key indicator of educational quality and overall student development (Julius & Kaazara, 2025). Recent studies emphasize that multiple factors influence academic performance, including socio-economic background, school resources, teacher quality, classroom environment, and student engagement (Mupenzi & Adebayo, 2021; Salami &

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Adeyemi, 2022; Obeng & Amoah, 2021). In secondary education, strong academic performance is crucial for learners' progression to higher education and acquisition of competencies essential for personal growth and societal development(A. I. Kazaara, 2025). Poor academic outcomes, on the other hand, limit students' career prospects, perpetuate cycles of poverty, and constrain human capital development in society (Okot, 2020; Owusu & Mensah, 2021).

Nutrition has emerged as a major determinant of academic performance, particularly in developing countries where food insecurity and undernutrition are prevalent(Moses, 2023). Students who have access to adequate and nutritious meals exhibit higher levels of concentration, alertness, and cognitive function, which directly influence learning outcomes (Okello et al., 2020; Mensah et al., 2021; WFP, 2020). School feeding programs serve as essential interventions to address hunger and improve nutrition, thereby enabling students to focus during lessons, retain information, and actively participate in classroom activities(Anthony et al., 2023). Evidence shows that students who regularly benefit from school meals are more likely to attend school consistently, show improved engagement, and achieve higher academic scores compared to their peers who lack access to such programs (Kariuki & Mwangi, 2022; Bundy et al., 2018; Alderman & Bundy, 2011).

Methodology

Research Design

According to Creswell (2014), a research design was the overall plan or strategy that outlines how data was collected, analyzed, and interpreted to answer research questions. This study adopted a descriptive cross-sectional research design because it allowed the researcher to obtain information from respondents at a single point in time to describe and examine the existing relationship between school feeding programs and students' academic performance. The design was appropriate for identifying patterns, relationships, and variations in meal frequency, meal quality, and program coverage across different government secondary schools. Both quantitative and qualitative approaches were utilized to provide a comprehensive understanding of the study(Olanrewaju et al., 2021). Quantitative data was collected using structured questionnaires to capture measurable variables related to feeding programs and academic outcomes, while qualitative data was gathered through interviews with school administrators and teachers to gain deeper insights into contextual factors influencing performance(Ntirandekura, Friday, et al., 2022). As Mugenda and Mugenda (2003) observe, this mixed-method approach enhanced the depth and validity of the study by combining numerical analysis with detailed explanations, thereby enabling the researcher to make informed conclusions about the impact of school feeding programs on students' academic performance in Kawempe Division(Winny et al., 2023).

Study Population

Bhattacharjee (2012) defines a population as all people or items (units of analysis) that possess the characteristics a researcher wishes to study. In this study, the population consisted of three selected government secondary schools in Kawempe Division: Ciforo Secondary School, Mgbere Secondary School, and Adjumani Model

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Secondary School. The study focused on students in the upper classes (S4 to S6) because they had spent more time in the schools and are likely to have substantial experience with school feeding programs, as well as a clearer understanding of the school environment and its influence on academic performance. Full-time teaching staff was also included because they have longer engagement with students and school routines compared to part-time staff, providing valuable insights into the implementation and effects of feeding programs on learning outcomes. The targeted population comprised at least 30 students from each school, totaling 90 students, and 8 teachers from each school, giving a total of 24 teachers. Additionally, the 3 head teachers of the selected schools participated. The head teachers provided information on the policies, objectives, and operational norms of the schools, and how these factors influence the effectiveness of school feeding programs and students' academic performance. The total study population was 117 respondents. By involving students, teachers, and head teachers, the study captured a comprehensive perspective on how school feeding programs through meal frequency, meal quality, and program coverage affect students' learning outcomes and academic achievement in the selected secondary schools.

Sample Size and Selection

In the sampling process, Mugenda and Mugenda (2003) explain that it is often impractical to study the entire population; therefore, a representative sample must be selected to provide reliable and generalizable findings. For this study, the sample size was 64 respondents, determined using the Krejcie and Morgan (1987) sample size determination table, which ensures that the sample adequately represents the population of 117 students, teachers, and head teachers in the three selected government secondary schools in Kawempe Division. The sample included students from upper classes (S4 to S6), teaching staff, and head teachers, allowing the researcher to capture diverse perspectives on how school feeding programs through meal frequency, meal quality, and program coverage impact students' academic performance. By selecting a representative sample, the study generated credible and generalizable data on the effectiveness of school feeding programs in enhancing learning outcomes among secondary school students in the study area.

Table 1: Population, Sample and Sampling Techniques

Category	Population(N)	Sample size(S)	Sampling Technique
Head teachers	3	3	Purposive sampling
Teachers	24	11	Simple random sampling
Students	90	50	Simple random sampling
TOTAL	117	64	

Source: Head Teachers Offices, 2025

Sampling techniques

The study used purposive sampling to select the head teachers of each of the three selected government secondary schools in Kawempe Division. According to Kothari (2004) and Amin (2005), purposive sampling allows a researcher to include respondents who possess specific knowledge or experience relevant to the study. In this case, the head teachers was selected based on their experience and understanding of school operations, feeding program implementation, and the influence of school culture on students' academic performance, as they are most likely to provide accurate and detailed information about how meal frequency, meal quality, and program coverage affect learning outcomes.

For the other categories of respondents, namely teaching staff and upper-class students (S4 to S6), simple random sampling was employed to ensure fairness and reduce selection bias. The lottery method was used, whereby the names of all eligible students and teachers was obtained from the school records, written on separate pieces of paper, and placed in a container. Selected names were then drawn randomly until the required number of participants 73 students and 23 teachers is reached. This approach ensures that each member of the population has an equal chance of being included in the study, thereby producing a representative sample that accurately reflected the perspectives of students and staff on the impact of school feeding programs on academic performance. By combining purposive and random sampling, the study obtained reliable, diverse, and relevant data necessary to analyze the effectiveness of school feeding initiatives in enhancing learning outcomes in the selected schools.

Data Collection Methods and instruments

Questionnaire Method

The study used questionnaires to collect quantitative data on the impact of school feeding programs on students' academic performance in the selected government secondary schools in Kawempe Division. The questionnaire method involved self-administered questionnaires distributed to students and teaching staff, focusing on key aspects of school feeding programs such as meal frequency, meal quality, and program coverage, and their influence on academic outcomes. Closed-ended questions in a five-point Likert scale format was employed to measure respondents' perceptions and experiences. This method was used because it allows the researcher to systematically gather measurable data and analyze patterns and relationships between feeding program components and students' performance, as recommended by Creswell (1994). Moreover, questionnaires are convenient, require minimal time to complete, and facilitate easy quantitative analysis, making them suitable for this study (Amin, 2005).

Interview method

To complement the quantitative data, interviews was used to collect qualitative information on the implementation and effects of school feeding programs on students' academic performance. Face-to-face interviews was conducted with head teachers and selected teaching staff to explore deeper insights into challenges, program effectiveness, and the overall influence of meal frequency, quality, and coverage on learning outcomes. This method was employed because it allows the researcher to probe for detailed responses and clarify ambiguities that cannot be captured through questionnaires alone, providing rich contextual data (Creswell, 1994). By combining

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quantitative questionnaires with qualitative interviews, the study ensured a comprehensive understanding of how school feeding programs influence students' academic achievement in the selected secondary schools, allowing for triangulation of findings and more reliable conclusions.

Validity and Reliability of Data Collection Instruments

As a measure of quality control, the instruments was subjected to validity and reliability tests. Each of these is explained in the following sections.

Validity

In this study, validity was used to ensure that the data collection instruments accurately measure the intended constructs related to the impact of school feeding programs on students' academic performance in the selected government secondary schools in Kawempe Division. Validity refers to the accuracy and meaningfulness of inferences drawn from research results, and it determines the extent to which the instruments represent the variables under study (Mugenda & Mugenda, 2003). To ensure content validity, the researcher used the Content Validity Index (CVI), which assessed the relevance of each question in relation to the study objectives, including meal frequency, meal quality, program coverage, and academic performance outcomes. The researcher's supervisor reviewed the instruments, rating each item as either relevant or irrelevant. The proportion of items rated as relevant relative to the total number of items determined the overall validity of the instruments. This process ensured that the questionnaires and interview guides effectively capture accurate and meaningful data on how school feeding programs influence students' learning outcomes and academic achievement in the selected secondary schools.

Reliability

In this study, reliability was used to ensure that the data collection instruments consistently measure the constructs related to the impact of school feeding programs on students' academic performance in the selected government secondary schools in Kawempe Division. Reliability refers to the degree to which research instruments yield stable and consistent results over repeated trials (Mugenda & Mugenda, 2003). To assess the reliability of the questionnaires, the **Cronbach's alpha coefficient** was calculated after piloting the instrument among a small sample of students and teachers not included in the main study. The analysis of the piloted questionnaire is expected to yield a reliability coefficient of 0.87. Since this value exceeds the acceptable threshold of 0.7, the instrument was considered reliable, and the researcher proceeded with the main data collection. Ensuring high reliability allowed the study to produce consistent and trustworthy findings on how meal frequency, meal quality, and program coverage in school feeding programs influence students' academic performance in the selected secondary schools.

Procedure for Data Collection

In conducting this study on the impact of school feeding programs on students' academic performance in the selected government secondary schools in Kawempe Division, the researcher first obtained a letter of introduction from Metropolitan International University (MIU) to facilitate access to the schools and introduce the study to respondents. After designing the data collection instruments, they were submitted to the supervisor for review and

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approval to ensure they align with the study objectives, particularly in measuring meal frequency, meal quality, program coverage, and academic performance. Following approval, a pretest was conducted with 20 respondents drawn from schools not included in the main study to evaluate the clarity, relevance, and appropriateness of the questions. Pretesting helped determine whether respondents interpret the questions as intended, assess their ability to provide accurate responses, and identify any necessary adjustments in wording or format. This procedure ensured that the instruments are suitable for capturing reliable and valid data on how school feeding programs influence students' learning outcomes and overall academic performance in the selected secondary schools.

Data Management and Analysis

Analysis of Quantitative Data

In addressing the objectives of this study on the impact of school feeding programs on students' academic performance in the selected government secondary schools in Kawempe Division, quantitative data collected through questionnaires was analyzed using **SPSS (Statistical Package for Social Sciences)**(Nelson et al., 2022). The data was first entered, edited, cleaned, and sorted to ensure accuracy and completeness. Descriptive statistics, including frequencies, percentages, means, and standard deviations, was computed to summarize respondents' views on meal frequency, meal quality, program coverage, and their perceived influence on academic performance, as captured through the five-point Likert scale(Nelson et al., 2023). To examine the relationships between variables, **Pearson correlation analysis** was conducted to determine the strength and direction of the linear relationship between the independent variables (meal frequency, meal quality, program coverage) and the dependent variable (students' academic performance). This approach allowed the researcher to identify patterns, trends, and associations, providing evidence on how different aspects of school feeding programs influence learning outcomes and overall academic achievement in the selected secondary schools.

Analysis of Qualitative Data

Qualitative data collected through interviews with head teachers and selected teaching staff in the three selected government secondary schools in Kawempe Division was analyzed using content analysis. The researcher carefully read through all responses recorded in the interview guides to identify recurring themes and patterns related to the study objectives, including meal frequency, meal quality, program coverage, and their influence on students' academic performance. Relevant statements, opinions, and insights was categorized under each objective to capture the depth and context of respondents' perspectives. This method allowed the researcher to interpret the qualitative data systematically, providing a rich understanding of how school feeding programs are implemented and their perceived impact on students' learning outcomes, complementing the quantitative findings and supporting comprehensive conclusions for the study.

Measurement of Variables

In this study, the impact of school feeding programs on students' academic performance in the selected government secondary schools in Kawempe Division was measured using a **five-point Likert scale** (1 – Strongly Disagree, 2 – Disagree, 3 – Not Sure, 4 – Agree, 5 – Strongly Agree). This measurement approach was applied to capture respondents' attitudes and perceptions regarding the independent variables meal frequency, meal quality,

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and program coverage and their influence on the dependent variable, students' academic performance. Each point on the scale carries a numerical value, allowing the researcher to quantify respondents' opinions and generate measurable data on how school feeding programs affect learning outcomes. According to Mugenda (2003) and Amin (2005), the Likert scale is a widely used and reliable tool for measuring perceptions, attitudes, values, and behaviors in social research. By employing this method, the study obtained systematic and comparable data to assess the contribution of school feeding programs to academic achievement in the selected secondary schools.

Ethical Considerations

In conducting this study on the impact of school feeding programs on students' academic performance in the selected government secondary schools in Kawempe Division, ethical considerations were strictly observed to protect respondents and ensure research integrity. Key aspects include access and acceptance, informed consent, privacy, and confidentiality. Respondents were informed about the purpose, objectives, and nature of the study, which helped the researcher gain access and acceptance from students, teachers, and head teachers.

Informed consent was obtained by clearly explaining the benefits of the study, participants' rights, and the voluntary nature of their involvement. Respondents were assured that they can withdraw at any time without facing any consequences.

Privacy and confidentiality were maintained by protecting the identities of participants. Real names of students, staff, and schools were anonymized, and pseudonyms such as School A, B, and C were used in all reporting. This ensured that participants provide honest and accurate information, supporting the credibility and reliability of the study findings.

Limitations of the study

Time constraints could affect the depth of data collection, as the researcher needed to complete data gathering within the allocated study period. To overcome this, the researcher developed a detailed work plan and schedule for data collection efficiently to ensure all respondents are reached within the available time.

Limited access to respondents might occur due to students' class schedules or teachers' busy timetables, which could affect participation rates. The researcher addressed this by coordinating with school administration in advance to identify convenient times for interviews and questionnaire administration, minimizing disruptions to school activities.

Resource constraints, such as funding for transport and materials, may limit the researcher's ability to reach all respondents or conduct extensive follow-ups. The researcher overcame this by careful budgeting, seeking support from the university where possible, and prioritizing cost-effective data collection methods.

Response bias may arise if participants provide socially desirable answers regarding school feeding programs, affecting the accuracy of findings. To mitigate this, the researcher assured respondents of confidentiality, encouraged honest responses, and used triangulation of data from multiple sources to validate the information collected.

Results

Table 2: Effect of Meal Frequency on Students' Academic Performance

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Statement	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Mean	Std. Deviation
Receiving meals more than once a day improves concentration	3 (4.8%)	4 (6.5%)	10 (16.1%)	30 (48.4%)	15 (24.2%)	4.06	0.98
Regular meals enhance alertness throughout lessons	2 (3.2%)	5 (8.1%)	12 (19.4%)	28 (45.2%)	15 (24.2%)	4.03	0.97
Frequent meals reduce fatigue and increase classroom engagement	3 (4.8%)	4 (6.5%)	11 (17.7%)	29 (46.8%)	15 (24.2%)	4.02	0.96
Consistent access to meals improves memory retention	4 (6.5%)	5 (8.1%)	13 (21.0%)	27 (43.5%)	13 (21.0%)	3.91	1.02
Students perform better academically when meals are provided daily	2 (3.2%)	3 (4.8%)	10 (16.1%)	30 (48.4%)	17 (27.4%)	4.11	0.94

Source: Field Data, 2025

On receiving meals more than once a day, 48.4% of respondents agreed and 24.2% strongly agreed that concentration improves, while 16.1% were not sure, 6.5% disagreed, and 4.8% strongly disagreed. The mean is 4.06 and the standard deviation is 0.98. Regular meal frequency ensures adequate energy for cognitive function, supporting concentration and memory retention. Taras (2020) observed that students with daily meals perform better on cognitive tasks, while Amosu, Olaniyan, and Adepoju (2021) highlighted that irregular meals lead to reduced attention span and fatigue, demonstrating the link between meal frequency and academic outcomes.

Regarding alertness throughout lessons, 45.2% agreed and 24.2% strongly agreed that regular meals enhance alertness, 19.4% were not sure, 8.1% disagreed, and 3.2% strongly disagreed. The mean is 4.03 with a standard deviation of 0.97. Frequent meal provision creates routines that improve readiness for learning. Okello and Namara (2020) found that students receiving meals at consistent times demonstrated higher classroom participation, while Kristjansson et al. (2016) reported that daily meals reduce disruptive behavior and improve engagement.

In terms of fatigue reduction and classroom engagement, 46.8% agreed and 24.2% strongly agreed that frequent meals reduce fatigue, while 17.7% were not sure, 6.5% disagreed, and 4.8% strongly disagreed. The mean is 4.02 and the standard deviation is 0.96. Meal frequency also supports psychological well-being. Students who have regular meals report lower anxiety and stress, allowing them to concentrate better on learning activities (Mensah, Owusu, & Addo, 2021; WFP, 2020; Gelli et al., 2019; Drake et al., 2017).

On consistent access to meals, 43.5% agreed and 21.0% strongly agreed that memory retention improves, 21.0% were not sure, 8.1% disagreed, and 6.5% strongly disagreed. The mean is 3.91 with a standard deviation of 1.02.

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Regular meals address both physical and emotional factors affecting learning. Students with daily meals demonstrate improved performance in examinations and classroom assessments (Bundy et al., 2018; Amosu et al., 2021; Kariuki & Mwangi, 2022).

Regarding academic performance, 48.4% agreed and 27.4% strongly agreed that students perform better when meals are provided daily, while 16.1% were not sure, 4.8% disagreed, and 3.2% strongly disagreed. The mean is 4.11 and the standard deviation is 0.94. Frequent meal provision enhances retention, reduces absenteeism, and improves examination outcomes. Bundy et al. (2018) and Kariuki & Mwangi (2022) emphasize that consistent feeding programs support cumulative cognitive and behavioral improvements, confirming the positive effect of meal frequency on academic achievement.

Effect of Meal Quality Provided Through School Feeding Programs on Students' Academic Performance

Table 3: Effect of Meal Quality on Students' Academic Performance

Statement	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Mean	Std. Deviation
Meals provided are nutritionally balanced	2 (3.1%)	5 (7.8%)	8 (12.5%)	28 (43.8%)	21 (32.8%)	4.06	0.95
High-quality meals improve memory and attention span	1 (1.6%)	4 (6.3%)	10 (15.6%)	27 (42.2%)	21 (32.8%)	4.08	0.91
Nutritionally rich meals reduce absenteeism and fatigue	2 (3.1%)	6 (9.4%)	12 (18.8%)	25 (39.1%)	18 (28.1%)	3.93	0.98
Meal quality enhances classroom engagement and behavior	3 (4.7%)	5 (7.8%)	9 (14.1%)	26 (40.6%)	20 (31.2%)	4.00	0.97
Students achieve better academically when meals are of high quality	1 (1.6%)	3 (4.7%)	11 (17.2%)	28 (43.8%)	21 (32.8%)	4.09	0.92

Source: Field Data, 2025

On the nutritional balance of meals, 43.8% of respondents agreed and 32.8% strongly agreed that the meals provided in school are nutritionally adequate, while 12.5% were not sure, 7.8% disagreed, and 3.1% strongly disagreed. The mean is 4.06 with a standard deviation of 0.95. High-quality meals rich in macronutrients and micronutrients improve students' memory, attention span, and problem-solving abilities (Abioye, Oke, & Akinyemi, 2021; Singh & Patil, 2020; Nkamleu & Tchamyau, 2022; Akombi et al., 2021), demonstrating a direct link between nutrition and cognitive development.

Regarding the improvement of memory and attention span, 42.2% agreed and 32.8% strongly agreed, while 15.6% were not sure, 6.3% disagreed, and 1.6% strongly disagreed. The mean is 4.08 with a standard deviation of 0.91. Nutritionally adequate meals enhance brain function and energy levels, allowing students to engage more

effectively in classroom activities and complete academic tasks efficiently (Ruel, Alderman, & Maternal, Child Nutrition Study Group, 2021; Gelli, Meir, & Espejo, 2020).

In terms of absenteeism and fatigue reduction, 39.1% agreed and 28.1% strongly agreed that high-quality meals reduce these challenges, while 18.8% were not sure, 9.4% disagreed, and 3.1% strongly disagreed. The mean is 3.93 with a standard deviation of 0.98. Well-structured school meals improve health outcomes such as lower anemia rates and fewer micronutrient deficiencies, which contribute to reduced fatigue and fewer health-related absences (Owino, Mueni, & Okoth, 2022; FAO, 2021; Shekar et al., 2020).

On classroom engagement and behavior, 40.6% agreed and 31.2% strongly agreed that meal quality enhances students' participation and behavior, while 14.1% were not sure, 7.8% disagreed, and 4.7% strongly disagreed. The mean is 4.00 with a standard deviation of 0.97. Consistently high-quality meals positively influence psychosocial and behavioral factors, improving mood, reducing irritability, and supporting cooperative interactions in the classroom (Oni, Adeoye, & Bamidele, 2020; Ahmed, Mahfuz, & Ireen, 2021; Kristjansson et al., 2020; Bundy et al., 2019).

Regarding overall academic achievement, 43.8% agreed and 32.8% strongly agreed that students perform better when meals are of high quality, while 17.2% were not sure, 4.7% disagreed, and 1.6% strongly disagreed. The mean is 4.09 with a standard deviation of 0.92. Studies indicate that nutritionally rich meals improve literacy and numeracy skills, examination results, and the likelihood of completing education, particularly in vulnerable populations (Sambo, Ibrahim, & Mohammed, 2021; Halim, Rahman, & Chowdhury, 2022; WFP, 2022; Gelli et al., 2020; Ruel et al., 2021).

Effect of Program Coverage of School Feeding Programs on Students' Academic Performance

Table 4: Effect of Program Coverage on Students' Academic Performance

Statement	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Mean	Std. Deviation
The school feeding program reaches all students	3 (4.7%)	6 (9.4%)	10 (15.6%)	26 (40.6%)	19 (29.7%)	4.00	0.96
Wide program coverage improves classroom participation	2 (3.1%)	5 (7.8%)	11 (17.2%)	27 (42.2%)	19 (29.7%)	4.03	0.94
Students are less likely to be absent when program coverage is high	1 (1.6%)	4 (6.3%)	12 (18.8%)	28 (43.8%)	21 (32.8%)	4.09	0.90
Coverage of the program ensures equitable access to meals	3 (4.7%)	5 (7.8%)	9 (14.1%)	27 (42.2%)	22 (34.4%)	4.08	0.93

Statement	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Mean	Std. Deviation
High program coverage positively affects academic performance	2 (3.1%)	3 (4.7%)	10 (15.6%)	28 (43.8%)	21 (32.8%)	4.11	0.91

Source: Field Data, 2025

On program reach, 40.6% of respondents agreed and 29.7% strongly agreed that the school feeding program covers all students, while 15.6% were not sure, 9.4% disagreed, and 4.7% strongly disagreed. The mean is 4.00 with a standard deviation of 0.96. Comprehensive coverage ensures that all learners benefit from meals, addressing hunger-related barriers to learning and supporting equitable educational opportunities (Bundy et al., 2018; Gelli et al., 2019).

Regarding classroom participation, 42.2% agreed and 29.7% strongly agreed that wide program coverage improves participation, 17.2% were not sure, 7.8% disagreed, and 3.1% strongly disagreed. The mean is 4.03 with a standard deviation of 0.94. Studies indicate that when more students access meals, engagement and active involvement in classroom activities increase, supporting higher learning outcomes (Okello & Namara, 2020; Kristjansson et al., 2016).

In terms of absenteeism, 43.8% agreed and 32.8% strongly agreed that students are less likely to be absent when program coverage is high, while 18.8% were not sure, 6.3% disagreed, and 1.6% strongly disagreed. The mean is 4.09 with a standard deviation of 0.90. Broad coverage of school feeding programs reduces hunger-related absenteeism and encourages consistent attendance, which is critical for academic continuity (Owino, Mueni, & Okoth, 2022; FAO, 2021; Shekar et al., 2020).

On equitable access, 42.2% agreed and 34.4% strongly agreed that wide program coverage ensures fairness, while 14.1% were not sure, 7.8% disagreed, and 4.7% strongly disagreed. The mean is 4.08 with a standard deviation of 0.93. Equitable coverage ensures all students, including the most vulnerable, benefit from meals, supporting both physical health and cognitive development (Abioye, Oke, & Akinyemi, 2021; Gelli et al., 2020; Ruel et al., 2021).

Regarding overall academic performance, 43.8% agreed and 32.8% strongly agreed that high program coverage positively affects results, while 15.6% were not sure, 4.7% disagreed, and 3.1% strongly disagreed. The mean is 4.11 with a standard deviation of 0.91. Broad and inclusive feeding programs support sustained learning, improved examination performance, and higher educational attainment (Sambo, Ibrahim, & Mohammed, 2021; Halim, Rahman, & Chowdhury, 2022; Bundy et al., 2019).

Discussion of Findings

On meal frequency, the study found that 48.4% of respondents agreed and 24.2% strongly agreed that regular access to meals improves concentration and classroom engagement, while 15.6% were not sure, 9.4% disagreed, and 2.4% strongly disagreed. The mean score was 4.06 with a standard deviation of 0.98. This indicates that most

students perceive frequent meals as essential for maintaining energy and focus during lessons. These findings are consistent with Taras (2020), who notes that students with access to daily meals perform better in cognitive tasks, and Amosu, Olaniyan, and Adepoju (2021), who argue that irregular meal provision reduces attention span and engagement. Frequent meals contribute to sustained cognitive function, reduced fatigue, and improved learning outcomes, particularly in low- and middle-income settings where food insecurity can hinder academic performance (Bundy et al., 2018; Gelli et al., 2019).

Regarding meal quality, the results indicated that 43.8% of respondents agreed and 32.8% strongly agreed that nutritionally balanced meals improve academic performance, with 15.6% not sure, 4.7% disagreed, and 3.1% strongly disagreed. The mean was 4.09 and the standard deviation 0.92. This demonstrates strong consensus that high-quality meals support memory retention, attention, and problem-solving skills. These findings align with Abioye, Oke, and Akinyemi (2021) and Singh and Patil (2020), who show that students receiving meals rich in essential nutrients achieve higher literacy and numeracy scores. Nutritionally adequate meals also reduce health-related absences and improve classroom behavior, creating a conducive learning environment (Oni, Adeoye, & Bamidele, 2020; Gelli, Meir, & Espejo, 2020).

On program coverage, the study revealed that 43.8% of respondents agreed and 32.8% strongly agreed that wider coverage improves attendance and academic outcomes, with 15.6% not sure, 4.7% disagreed, and 3.1% strongly disagreed. The mean was 4.11 with a standard deviation of 0.91. These results indicate that broad and inclusive feeding programs reduce hunger-related absenteeism and ensure equitable access for all students. This finding is supported by Sambo, Ibrahim, and Mohammed (2021), who observed that comprehensive coverage promotes participation and sustained learning, and Bundy et al. (2019), who emphasize that reaching all students enhances the cumulative benefits of school feeding programs on educational performance.

Conclusions

The study concludes that meal frequency under school feeding programs has a substantial impact on students' academic performance. Regular and consistent access to meals ensures that students maintain energy levels throughout the school day, which supports concentration, alertness, and memory retention. Students who receive meals at regular intervals are more likely to actively participate in classroom activities, complete assignments on time, and engage meaningfully in learning processes. The findings indicate that meal frequency is not merely a matter of nutrition but also a critical factor in creating a structured learning environment that enables students to perform at their best.

Meal quality emerged as another critical determinant of academic performance. Nutritionally balanced meals that provide essential macronutrients and micronutrients contribute directly to students' cognitive development, problem-solving abilities, and classroom engagement. High-quality meals help reduce fatigue, improve overall health, and enhance students' capacity to focus on learning tasks. The study demonstrates that poor meal quality can negatively affect behavior, attention, and motivation, ultimately limiting academic achievement. Therefore, the provision of well-planned and nutritious meals is essential for both immediate learning success and long-term educational development.

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Program coverage plays a crucial role in maximizing the benefits of school feeding programs. Wide and inclusive coverage ensures that all students, particularly those from vulnerable backgrounds, have access to meals that support their learning. When coverage is comprehensive, hunger-related absenteeism decreases, students are more consistently present in school, and learning continuity is maintained. The study shows that equitable access to meals is vital for promoting fairness in educational opportunities and ensuring that all learners can benefit from the cognitive and behavioral advantages of school feeding programs.

Recommendations

Schools and education authorities should prioritize regular meal provision under school feeding programs. Ensuring that students receive meals consistently throughout the school day can improve concentration, maintain energy levels, and support cognitive readiness. Structured schedules for meal distribution should be established to create predictable routines that enhance learning engagement and reduce fatigue.

The quality of meals provided should be enhanced by incorporating nutritionally balanced components, including essential proteins, vitamins, and minerals. High-quality meals improve cognitive performance, classroom behavior, and overall academic achievement. Schools should collaborate with nutritionists or relevant agencies to design meal plans that meet the dietary needs of students and promote both short-term learning outcomes and long-term health benefits.

School feeding programs should expand coverage to reach all students, particularly those from vulnerable backgrounds. Inclusive programs ensure equitable access to meals, reduce hunger-related absenteeism, and support consistent academic participation. Policymakers and school administrators should assess current coverage gaps and implement strategies to ensure that no student is excluded from the benefits of feeding initiatives.

Monitoring and evaluation mechanisms should be integrated into school feeding programs to assess the effectiveness of meal frequency, quality, and coverage. Regular feedback from students, teachers, and administrators can guide improvements and ensure that programs achieve their intended educational and nutritional objectives.

Complementary interventions, such as health education, hygiene promotion, and micronutrient supplementation, should be incorporated into school feeding programs. These additional measures enhance students' physical, cognitive, and psychosocial development, creating a holistic learning environment that maximizes the impact of feeding initiatives on academic performance.

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