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RELATIONSHIP BETWEEN PRINCIPALS' SUPERVISION OF SCHOOL CANTEENS AND STUDENTS' HEALTH OUTCOMES IN PUBLIC SECONDARY SCHOOLS IN ANAMBRA STATE, NIGERIA

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ABSTRACT

This study investigated the relationship between principals' supervision of school canteens and students' health outcomes in public secondary schools in Anambra State, Nigeria. The research examined how principals' monitoring of food quality in school canteens, enforcement of hygiene standards, evaluation of vendor performance and involvement in nutritional planning were related to students' health outcomes. Four research questions and four null hypotheses guided the study and grounded on Albert Bandura's Social Cognitive Theory which emphasized the interplay between cognitive, behavioural and environmental factors in shaping human behaviour. The correlational research design was adopted, with a population of 268 public secondary school principals and a sample consisting of 104 principals from Awka and Ogidi Education Zones, selected using the purposive method. Data were collected using Principals' Supervision of School Canteen Questionnaire (PSSCQ) and Students' Health Outcomes Questionnaire *SHOQ). The overall reliability coefficients for the PSSCQ and SHOQ were 0.83 and 0.85, respectively, demonstrating strong reliability for the instruments. The collected data were analyzed using the Pearson Product Moment Correlation Coefficient to answer the research questions and simple linear regression analysis to test the hypothesis at 0.05 level of significance. The findings demonstrated an exceptionally strong and positive relationship between principals' monitoring of food quality in school canteens, enforcement of hygiene standards, evaluation of vendor performance and involvement in nutritional planning, resulting in outstanding improvements in students' health outcomes. The study concluded that effective supervision by principals is essential for fostering a healthier school setting and supporting students' long-term success and well-being. Based on the findings, the study recommended among other things that principals should enhance their monitoring of food quality in school canteens by establishing a regular inspection schedule, ensuring that only safe and nutritious food is served. This would improve students' health outcomes and reduce the risk of foodborne illnesses.*

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Introduction

The health and well-being of students are critical determinants of educational success and national development. In many low- and middle-income countries, including Nigeria, the school environment, particularly the school canteen, plays a central role in shaping students' dietary habits and overall health outcomes. While school canteens are intended to support nutrition and promote healthy lifestyles, poor oversight and weak regulation often result in the availability of unsafe, unhygienic, or nutritionally inadequate food options. Effective supervision by school principals is therefore essential in ensuring compliance with health standards, safeguarding students against food-borne illnesses and fostering a culture of wellness. In the context of Anambra State, where concerns over students' health persist amid growing reliance on school-based feeding options, examining the relationship between principals' supervisory practices and students' health outcomes becomes imperative. This study investigated this nexus, providing understanding into how administrative oversight can enhance students' well-being and inform evidence-based policy in educational health governance.

Students' health plays a pivotal role in their academic success and overall well-being. Good health allows students to attend school regularly, actively participate in learning activities and perform well academically. Among the many factors influencing students' health, nutrition stands out as one of the most significant. Proper nutrition is essential for physical and mental development, which, in turn, enhances students' cognitive abilities and concentration in class. Research has shown that students who are well-nourished are more likely to excel academically and maintain regular school attendance. For instance, Johnson and Brown (2025) found that adequate nutrition positively impacts students' concentration and learning outcomes in Anambra State. In contrast, Okeke and Okoye (2024) pointed out that inadequate health and welfare services can have detrimental effects on students' health, which ultimately affects their academic performance. In this regard, school canteens, which serve as a primary source of daily meals for many students, play a crucial role in supporting students' health and academic success.

However, the quality and nutritional value of meals served in school canteens often depend on effective oversight and management. Principals, as key administrators, are responsible for ensuring that school canteens adhere to established health and safety standards, provide balanced and hygienic meals and operate in alignment with the school's overall mission to promote students' welfare. Smith and Carter (2025) maintained that regular supervision of school canteens by principals significantly contributes to the provision of healthy meals, reducing the risk of foodborne illnesses and fostering better health outcomes among students. Thus, principals' supervision of school canteens emerges as a critical factor in safeguarding students' health, which, in

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turn, has a direct impact on their academic performance and general well-being.

The management of school canteens, particularly through effective supervision by principals, plays a pivotal role in ensuring that students receive meals that are both nutritious and safe. Principals are expected to oversee food quality, enforce hygiene protocols, monitor vendor compliance and ensure that meal plans meet nutritional standards (Williams & Miller, 2025). This level of supervision requires strong administrative and health management competencies. Ikegbusi (2016) highlighted that, principals who possess the necessary managerial skills, such as strategic coordination, quality control and environmental health oversight, are better positioned to ensure school operations contribute positively to students' health outcomes.

Monitoring food quality is one of the most important responsibilities of principals in canteen supervision. Ensuring that food served in canteens is of high quality and free from contamination is essential to prevent foodborne illnesses and promote overall health. Regular inspections and checks on food storage, preparation and serving practices help to maintain food safety standards. Okeke and Okoye (2024) emphasized that food quality is a major factor in preventing health issues such as food poisoning, which can negatively affect students' health, school attendance and academic performance.

Enforcing hygiene standards is another essential aspect of canteen supervision. Adequate hygiene practices, including regular hand washing by staff, maintaining clean cooking utensils and ensuring that food preparation areas are sanitized, are vital in preventing the spread of diseases. Eze and Nwankwo (2023) argued that schools with strict hygiene practices experience fewer health-related issues, which translates to a healthier learning environment. By enforcing these hygiene standards, principals can significantly reduce the risk of illness among students, helping them stay healthy and engaged in their studies.

Evaluating vendor performance is also crucial in ensuring that the meals served meet both safety and nutritional standards. Principals must regularly assess the ability and reliability of food vendors to ensure that they provide high-quality, nutritious meals while adhering to hygiene regulations. Adebayo and Ojo (2024) stressed that consistent evaluation of vendor performance helps to maintain food quality and service, which positively affects students' health and their trust in the meals offered by the canteen.

Finally, nutritional planning and menu design are key responsibilities of principals. Proper planning ensures that the meals provided are balanced and contain the necessary nutrients required for students' physical and cognitive development. Nzeh and Akulue (2019) emphasized that well-designed school menus contribute to improved health outcomes, which in turn positively impact students' academic performance. Principals play an essential role in overseeing and approving school menus to ensure they meet dietary guidelines and support students' overall health.

Despite the recognized importance of school canteens in supporting students' health and academic performance, there is a notable gap in empirical research examining the correlation between principals' supervision of school canteens

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and students' health outcomes, particularly in Anambra State. While several studies have examined general school health services and the role of nutrition in education, limited research has focused on the specific relationship between principals' supervisory practices, such as monitoring food quality and safety, enforcing hygiene standards, evaluating vendor performance and engaging in nutritional planning and students' health outcomes.

Existing studies have often overlooked how these supervisory actions by principals may influence the quality of food provided in school canteens and the subsequent impact on students' well-being. The observed prevalence of health-related issues among students, such as foodborne illnesses and malnutrition, which negatively affect their attendance, concentration and academic performance, further highlighted this research gap. The researchers were prompted to embark on this study by the critical need to address these health challenges and investigate the role of principals' supervision in mitigating them. By investigating the relationship between principals' supervisory practices and students' health outcomes, this study aimed to provide understanding into how effective supervision of school canteens can enhance students' well-being and academic success in public secondary schools in Anambra State.

Statement of the Problem

Students' health is a critical determinant of their academic success, as proper nutrition and health practices foster physical growth, cognitive development and active classroom participation. However, public secondary schools in Anambra State face persistent challenges such as malnutrition and diet-related illnesses, which hinder students' concentration, attendance and overall academic performance. School canteens, a primary source of daily nutrition for many students, are pivotal in addressing these challenges by providing safe, hygienic and nutritious meals.

Principals, as key administrators, are tasked with supervising school canteens to ensure adherence to health and safety standards, including monitoring food quality, enforcing hygiene practices, evaluating vendor performance and planning nutritious menus. Despite the significance of these supervisory roles, many principals encounter challenges such as inadequate training, resource constraints and inconsistent enforcement of standards, which compromise the quality of canteen services and consequently, students' health outcomes.

Although prior studies have underscored the importance of nutrition and general school health services, limited research has examined the specific relationship between principals' supervision of school canteens and students' health outcomes, particularly in Anambra State. This gap, coupled with observations of rising cases of malnutrition and foodborne illnesses among students, prompted the researchers to investigate how principals' supervisory practices relate with students' health and well-being, aiming to provide actionable understanding to improve canteen management and enhance students' welfare in the region.

Purpose of the Study

The main purpose of this study was to examine the relationship between

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principals' supervision of school canteens and students' health outcomes in public secondary schools in Anambra State. Specifically, the study sought to:

1. Examine the relationship between principals' monitoring of food quality in school canteens and students' health outcomes in public secondary schools in Anambra State.
2. Investigate the correlation between principals' enforcement of hygiene standards in school canteens and students' health outcomes in public secondary schools in Anambra State.
3. Determine the relationship between principals' evaluation of vendor performance in school canteens and students' health outcomes in public secondary schools in Anambra State.
4. Assess the correlation between principals' involvement in nutritional planning and students' health outcomes in public secondary schools in Anambra State.

Scope of the Study

The geographical scope of this study encompassed all the 268 public secondary schools in Anambra State. The content scope specifically focused on examining the relationship between principals' supervision of school canteens variables, including monitoring of food quality, enforcement of hygiene standards, evaluation of vendor performance and involvement in nutritional planning and students' health outcomes in public secondary schools in Anambra State.

Research Questions

The following research questions guided the study:

1. What is the relationship between principals' monitoring of food quality in school canteens and students' health outcomes in public secondary schools in Anambra State?
2. What is the relationship between principals' enforcement of hygiene standards in school canteens and students' health outcomes in public secondary schools in Anambra State?
3. What is the relationship between principals' evaluation of vendor performance in school canteens and students' health outcomes in public secondary schools in Anambra State?
4. What is the relationship between principals' involvement in nutritional planning and students' health outcomes in public secondary schools in Anambra State?

Hypotheses

The following Null Hypotheses were tested at 0.05 level of significance:

1. There is no significant relationship between principals' monitoring of food quality in school canteens and students' health outcomes in public secondary schools in Anambra State.
2. There is no significant relationship between principals' enforcement of hygiene standards in school canteens and students' health outcomes in public secondary schools in Anambra State.

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Literature Review

Principals' Supervision of School Canteens

School canteens are vital components of the school environment, serving as essential sources of daily nutrition for students. The supervision of these canteens by school principals is a critical administrative function that ensures students receive safe, hygienic and nutritious meals, directly influencing their health and academic performance. Principals' supervision of school canteens encompasses a range of managerial activities aimed at maintaining operational standards and aligning canteen services with school health policies. Adebayo (2022) affirmed that this supervision involves monitoring, regulating and guiding the activities of canteen staff and vendors to promote student welfare. Nwankwo (2023) further described it as a multidimensional process comprising planning, monitoring and evaluating canteen operations to ensure compliance with institutional goals and community health expectations. Ikegbusi and Iheanacho (2016) noted that inadequate supervision of ancillary school services, such as canteens, can undermine the effectiveness of school administration and jeopardize students' well-being. Effective supervision can be understood through specific indices, including the monitoring of food quality and safety, enforcement of hygiene standards, evaluation of vendor performance, and engagement in nutritional planning. These components form the foundation for ensuring that school canteens contribute positively to students' health outcomes and support a conducive learning environment.

Monitoring food quality and safety is a critical responsibility of principals in their supervisory role. It involves ensuring that the food served in school canteens is free from contaminants, prepared under hygienic conditions, and meets nutritional standards. Ojo and Adeleke (2022) emphasized that principals must conduct regular inspections to verify the quality of ingredients, storage methods, and preparation practices to prevent foodborne illnesses. They noted that poor food quality could result in health problems such as food poisoning, which negatively impacts students' attendance and academic performance.

Additionally, monitoring food safety includes assessing the compliance of canteen staff with food handling regulations. For instance, Onyeka et al. (2023) found that schools with robust food safety monitoring systems experienced fewer cases of health-related absences among students. They concluded that regular monitoring and swift corrective actions are essential to maintaining high food safety standards in school canteens.

Enforcing hygiene standards is a fundamental aspect of food service management and principals play a vital role in ensuring that canteen operations adhere to strict hygiene protocols. These standards include practices such as proper hand washing, regular cleaning of cooking and serving areas, and maintaining clean and sanitized utensils and equipment. Adeyemi and Ogunleye (2022) explained that principals' enforcement of hygiene standards is essential for preventing the spread of diseases and fostering a healthy school environment. Principals are also responsible for training canteen staff on hygiene practices and ensuring compliance

with established protocols. Eze and Nduka (2023) highlighted that, principals who enforce stringent hygiene standards help reduce incidents of illnesses, thereby supporting students' physical well-being and academic engagement. This enforcement involves conducting regular hygiene audits and implementing corrective actions for non-compliance.

Evaluating vendor performance is an essential component of principals' supervision. It involves assessing the reliability, efficiency, and adherence of canteen vendors to contractual and regulatory requirements. Nwachukwu (2023) emphasized that principals must regularly evaluate vendors to ensure they consistently provide high-quality meals and snacks that meet the school's nutritional and safety standards. This process also includes monitoring vendors' responsiveness to feedback and their ability to adapt to changing needs. For example, Okoro et al. (2023) argued that consistent performance evaluation fosters accountability and encourages vendors to prioritize student welfare. Principals who actively participate in this process are better positioned to identify and address gaps in canteen service delivery, ensuring that students receive meals that positively impact their health.

Engaging in nutritional planning and menu design is essential for providing balanced meals in school canteens. Principals' involvement in this process ensures that the meals offered meet the dietary needs of students and support their physical and cognitive development. Chukwu and Ezenwa (2023) explained that nutritional planning involves collaborating with nutritionists, health professionals, and canteen staff to develop menus that comply with national dietary guidelines. Principals' participation in nutritional planning includes overseeing portion sizes, ensuring the inclusion of essential food groups, and addressing specific nutritional needs based on the student population. Obiora and Okeke (2025) emphasized that well-planned menus contribute to better health outcomes, which are directly connected to improved academic performance. They also highlighted the importance of periodic menu reviews to account for the seasonal availability of ingredients and student preferences.

In conclusion, principals' supervision of school canteens is a multifaceted responsibility that plays a critical role in promoting students' health and academic success. By effectively monitoring food quality and safety, enforcing hygiene standards, evaluating vendor performance and engaging in nutritional planning, principals ensure that school canteens provide meals that support students' overall well-being. The indices discussed provided a comprehensive framework for understanding how principals' supervisory practices can positively correlate with students' health outcomes in public secondary schools. As schools continue to face challenges such as resource constraints and varying health regulations, the role of principals in supervising school canteens remains indispensable for fostering a healthy and conducive learning environment.

Students' Health Outcomes

Students' health outcomes refer to the physical, mental and emotional well-being of students, which significantly impact their academic performance and overall development. Health outcomes are

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shaped by various factors, including nutrition, hygiene practices, physical activity and access to healthcare services. World Health Organization (WHO, 2020), explained that health outcomes encompass measurable indicators such as nutritional status, prevalence of illnesses and overall wellness levels that directly influence students' ability to attend school regularly, concentrate and succeed academically. Okoye (2022) defined students' health outcomes as the observable and measurable effects of health-related practices, such as dietary habits and physical activity, on students' educational experiences and long-term well-being. The author emphasized that poor health outcomes, such as malnutrition or chronic illnesses, often result in absenteeism, reduced cognitive function and lower academic achievement.

The health of students is crucial not only for academic success but also for their social and emotional development, which plays a vital role in their overall growth. Adegbite and Ojo (2021) emphasized that the well-being of students extends beyond their academic achievements, influencing their holistic development. Additionally, research conducted by Eze and Nwankwo (2023) illustrated a significant correlation between nutritional adequacy and students' cognitive performance. The study demonstrated that students who receive balanced and nutritious meals tend to perform better in standardized tests and exhibit higher levels of concentration and active participation in classroom activities. Poor health outcomes, such as stunted growth or frequent illnesses, can lead to disengagement and increased dropout rates, further highlighting the importance of ensuring students' overall well-being through proper nutrition.

Key determinants of students' health outcomes include nutrition, hygiene and school health services. Nutrition is a major determinant because it influences physical growth, brain development and immune function. For example, Adeoye and Akande (2022) asserted that malnutrition negatively affects students' attention span and academic performance, while access to nutritious meals improves learning outcomes. Hygiene practices, including proper hand washing and sanitation, reduce the prevalence of infectious diseases and promote a healthy learning environment (WHO, 2021). Schools that emphasize hygiene education and maintain clean facilities often report fewer health-related disruptions to learning activities.

Additionally, access to school health services plays a vital role in enhancing students' health outcomes. Services such as routine health screenings, counselling and timely first aid enable early identification and management of health issues, helping students to stay actively engaged in learning. Structured health programs within schools have been linked to reduced absenteeism and improved student retention (Akulue, 2025). Ikegbusi (2018) affirmed that educational environments that support students' well-being, through both academic and health interventions create conditions that promote sustained attendance and improved academic performance, reinforcing the necessity of embedding health services into school management practices.

In conclusion, students' health outcomes are fundamental to their academic success and overall well-being. Poor health outcomes can create barriers to effective learning, while improved health

positively impacts cognitive abilities, school attendance and participation. Ensuring students' health involves addressing key determinants such as nutrition, hygiene and access to health services. These efforts are essential for promoting an environment conducive for academic excellence and long-term personal development.

Theoretical Framework

Social Cognitive Theory (SCT) by Albert Bandura (1986)

This study is anchored in Albert Bandura's Social Cognitive Theory (SCT), which emphasized the interplay between cognitive, behavioural and environmental factors in shaping human behaviour. Bandura explained that individuals learn and develop behaviours not only through direct experiences but also by observing others and interacting with their environment. SCT identified three core components that influence behaviour: self-efficacy, observational learning and reinforcements. These components are highly relevant for understanding the relationship between principals' supervision of school canteens and students' health outcomes.

In the context of this present study, self-efficacy refers to students' confidence in their ability to make healthy choices regarding their diet, influenced by the environment set by school canteens and the role of principals in managing these environments. When principals supervise the canteens to ensure that healthy food options are available and promote healthy eating, it enhances students' belief in their ability to make healthy dietary decisions, which in turn contribute to improved health outcomes. This aligned with Bandura's concept that individuals who perceive themselves as capable of making healthy decisions are more likely to engage in health-promoting behaviours.

Observational learning, another central principle of SCT, suggested that students observe their peers, teachers and principals in relation to health behaviours and nutrition practices. The effective supervision by principals in school canteens, alongside their own dietary practices and promotion of health messages, serves as a model for students to observe and replicate. When principals promote healthy food choices and lead by example, students are more likely to adopt similar behaviours. This observational learning process is crucial in understanding how principals' actions can influence students' health-related choices and behaviours.

Reinforcements also play a significant role in shaping students' health behaviours. Positive reinforcement in the form of recognition for healthy eating habits or increased awareness through school programs can encourage students to maintain health-promoting behaviours. Conversely, negative reinforcement, such as discouraging unhealthy eating habits, may deter students from engaging in poor dietary choices. These forms of reinforcement influence students' motivation and behaviour, making the environment created by principals a key factor in shaping health outcomes.

The application of SCT in this study helped to highlight how principals' supervision of school canteens and the environmental factors they control can positively relate with students' health outcomes. Bandura's theory suggested that a well-supervised canteen environment,

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where healthy food choices are supported by the principal, is likely to influence students' attitudes and behaviours regarding nutrition. Moreover, the theory highlighted the importance of creating an environment where healthy behaviours are encouraged, modelled and reinforced, which can lead to better health outcomes for students.

This theoretical framework guided the exploration of the relationship between principals' supervision of school canteens and students' health outcomes. By applying Social Cognitive Theory, this study aimed to investigate how principals' leadership in managing the school canteen environment relates with students' dietary behaviours and health, ultimately contributing to their overall health outcomes in public secondary schools in Anambra State.

Methodology

This study adopted a correlational research design to examine the relationship between principals' supervision of school canteens and students' health outcomes in public secondary schools in Anambra State. The correlational design was considered appropriate because it enables the identification and analysis of the strength and direction of the relationship between these two variables, without manipulating them, as explained by Ikegbusi (2022:269). This design provided an opportunity to investigate the association between the supervision of school canteens by principals and the health outcomes of students in selected public secondary schools.

The population for this study comprised 268 public secondary school principals from 268 public secondary schools across the six education zones in Anambra State: Awka, Aguata, Ogidi, Onitsha, Nnewi, and Otuocha. To ensure a representative sample, two education zones, Awka and Ogidi, were purposively selected for the study. These zones were chosen due to their accessibility, as well as the diversity in the schools' demographic and geographical characteristics, which are considered representative of the larger population in Anambra State. Awka Zone and Ogidi Zone have 64 and 40 public secondary schools respectively.

In this study, all the principals from the selected zones were included in the sample using a census sampling technique, meaning the entire population of 64 principals from Awka Zone and 40 principals from Ogidi Zone were sampled. This technique was chosen according to Obi et al (2022: 92) to ensure complete representation of all principals in the two zones, allowing for a correlational analysis to examine the relationship between principals' supervision of school canteens and students' health outcomes in the selected education zones.

Two main instruments were used for data collection. The first instrument was the Principals' Supervision of School Canteen Questionnaire (PSSCQ), designed to assess principals' supervision of school canteens. The PSSCQ consisted of 40 items categorized into four sub-variables: principals' monitoring of food quality in school canteens, principals' enforcement of hygiene standards in school canteens, principals' evaluation of vendor performance in school canteens and principals' involvement in nutritional planning. Each sub-variable was measured with 10 items, and responses were rated on a four-point Likert scale: Strongly Agree

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(4), Agree (3), Disagree (2), and Strongly Disagree (1).

The second instrument was the Students' Health Outcomes Questionnaire (SHOQ), developed to assess the relationship between students' health outcomes, their eating habits, and the impact of school canteen supervision. The SHOQ consisted of 20 items, rated on a four-point Likert scale: Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). This instrument was used to examine how the supervision of school canteens by principals correlates with students' health outcomes. Both instruments were reviewed by experts from Chukwuemeka Odumegwu Ojukwu University, Igbariam to ensure content, clarity and relevance. Their feedback was incorporated to finalize the instruments.

To determine the reliability of the instruments, a trial test was conducted in the Nnewi Education Zone, which shares characteristics similar to those of the selected zones. 20 principals from public secondary schools in Nnewi were purposively selected for the trial test. Data from the trial test were analyzed using Cronbach Alpha to assess the internal consistency of the instruments. The reliability coefficients for the PSSCQ sub-variables were 0.81 for principals' monitoring of food quality in school canteens, 0.78 for principals' enforcement of hygiene standards in school canteens, 0.82 for principals' evaluation of vendor performance in school canteens and 0.80 for principals' involvement in nutritional planning. The reliability coefficient for the SHOQ was 0.86. The overall reliability coefficients for the PSSCQ and SHOQ were 0.83 and 0.85, respectively, indicating strong reliability for the instruments.

The questionnaires were administered to all the 64 principals in Awka and 40 principals in Ogidi Zones by the researcher and three research assistants in their respective schools. The research team waited for the principals to complete the questionnaires before retrieving them. Four questionnaires were invalidated due to incomplete or inconsistent responses. A total of 100 valid questionnaires were collected and used for the study.

The collected data were analyzed using the Pearson Product-Moment Correlation Coefficient (PPMCC) to answer the research questions and test of significance of Pearson analysis to test the null hypotheses at 0.05 level of significance. The rationale for the research questions was to explore the relationship between principals' supervision of school canteens and students' health outcomes, focusing on how different aspects of supervision (e.g., monitoring food quality, enforcing hygiene standards, evaluating vendor performance, and involvement in nutritional planning) correlate with students' health outcomes. The null hypotheses were tested to determine if there was no significant relationship between these variables. The null hypotheses were either rejected or accepted based on the results of the statistical tests. If the p-value was less than 0.05, the null hypothesis was rejected, indicating a significant relationship between the variables. Conversely, if the p-value was greater than 0.05, the null hypothesis was accepted, suggesting no significant relationship between the variables. The analysis provided a detailed understanding of the relationship between principals' supervision of school canteens and

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students' health outcomes, contributing to the study's objectives.

Results

Table 1: Pearson r on Principals' Monitoring of Food Quality and Students' Health Outcomes in Public Secondary Schools in Anambra State

Variables	N	Principals' Monitoring of Food Quality	Students' Health Outcomes	Remarks
Principals' Monitoring of Food Quality	100	1.00	0.824	
Students' Health Outcomes	100	0.824	1.00	High

The results in Table 2 revealed a Pearson correlation coefficient of 0.824 between principals' monitoring of food quality and students' health outcomes. This indicated a very strong positive relationship between the two variables. The positive value suggested that as principals' monitoring of food quality improves, there is a corresponding significant enhancement in students' health outcomes. The value 1.00 along the diagonal represented the perfect correlation of each variable with itself, which is standard in a correlation matrix. The strong correlation (r = 0.824) emphasized the critical role of effective monitoring by principals in ensuring the quality and safety of food provided in school canteens. The findings demonstrated that principals who actively supervise food services and ensure compliance with healthy food policies significantly contribute to improved students' health outcomes, such as reduced incidences of foodborne illnesses, better nutritional well-being, and overall physical readiness for learning. This highlighted the necessity for school leadership to prioritize robust monitoring of food quality in school canteens, thereby fostering a healthier school environment and promoting the holistic development of students.

Table 2: Pearson r on Principals' Enforcement of Hygiene Standards and Students' Health Outcomes in Public Secondary Schools in Anambra State

Variables	N	Principals' Enforcement of Hygiene Standards	Students' Health Outcomes	Remarks
Enforcement of Hygiene Standards	100	1.00	0.842	
Students' Health Outcomes	100	0.842	1.00	High

The results in Table 2 revealed a Pearson correlation coefficient of 0.842 between principals' enforcement of hygiene standards and students' health outcomes. This indicated a very strong positive relationship between the two variables. The positive value suggested that as principals' enforcement of hygiene standards improves, there is a corresponding significant enhancement in

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students' health outcomes. The value 1.00 along the diagonal represented the perfect correlation of each variable with itself, which is expected in a correlation matrix. The strong correlation (r = 0.842) emphasized the importance of strict adherence to hygiene standards in school environments. Principals who effectively enforce hygiene policies, such as regular cleaning of facilities, proper waste management and ensuring food handlers adhere to sanitation protocols, contribute significantly to improved student health outcomes, including reduced illness rates and enhanced overall well-being. These findings highlighted the pivotal role of principals in maintaining a hygienic school environment, which is essential for fostering a healthy and productive learning atmosphere. Such efforts ensure students' readiness to participate actively in academic and extracurricular activities, promoting their holistic development.

Table 3: Pearson r on Principals' Evaluation of Vendor Performance and Students' Health Outcomes in Public Secondary Schools in Anambra State

Variables	N	Principals' Evaluation of Vendor Performance	Students' Health Outcomes	Remarks
Principals' Evaluation of Vendor Performance	100	1.00	0.798	High
Students' Health Outcomes	100	0.798	1.00	

The results in Table 3 revealed a Pearson correlation coefficient of 0.798 between principals' evaluation of vendor performance and students' health outcomes. This indicated a strong positive relationship between the two variables. The positive value suggested that as principals' evaluation of vendor performance improves, there is a corresponding significant enhancement in students' health outcomes. The value 1.00 along the diagonal represented the perfect correlation of each variable with itself, which is standard in a correlation matrix. The strong correlation (r = 0.798) highlighted the critical role of principals in assessing and ensuring the quality of services provided by canteen vendors. Principals, who routinely evaluate vendor performance, including adherence to hygiene protocols, quality of food and snacks served and compliance with health standards, significantly contribute to improved student health outcomes, such as reduced foodborne illnesses and better nutritional well-being. These findings stressed the importance of consistent vendor evaluations as part of school management practices. By prioritizing the quality of vendor performance, principals can create a healthier school environment, enhancing students' physical well-being and their readiness for academic and extracurricular engagements.

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Table 4: Pearson r on Principals' Involvement in Nutritional Planning and Students' Health Outcomes in Public Secondary Schools in Anambra State

Variables	N	Involvement in Nutritional Planning	Students' Health Outcomes	Remarks
Principals' Involvement in Nutritional Planning	100	1.00	0.815	High
Students' Health Outcomes	100	0.815	1.00	

The results in Table 4 revealed a Pearson correlation coefficient of 0.815 between principals' involvement in nutritional planning and students' health outcomes. This indicated a very strong positive relationship between the two variables. The positive value suggested that as principals' involvement in nutritional planning improves, there is a corresponding significant enhancement in students' health outcomes. The value 1.00 along the diagonal represented the perfect correlation of each variable with itself, which is typical in a correlation matrix. The strong correlation (r = 0.815) emphasized the importance of principals actively participating in the nutritional planning process. When principals ensure the inclusion of balanced meals, adherence to dietary guidelines and the provision of nutrient-rich foods in school meal plans, students experience improved health outcomes, such as better physical well-being, reduced malnutrition and heightened immunity against illnesses. These findings emphasized the pivotal role of principals in overseeing nutritional planning to create a healthier school environment. Their involvement ensured that students' dietary needs are met, fostering better health, academic readiness and overall performance.

Test of Hypotheses

Table 5: Test of Significance of Pearson on the Relationship Between Principals' Monitoring of Food Quality and Students' Health Outcomes in Public Secondary Schools in Anambra State

Variables	R	R^2	Adjusted R^2	Std. Error of the Estimate	F-value	P-value	Remarks
Monitoring of Food Quality	0.834a	0.696	0.692	8.457	227.913	0.000b	Sig.

As shown in Table 5, the results of the test of significance of Pearson for the hypothesis revealed that the p-value (0.000) is less than 0.05. Thus, the null hypothesis was not upheld. This indicated a significant relationship between principals' monitoring of food quality and students' health outcomes in public secondary schools in Anambra State. Furthermore, the R square value of 0.696 signified that principals' monitoring of food quality accounted for 69.6% of the variation in students' health outcomes in the schools. This emphasized the critical role of principals in maintaining and enforcing food quality standards within school

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canteens, which directly influences students' health and well-being. The findings highlighted that effective monitoring practices, such as ensuring hygiene compliance, quality control of food supplies and regular inspection of food handlers, contribute significantly to reducing health risks and improving the nutritional status of students. This, in turn, fosters a healthier school environment, enhancing students' readiness for learning and overall development.

Table 6: Test of Significance of Pearson on the Relationship between Principals' Enforcement of Hygiene Standards in School Canteens and Students' Health Outcomes in Public Secondary Schools in Anambra State

Variable	R	R^2	Adjusted R^2	Std. Error of the Estimate	F-value	P-value	Remarks
Enforcement of Hygiene Standards	0.852a	0.726	0.723	8.203	312.154	0.000b	Sig

As shown in Table 6, the results of the test of significance of Pearson for the hypothesis revealed that the p-value (0.000) is less than 0.05. Thus, the null hypothesis was not upheld, while the alternative hypothesis was upheld. This indicated a significant relationship between principals' enforcement of hygiene standards in school canteens and students' health outcomes in public secondary schools in Anambra State. The R square value of 0.726 indicated that principals' enforcement of hygiene standards contributed 72.6% to the variance in students' health outcomes. This finding highlighted the critical importance of principals' active enforcement of hygiene protocols in school canteens, which included regular inspections, ensuring the cleanliness of food preparation areas and monitoring compliance with sanitation guidelines. These efforts significantly reduce health risks, prevent the spread of foodborne illnesses and promote better nutritional well-being among students. The results further emphasized that maintaining high hygiene standards in school canteens fosters a safer and healthier environment, which is essential for students' academic success and overall development.

Discussion of Findings

Principals' Monitoring of Food Quality in School Canteens and Students' Health Outcomes

The findings of this study revealed a strong positive relationship between principals' monitoring of food quality in school canteens and students' health outcomes in public secondary schools in Anambra State. Specifically, the results indicated that as principals increase their monitoring of food quality, there is a corresponding improvement in students' health outcomes. The Pearson correlation coefficient (r) of 0.824 demonstrated that the effective oversight of food quality by principals significantly contributed to better health and well-being among students.

These findings aligned with the work of Oluwole et al. (2023), who emphasized that regular monitoring and enforcement of food safety standards in

school canteens play a crucial role in preventing foodborne illnesses and improving the overall health of students. Similarly, Akinsola et al. (2022) found that principals, who ensure the provision of healthy, nutritious meals, contribute to the physical well-being of students, thereby enhancing their capacity to engage in academic and extracurricular activities. These studies further supported the importance of leadership in ensuring the quality of food provided to students. However, findings from Akinola et al. (2023) contradicted this view, suggesting that while food quality monitoring is essential, other factors such as socio-economic status, students' dietary habits, and home-based nutrition programs may play a more substantial role in students' health outcomes than monitoring alone. They argued that principals' influence is limited when broader environmental and socio-cultural factors are not addressed.

Principals' Enforcement of Hygiene Standards in School Canteens and Students' Health Outcomes

The findings of this study revealed a strong positive relationship between principals' enforcement of hygiene standards in school canteens and students' health outcomes in public secondary schools in Anambra State. Specifically, the results indicated that an increase in principals' enforcement of hygiene standards correlates with significant improvements in students' health outcomes. The Pearson correlation coefficient (r) of 0.812 suggested that principals' active oversight of hygiene practices in school canteens plays a crucial role in ensuring students' health and well-being.

These findings are consistent with the work of Olaleye and Yusuf (2024), who stressed that principals' commitment to enforcing hygiene standards in school canteens is essential for preventing foodborne illnesses and promoting better overall health among students. Furthermore, Eze et al. (2024) found that hygiene practices, such as regular sanitation of food preparation areas and monitoring food vendors, significantly reduce the risks of health issues like food poisoning, thereby improving students' health outcomes. These studies supported the notion that strong leadership in food safety is integral to fostering a healthy school environment. However, findings from Adeyemi and Omotayo (2024) provided a contrasting perspective. They argued that while hygiene standards are important, other factors such as the socio-economic status of students, cultural attitudes towards food safety and the availability of clean water and sanitation facilities may play an even more significant role in improving health outcomes. They suggested that principals' influence on hygiene standards may be limited without addressing these broader environmental and systemic factors.

Principals' Evaluation of Vendor Performance in School Canteens and Students' Health Outcomes

The findings indicated a significant positive relationship between principals' evaluation of vendor performance in school canteens and students' health outcomes in public secondary schools in Anambra State, suggesting that when principals regularly evaluate and ensure the performance of food vendors, students' health outcomes improve. The results demonstrated that principals' oversight and assessment of

vendor practices, including food quality, hygiene and safety, play a pivotal role in safeguarding students' health. These findings are consistent with recent studies by Akintoye et al. (2023), who noted that principals who actively evaluate the performance of school canteen vendors contribute to better food quality and safer eating environments for students. Their research highlighted that consistent monitoring leads to healthier food choices, reducing the risks of foodborne illnesses and promoting overall well-being. Similarly, Afolabi and Adebayo (2022) found that principals' involvement in vendor performance evaluations directly correlates with improvements in students' health outcomes. They suggested that this monitoring ensured that vendors adhere to established food safety standards, significantly reducing health risks such as food poisoning. However, contrary findings were observed in the work of Oladipo et al. (2023), who argued that while vendor performance evaluation is important, other factors such as limited school budgets for food safety training and insufficient students' education on healthy eating habits may hinder the full impact of vendor evaluations on health outcomes. They posited that a more holistic approach, addressing both educational and infrastructural barriers, is necessary for optimal health outcomes.

Principals' Involvement in Nutritional Planning and Students' Health Outcomes

The findings indicated a significant positive relationship between the two variables, suggesting that principals who actively engage in the nutritional planning process significantly contribute to improved health outcomes for students. This study found that when principals are involved in planning school meals and ensuring the provision of balanced and nutritious food, students' health outcomes, including physical well-being and academic performance, are enhanced. These findings are consistent with the work of Chukwuka (2023), who found that principals' active involvement in nutritional planning leads to better food choices and improved health outcomes for students. His research emphasized the importance of school leadership in guiding the implementation of nutritional programs, which foster healthier students and contribute to their academic success. Similarly, Ejiofor (2024) highlighted the role of school leadership in shaping nutritional policies and ensuring that students have access to healthier meals. He found that schools with strong leadership in nutritional planning reported fewer cases of student illness and better student engagement. However, contrary findings were presented by Olamide and Durojaiye (2023), who argued that principals' involvement in nutritional planning alone is not sufficient to ensure improved health outcomes. They posited that external factors such as government policies, community health resources and students' home environments play a significant role in students' health. Without addressing these broader factors, they argued that even effective nutritional planning within schools may have limited correlation with students' overall health outcomes.

Conclusion

This study provided valuable understanding into the relationship between principals' supervision of school canteens

and students' health outcomes in public secondary schools in Anambra State. The findings revealed a significant positive correlation between principals' supervision of school canteens and students' health outcomes. Specifically, active involvement in overseeing canteen operations, ensuring food safety and promoting healthy eating habits contributes significantly to improving students' overall health and well-being. The research emphasized the crucial role of school leadership in creating a supportive and healthy school environment, which positively relates with students' health outcomes, reduces the risk of diet-related health issues and enhances both physical and academic performance. Effective supervision by principals is essential for fostering a healthier school setting and supporting students' long-term success and well-being.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Principals should enhance their monitoring of food quality in school canteens by establishing a regular inspection schedule, ensuring that only safe and nutritious food is served. This would go a long way to improve students' health outcomes and reduce the risk of foodborne illnesses.
2. Principals should strengthen the enforcement of hygiene standards in canteens through routine checks and adherence to health regulations. This would go a long way to create a safer eating environment, minimizing health risks and promoting better overall student health.
3. Principals should implement a comprehensive evaluation system for vendor performance, including periodic assessments and feedback mechanisms. This would ensure that vendors maintain high standards of food preparation and service, directly contributing to students' well-being.
4. Principals should become more involved in nutritional planning by collaborating with nutritionists to ensure that meals meet students' dietary needs. This would promote healthy eating habits, improving students' health and enhancing their academic performance.

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