

**FOOD HYGIENE PRACTICES AMONG FOOD VENDORS AND STUDENTS OF
FEDERAL COLLEGE OF EDUCATION (TECHNICAL) ASABA IMPLICATIONS
FOR THE TRANSMISSION OF FOOD BORNE DISEASES**

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Abstract

This study examined food hygiene practices among food vendors and students of Federal College of Education (Technical), Asaba, implications for transmission of foodborne diseases. Two research questions guided the study. The research adopted a survey design. The total population for the study consisted of 103 respondents, comprising 98 students residing in the hostels and 5 food vendors operating within the campus business center.. A total of 55 respondents, comprising 50 students (25 male, 25 female) and 5 food vendors, were selected using simple random and purposive sampling techniques. Data was collected using a 20item self-structured questionnaire, validated for face and content by experts, and tested for reliability using Cronbach Alpha. Data were analyzed using mean statistics, with a four-point Likert scale where scores ≥ 2.5 indicated agreement. The findings revealed that students generally adhered to basic hygiene practices, including hand-washing, washing fruits and vegetables, and covering the mouth while coughing or sneezing, though they performed poorly in checking storage instructions on packaged foods. Food vendors demonstrated inconsistent hygiene practices, with poor environmental sanitation and improper food preparation methods contributing significantly to disease transmission. The study concluded that while students' practices minimally influence foodborne disease risks, vendors are the primary contributors to potential outbreaks. Recommendations included targeted hygiene training, monitoring, and regulatory enforcement for food vendors, alongside awareness programs for students to reinforce safe consumption practices.

Keywords: Federal College of Education, Food Borne Diseases, Food Hygiene, Food Vendors, Students.

Introduction

Food is any substance, whether processed, semi-processed, or raw, that is intended for human consumption and provides the nutrients required for growth, development, and survival (World Health Organization, 2023). It contains essential nutrients such as carbohydrates, proteins, fats, vitamins, and minerals that supply energy and support the normal functioning of the human body. Food plays a vital role in sustaining life and promoting health, enabling individuals to perform daily activities such as learning, working, and engaging in productive ventures. As the world's population continues to increase, the demand for food has also grown, leading to an expansion in food production, preparation, and distribution systems (Ohiokpehai, 2024). While food is indispensable for human survival, its benefits can be undermined when it becomes contaminated and unsafe for consumption.

Unsafe or contaminated food is a major source of food-borne diseases, which remain a significant public health concern worldwide. Food-borne diseases are illnesses that result from the consumption of food contaminated with harmful microorganisms, parasites, viruses, chemicals, or toxins. According to Okojie and Isah (2022), common food-borne diseases include cholera, dysentery, typhoid fever, and diarrhoea, all of which can negatively affect the health and well-being of individuals. Symptoms such as nausea, vomiting, abdominal pain, fever, and dehydration are often associated with these illnesses. The increasing prevalence of food-borne diseases has attracted considerable attention from health professionals and public health authorities because of their impact on human health, productivity, and quality of life. The occurrence of these diseases is closely linked to how food is handled, prepared, stored, and consumed.

The transmission of food-borne diseases occurs when contaminated food or beverages are consumed by individuals. Food contamination may occur at any point along the food chain, including production, processing, transportation, storage, preparation, and serving. Poor personal hygiene, inadequate environmental sanitation, improper food handling practices, contaminated water, and cross-contamination between raw and cooked foods are among the major factors responsible for the transmission of food-borne diseases. Since food is consumed daily by people in homes, workplaces, and educational institutions, maintaining proper food hygiene practices is essential for preventing disease outbreaks. This concern becomes particularly important in tertiary educational institutions where large numbers of students depend on prepared meals for their daily nutritional needs.

Tertiary educational institutions such as Federal College of Education (Technical), Asaba provide hostel accommodation for a large number of students who live and study within the campus environment. Student hostels often accommodate many occupants and generate substantial amounts of waste, which may create sanitation challenges if not properly managed. In addition, academic activities and limited cooking facilities often make students rely heavily on ready-to-eat meals purchased from food vendors operating within and around the campus. The regular interaction between students and food vendors creates a food consumption environment where poor hygiene practices may easily contribute to food contamination and the spread of food-borne diseases. Consequently, the activities of food vendors become an important factor in ensuring food safety within the institution.

Food vendors play a vital role in meeting the food needs of students and staff by preparing and selling affordable and convenient meals. They operate through kiosks, canteens, food stalls, and other food outlets located within and around educational institutions. According to Eze et al. (2023), food vendors are individuals or small-scale food service operators who prepare, cook, and sell food directly to consumers. Although their services contribute significantly to food accessibility and convenience, concerns have been raised regarding the hygienic conditions under which some food vendors operate. In some cases, food may be exposed to contaminants through poor waste disposal practices, inadequate handwashing, improper food storage, unclean utensils, and unsanitary preparation environments. These conditions increase the risk of food contamination and make the adoption of proper food hygiene practices a necessity for both vendors and consumers.

Food hygiene refers to the set of practices aimed at ensuring the cleanliness and safety of food throughout its preparation, handling, storage, and consumption. According to Nwana (2024), hygiene involves maintaining personal and environmental cleanliness in order to prevent disease and promote health, while Liu (2023) describes it as a scientific approach to maintaining cleanliness for healthy living. Among food vendors and students, food hygiene practices include proper handwashing, safe food storage, regular cleaning of utensils and food preparation surfaces, proper waste disposal, and protection of food from contamination. However, inadequate food safety awareness among students, poor sanitation conditions within hostels, and improper food handling practices by some vendors may increase the likelihood of food-borne disease transmission within the institution (Adepoju & Oladimeji, 2023). Since both students and food vendors play important roles in the food consumption chain on campus, their hygiene

practices have significant implications for food safety and public health. It is therefore necessary to examine the food hygiene practices among food vendors and students of Federal College of Education (Technical), Asaba, and determine their implications for the transmission of food-borne diseases.

Concept of Food

Food is a fundamental human necessity and occupies a central position in human survival and well-being. In Maslow's Hierarchy of Needs, food is placed among the most essential physiological requirements necessary for sustaining life. Food is generally defined as any substance consumed to provide nutritional support to the body. It is commonly derived from plant or animal sources and contains essential nutrients such as carbohydrates, proteins, fats, vitamins, and minerals that are required for energy production, growth, and maintenance of body functions (Sudershan, 2023). Food is ingested by organisms and assimilated by body cells to support metabolic processes and maintain life. It can also be described as any article manufactured, sold, or represented for human consumption as food or drink, including items used in the composition, preparation, or preservation of such products. This definition also extends to confectioneries, chewing substances, and their related ingredients used in human diets (Agba, 2023).

Agba (2023) further emphasized that several factors should be considered when procuring food for consumption. These include the smell of the food, its freshness, the nature of its composition, the environmental conditions under which it is prepared, and the personal cleanliness of the food provider. These considerations highlight the importance of hygiene in food procurement, preparation, and consumption in order to ensure healthy living and protect individuals from food-related illnesses. Foodborne diseases, according to Vorvick (2023), are illnesses caused by bacteria, viruses, parasites, or toxins that enter the body through contaminated food, often occurring after meals consumed at picnics, restaurants, canteens, or large social gatherings. Common examples include botulism, infections caused by *Clostridium botulinum*, *Staphylococcus aureus*, and *Salmonella*. These microorganisms may contaminate food through several pathways such as contaminated water, improper handling of meat and poultry, contact with intestinal bacteria during processing, or the use of unclean cooking utensils and preparation tools. Longree (2022) noted that food may contain bacteria before entering the kitchen, or contamination may occur during preparation due to improper handling. Consequently, the major sources of foodborne diseases include food handlers, the food

preparation environment, and the food itself. Personnel involved in food preparation, particularly food handlers and vendors, have frequently been associated with the transmission of diseases such as staphylococcus infections, salmonellosis, and cholera. Therefore, it is essential that individuals involved in food preparation and vending possess adequate knowledge of food hygiene practices to prevent the spread of foodborne diseases (Nwankwo & Okeke, 2022).

Concept of Hygiene

Hygiene refers to the practices and conditions necessary to maintain health and prevent the spread of diseases. According to Nwana (2024), hygiene involves maintaining personal cleanliness and keeping the surrounding environment clean in order to prevent illness and disease outbreaks. In the context of this study, hygiene refers to all deliberate efforts directed at maintaining a clean and safe environment to reduce the occurrence of diseases and other health hazards. Kubik (2023) explained that precautions against foodborne diseases can be grouped into three major categories: personal hygiene, environmental hygiene, and proper food preparation and vending practices. Personal hygiene in food preparation is particularly important because it helps prevent the spread of food poisoning bacteria from the body of food handlers to the food being prepared. For this reason, individuals involved in food preparation and vending are expected to protect food from contamination caused by coughing or sneezing by turning away from food and covering their mouths properly in order to prevent cross contamination.

Furthermore, proper hygiene practices such as regular handwashing play a crucial role in preventing food contamination. Winchell (2023) recommended that washing hands with clean water and soap is an effective measure for reducing contamination risks. He emphasized that food service operators and students should have access to handwashing facilities supplied with soap and disposable towels to encourage proper hygiene. Food handlers are expected to wash their hands thoroughly with warm water and soap for at least 20 seconds, rinse with clean water, and dry with disposable towels before disposing of them properly. Handwashing is especially important during food preparation, after using the toilet, and after handling raw food items (Eze, et. al., 2023). In addition, environmental hygiene is another critical aspect of food safety. Sodha and Griffin (2024) described environmental hygiene as the science of maintaining healthy surroundings in order to prevent diseases and preserve public health. In relation to food hygiene, Adeoye (2024) explained that environmental hygiene includes proper food preservation, storage, and preparation, as well as maintaining cleanliness within food preparation areas, equipment, utensils, and the surrounding premises to ensure safe food handling practices.

Concept of Food Borne Diseases

Food borne diseases are any disease of an infectious or toxic nature caused by consumption of food (Longree, 2022). Food borne diseases are as a result of ingestion of food stuffs infected with microorganism or chemicals. The contamination of food may occur at any stage in the process from production to consumption. According to Nwana (2024), food borne diseases (also referred to as food borne illness or food poisoning) is any illness that results from the consumption of contaminated food, pathogenic bacteria, viruses or parasites that contaminate food. The economic costs associated with food borne diseases can be severe on people, food companies and country reputation. Food borne disease globally is still not under economic losses (World Health Organization (WHO), 2023). The causes are unhygienic practices in food production, harvesting and preparation.

According to Liu (2023) foodborne disease is an inflammation of the stomach and bowels. The diseases can happen when you eat or drink something that is contaminated by a bacteria, virus or parasite. Often the inflammation leads to diarrhea, nausea, vomiting abdominal pain, abdominal cramps and sometimes fever. A food borne disease can last between one and three days. Liu stated that many foodborne diseases occur at people's homes, simply due to poor hygiene. It is as easy as this: preparing food without hand washing after visiting the toilet. Cross contamination is also a risk, for instance if raw meat and lettuce are both chopped on the same cutting board. Even using the same knife to chop both could cause contamination by food borne pathogens. Eating meat or fish that is not cooked all the way through, or eating raw shell fish, there is risk of food borne infections.

Statement of the Problem

Institutions of higher learning have become major centers for food vending activities due to the high demand for affordable and convenient meals among students. However, many of these food vendors operate in environments that fall below acceptable hygiene standards. Food is often prepared or displayed in open spaces exposed to dust, flies, and other contaminants, while utensils and cooking surfaces may not be properly cleaned. In addition, access to safe water and proper waste disposal systems is often limited. The situation is further worsened by the behaviour of many students who prioritize convenience and low cost options over food safety, frequently patronizing vendors without considering the hygienic conditions under which the food is prepared and sold. At the Federal College of Education (Technical), Asaba, the increasing presence of food vendors within and around the campus has raised serious concerns

about the safety of food consumed by students. Despite the potential health risks associated with poor food hygiene practices, there is limited documented evidence regarding the level of hygiene maintained by food vendors and the awareness of students about food safety practices. This lack of reliable information makes it difficult to assess the extent to which poor food hygiene practices may contribute to the transmission of foodborne diseases within the institution. Therefore, there is a pressing need to examine the food hygiene practices of vendors and students in the college environment in order to understand the potential health implications and provide evidence for effective interventions.

Purpose of the Study

The main purpose of the study was to examine food hygiene practices among food vendors and students of Federal College of Education (Technical) Asaba and implications for transmission of food borne diseases. Specifically, the study sought to:

1. determine the food hygiene practices of students and food vendors in Federal College of Education (Technical), Asaba.
2. examine how food vendors and students' hygiene practices facilitate the transmission of food borne diseases in Federal College of Education (Technical) Asaba

Research Questions

The following research question guided the study

1. What are the food hygiene practices of students and food vendors in Federal College of Education (Technical), Asaba?
2. In what ways do students and food vendors hygiene practices facilitate transmission of food borne diseases?

Methodology

The study adopted a survey research design to examine food hygiene practices among food vendors and students of Federal College of Education (Technical), Asaba, and their implications for the transmission of foodborne diseases, as it allowed for the systematic collection of respondents' opinions on the subject. The research was carried out within the college, situated in Oshimili South Local Government Area of Delta State, focusing on food service environments such as campus restaurants, markets, and food vendor outlets that cater to students. The total population for the study consisted of 103 respondents, comprising 98 students residing in the hostels and 5 food vendors operating within the campus business center. From this population, a sample of 55 respondents was selected, including 50 students (25 male

and 25 female) randomly drawn from the male and female hostels, and five food vendors purposively selected to ensure representation of both food consumers and providers. Data was collected using a self-structured questionnaire titled “*Food Hygiene Practices and Transmission of Foodborne Diseases Questionnaire (FHPTEBDQ)*”, divided into Section A which elicited demographic data and Section B with 15 items assessing knowledge, attitudes, and practices related to food hygiene on a four-point modified Likert scale (SA, A, D, SD). The instrument was validated for face and content validity by the researchers’ supervisor and two experts from the Departments of Curriculum Studies and Home Economics Education, whose recommendations were incorporated. Questionnaires were administered directly by the researcher to ensure comprehension, and all 55 were retrieved, yielding a complete response rate. For analysis, mean standard deviation statistics were used, with responses organized into tables.

Results

Data Analysis for Students

Research Question 1: What are the food hygiene practices of students and food vendors in Federal College of Education (Technical), Asaba?

Table 1: Mean Score and Standard Derivation Responses on Food Hygiene Practices of Students

S/N	STATEMENT	SA	A	D	SD	\bar{X}	SD	DECISION
1	Most students do wash their hands before and after cooking	35	15	3	2	3.82	0.49	Agree
2	It is a practice among students to consume food left at room temperature for long	40	7	2	1	3.72	0.49	Agree
3	Most students are conscious of covering their mouth when they cough or sneeze while cooking	12	30	5	3	3.02	0.45	Agree
4	It is a practice among students to wash fruits and vegetables before eating	15	42	6	1	3.98	1.91	Agree
5	Most students are careful to read the conditions of use and storage of packaged food	1	6	8	35	1.46	0.44	Disagree
Grand Mean						3.2		Agree

Source: Researcher’s field survey, 2026.

Result from table 1 shows that item 1-4 were rated with mean scores of 3.82, 3.72, 3.02 and 3.98 respectively indicated agree with food hygiene practices of students while item 5 with mean score of 1.46 indicated disagree with food hygiene practices of students. A grand mean score of 3.2 supported it.

Research Question 2: In what ways do students and food vendors hygiene practices facilitate transmission of food borne diseases?

Table 2: Mean Score and Standard Derivation Responses on Food Hygiene Practices of Students in FCE (T) Asaba.

S/N	STATEMENT	SA	A	D	SD	\bar{X}	SD	DECISION
6	The practice of imbalanced nutritious diet among students causes transmission food borne diseases	1	3	37	7	1.88	0.36	Disagree
7.	The use of unhealthy spices in meal preparations by students facilitates transmission of food borne disease	42	6	1	1	3.8	0.38	Agree
8.	Inability of students to prepare meals using healthy cooking items facilitates the transmission of food borne diseases.	37	10	2	1	0.22	0.72	Disagree
9.	Lack of nutritional knowledge among students facilitates transmission of food borne diseases	5	40	3	2	2.96	0.89	Agree
10.	Preparations of meals in a very dirty environment using polluted water facilitate transmission of food borne diseases.	45	3			1.88	0.58	Disagree
Grand Mean						2.15		Disagree

Source: Researcher's field survey, 2026.

Result from table 2 above shows that items 6, 8 and 10 were rated below the mean decision rule of 2.50 with mean scores of 1.88, 0.22 and 1.88 respectively indicated disagree with food hygiene practices of students in FCE (T) Asaba while items 12 and 14 were rated with mean scores of 3.8 and 2.96 respectively indicated agree with food hygiene practices of students in FCE (T) Asaba.

Data Analysis for Food Vendors

Research Question 1: What are the food hygiene practices of students and food vendors in Federal College of Education (Technical), Asaba?

Table 3: Mean and Standard Deviation Response Scores on Food Hygiene Practices of Food Vendor

S/N	STATEMENT	SA	A	D	SD	X	SD	DECISION
11.	Most food vendor do wash their hands before and after cooking	-	5	-	-	3.00	1.22	Agree
12.	It is a practice among food vendor to consume food left at room temperature for long	-	5	-	-	3.00	1.22	Agree
13.	Most food vendor are conscious of covering their mouth when they cough or sneeze while cooking	-	4	-	1	2.40	1.12	Disagree
14.	It is a practice among food vendor to wash fruits and vegetables before eating	-	4	-	1	2.40	1.12	Disagree
15.	Most food vendor are careful to read the conditions of use and storage of packaged food	-	-	5	-	2.00	0.78	Disagree
Grand Mean						2.56		Agree

Source: Researcher's field survey, 2026.

Result from table 3 shows that item 11 and 12 were rated with mean scores of 3.00 and 3.00 respectively which indicated agreement with food hygiene practices of food vendors in FCE (T) Asaba while item 13 to 15 were rated with mean scores of 2.4, 2.40 and 2.0 respectively which indicated disagreement with food hygiene practices of food vendor in FCE (T) Asaba. A grand mean score of 256 support food hygiene practices of food vendor in FCE (T) Asaba.

Research Question 2: In what ways do students and food vendors hygiene practices facilitate transmission of food borne diseases?

Table 4: Mean and Standard Deviation Response on Food Vendor's Hygiene Practice and Transmission of Food Borne Diseases

S/N	STATEMENT	SA	A	D	SD	\bar{X}	SD	DECISION
16	The practice of imbalanced nutritious diet among food vendor causes transmission food borne diseases	-	-	5	-	2.00	0.78	Disagree
17	The use of unhealthy spices in meal preparations by food vendor facilitates transmission of food borne disease	5	-	-	-	4.00	1.87	Agree
18	Inability of food vendor to prepare meals using healthy cooking items facilitates the transmission of food borne diseases.	5	-	-	-	4.00	1.87	Agree

S/N	STATEMENT	SA	A	D	SD	\bar{X}	SD	DECISION
19	Lack of nutritional knowledge among food vendor facilitates transmission of food borne diseases	-	5	-	-	3.00	1.22	Agree
20	Preparations of meals in a very dirty environment using polluted water facilitate transmission of food borne diseases.	5	-	-	-	4.00	1.87	Agree
Grand Mean						3.4		Agree

Source: Researcher's field survey, 2026.

Result from table 4 shows that item 16 was rated with mean score of 2.00 which indicated low extent of food vendors' hygiene practice and transmission of food borne diseases while item 17 – 20 were rated with mean scores of 4.00, 4.00, 3.00 and 4.00 respectively which indicated high extent of food vendors' hygiene practice and transmission of food borne diseases. A grand mean score of 3.4 supported it.

Discussion of Findings

The study revealed that students at FCE (T) Asaba generally practice basic food hygiene measures which include washing hands before and after cooking, washing fruits and vegetables, and covering their mouths while coughing or sneezing. This indicates that students are somewhat conscious of personal hygiene and the role it plays in preventing foodborne illnesses. But, they demonstrated poor attention to checking storage instructions on packaged foods, suggesting that awareness does not always translate into consistent practice. This finding is consistent with the studies of Okojie and Isah (2022), who observed that while students in higher education institutions demonstrate knowledge of personal hygiene, gaps remain in implementing comprehensive food safety practices. Similarly, Adepoju and Oladimeji (2023) reported that young adults often neglect aspects of food safety related to food storage and packaging, exposing them to potential contamination risks.

Regarding the influence of students' hygiene practices on the transmission of foodborne diseases, the study found that while students maintain some hygiene protocols, behaviours such as leaving food at room temperature and limited nutritional knowledge contribute minimally to disease transmission. This suggests that students' practices alone may not be a major driver of foodborne disease outbreaks but arise because of poor environmental conditions. This aligns with the findings of Chukwu, et. al, (2022), who highlighted that students' limited exposure to

practical food safety measures reduces their impact on disease transmission, even when basic hygiene knowledge exists.

The research showed that food vendors exhibited inconsistent hygiene practices. While some vendors adhered to basic measures like handwashing, many neglected essential practices, including proper food preparation, use of healthy cooking items, and maintaining environmental sanitation. These gaps increase the risk of contaminating food served to students. This observation corroborates the work of Eze, et, al, (2023), who reported that informal food vendors in tertiary institutions often operate under unsanitary conditions, significantly contributing to the prevalence of foodborne illnesses among students and staff.

The study further revealed that food vendors' practices have a substantial influence on the transmission of foodborne diseases. Unhealthy spices, poor cooking methods, and lack of nutritional knowledge were major contributors to potential disease outbreaks. This finding is in line with the studies of Nwankwo et. al., (2022), who emphasized that the behaviors of food vendors in institutional settings are critical determinants of foodborne disease risks. The inconsistent practices observed among vendors indicate the need for targeted interventions such as hygiene training, regulatory monitoring, and enforcement of standards to minimize disease transmission in the campus environment.

Conclusion

The study has revealed insights into food hygiene practices among students and food vendors at the Federal College of Education (Technical), Asaba, and their implications for the transmission of foodborne diseases. Students generally demonstrated adherence to basic hygiene measures such as handwashing, washing fruits and vegetables, and covering the mouth while coughing or sneezing, reflecting a moderate level of awareness and health consciousness. However, gaps were identified, particularly in practices such as checking storage instructions on packaged foods, which exposes them to potential contamination risks. Food vendors, on the other hand, exhibited more inconsistent and often inadequate hygiene practices, including poor environmental sanitation, the use of unhealthy cooking items, and limited nutritional knowledge, which directly contribute to the transmission of foodborne diseases. The findings clearly indicate that while students' hygiene practices play a role in mitigating risks, food vendors' practices are more critical in determining the overall safety of food consumed within the college environment.

Recommendations

The following recommendations were made:

- Federal College of Education (Technical) Asaba through its appropriate unit or directorate should provide targeted food safety education focusing on proper storage and handling of packaged foods.
- Federal College of Education (Technical) Asaba through its appropriate unit or directorate should organize workshops for students and food vendors on promotion of responsible consumption and proper handling of leftovers.
- Federal College of Education (Technical) Asaba through its appropriate unit or directorate should implement mandatory training and certification for food vendors covering hygiene, safe food handling, and compliance with health regulations.
- Federal College of Education (Technical) Asaba through its appropriate unit or directorate should engage in periodic monitoring and inspection to enforce hygiene standards, provide guidance, and ensure food safety on campus.

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