

Do Vendors' Knowledge and Attitudes Reflect their Practices? Food Safety Insights from Seikwa Community, Ghana

Christian Ankamah Ababio^{1,2*}, Juabie Douri Bennin³, Nawaane Patience⁴, Naomi Manu², Amanda Asomah⁴, Amankwah Koduah², Luri Hayen Chei², Agnes Pielong², John Ohene Peprah², Helen Lartey⁴

¹*Department of Public Health, University of Port Harcourt, Nigeria*

²*Department of Nursing and Midwifery, Nursing and Midwifery Training College-Seikwa, Ghana*

³*Department of Nursing, Nursing Training College-Wa, Ghana*

⁴*Department of Nursing and Midwifery, Nursing and Midwifery Training College-Sunyani, Ghana*

Abstract

Food safety is a major public health concern, especially in communities where food vending is a primary economic activity. In Seikwa, Ghana, food vendors are central to daily meal provision, making safe food handling essential to prevent foodborne illnesses. This study assessed food safety knowledge, attitudes, and practices (KAP) among food vendors in the Seikwa community. A descriptive cross-sectional design with a quantitative approach was employed. Respondents were selected through simple random sampling, and data were collected using a predesigned questionnaire adapted from the WHO's Five Keys to Food Safety. The instrument included a self-administered section for knowledge and attitudes and an observational checklist for practices. A total of 94 food vendors participated. Results showed that 52 (55.3%) had good knowledge of food safety, 52.3% exhibited positive attitudes, and 66.4% demonstrated good practices. Gaps in knowledge and practices were more pronounced among younger vendors (22-27 years) and those with higher education levels. Vendors operating in regulated environments, such as school premises and market squares, showed more positive attitudes. These findings indicate the need for targeted training and regular monitoring to enhance food safety standards among food vendors in the Seikwa community.

Keywords: Attitude, Food Safety Knowledge, Ghana, Practices, Vendors.

Introduction

Selling, buying and taking in food from the roadside and other open spaces is a common practice in most Ghanaian rural communities [1]. The increased preference for these fast foods, is due to changing lifestyles and working conditions which restrict most people from getting enough time to cook at home [2]. Food vending is necessary in contributing to the nutrient and energy needs of individuals [3]. It

satisfies hunger, contributes to food security, and reduces the time involved in food preparation, especially when one is extremely hungry or when there is little time for cooking [4].

However, studies have consistently shown that the safety of food bought from vendors are usually questionable and it is so because of the risk of contaminations [5]. The ultimate goal of food safety ensures that foods bought from vendors are largely safe from contaminants [6].

The World Health Organization (WHO) postulates that aside satisfaction, consuming safe and hygienic food is expected to be a paramount objective for every individual who buys from a food vendor, so as to help prevent food poison [4].

Certainly, consuming unsafety foods leads to food poisoning, diarrhea, typhoid, cholera, many health problems and even loss of lives [7]. This displaces most country's hard work towards achieving the sustainable development goal (SDG) 2, charging all nations to 'eliminate hunger, attain food security and enhance nutrition and stimulate sustainable agriculture' [8].

Tracing the implications of consuming unsafety foods using the funnel approach from global perspective to Africa and Ghana, it has been shown that unsafety food contributes to 75% of all food poisons, resulting in 420,000 lives loss globally, of which 125,000 are under five years with thirty-three million healthy-life-years (DALYs) and diseases occurrence of one in ten persons every year [9]. Among the harm caused by food poison, further studies have indicated that, as much as 18% of all deaths globally, are found to be caused by food vendors [9].

Developing countries including Sub-Saharan Africa countries record as high as 137,000 deaths annually as a result of eating contaminated foods [10].

The incidence of food-borne disease is widespread in Ghana [11]. Evidence from a scoping review shows that, four regions among the sixteen regions in Ghana, namely the Ashanti, Central, Eastern, and Greater Accra region, alone accounted for 70% of incidence of food contamination and food poison [3]. However, the Bono region was rated fifth with respect to food poison, among all the sixteen regions [19].

The Food and Drugs Authority (FDA) is a paramount food regulatory body in Ghana and this board is responsible for ensuring consumers food safety [12]. Some strategies

use by the Food and Drugs Authority to ensure food safety includes; enforcing food safety laws and regulations, coupled with health education for both food vendors and consumers, along with the adoption and implementation of food safety management systems and adherence to good hygiene practices, standards [13].

Sadly, this food safety regulatory body has most of its activities been impeded by resources, financial constraints, and numerous obstacles which leads to belie reports and regulations of food handlers including vendors putting the health of the public at risk [14]. Food regulators failed to enforce effective food safety regulations, monitoring and supervision particularly among food vendors in remote communities in Ghana because of resources limitations and other challenges [15]. Vendors on the other hand, fails to provide adequate infrastructure and facilities for sales of food. Personal, food and environmental hygiene among vendors are also poor [14].

Literature has consistently shown that, significantly food safety knowledge, food safety attitude and food safety practices gap exist, and this particularly affects the food vendors and consumers in the Bono region of Ghana [16]. This gap if not addressed can undermine food safety practices by vendors and ultimately threaten the health and safety of the consuming public [14]. Narrowing the literature search down to the Seikwa community in the Bono region of Ghana, no food safety knowledge, attitude, and practice data was found for food vendors in the Seikwa community. Hence, there was the need to assess the knowledge, attitude and food safety practices among food vendors in Seikwa community of the Tain District, Bono Region, Ghana.

Methodology

Study Design

The study employed a quantitative research approach along with a descriptive cross-sectional study design. The quantitative

approach facilitated objective measurement of variables and presented findings numerically [17]. The cross-sectional design allowed for capturing a snapshot of the current situation within the sample population at one specific point in time. It facilitated describing the distribution and associations of variables. While the cross-sectional design enabled cost-effective and efficient data collection from a large population, it did not establish causality due to data collection occurring only once from respondents.

Study Area

The study took place within the Seikwa community. Seikwa is a community located in the Tain District, Bono Region of Ghana. It is among the five bigger settlements within the district with a population of 11,308. [18]. The community coordinates are approximately 7°43'15"N 2°31'00"W. It is surrounded by natural beauty vegetation, with lush landscapes, fertile plains, and gentle hills in the surrounding areas.

Health facilities available within the community are; Seikwa health center and

Maame Nyarko Maternity Home. It has Scab pharmacy, and other few chemical seller stores. Utility services available in the community include; water supply mainly from the Ghana water corporation, electricity supply from National grid, crossroads, etc.

Social amenities within the community include Nursing and Midwifery Training College, Senior High School, Junior High School and Basic schools, Police station, Fire service station, Banks, Churches, Market, Restaurant, Guest house, drinking spots and bars, etc.

The community settlement is usually scattered with vegetations. It has few story buildings and semi-detached houses as well as compound houses.

The main occupation of the people of Seikwa community is farming and trading with few civil servants. Ready-to-eat food vending is also a paramount trading for most people in the community with most of them selling at open places such as; along major road side, within the community market and in schools. For this reason, the study settings included the following units:

S/N	Study Setting (Units)
1	Food vendors at roadside
2	Food vendors at school's premises (SNMTC, Nkoranman SHS, JHS schools and Basic schools)
3	Food vendors at community markets
4	Food vendors within the community

Study Population

For this quantitative study, the designated population consisted of 94 food vendors of all ages and genders within the Seikwa community. This included individuals that engaged in cooking, serving, packaging, and selling ready-to-eat foods to the public within the Seikwa community.

Sample Size Determination

The sample size for the study was determined using Cochran formula for sample

size calculation [17]. This formula is commonly applied in survey research when the total population size is large and unknown, as it provides a simplified yet statistically sound method for determining an appropriate sample size. Cochran's formula takes into account the desired level of precision, and in this study, it was estimated at 95% and the acceptable margin of error (5%), thereby ensuring that the selected sample adequately represents the target population. By applying this method, the study

ninety-four (94) food vendors were involved in this study.

Sampling Method

In this study, the four key vending sites within the community were purposefully selected as they represent significant areas for the study setting and areas that ready to eat foods are sold within the community. Recruitment of respondents for the study utilized simple random sampling method, a probability-based approach wherein all eligible respondents have an equal chance of being selected during the data collection process. This method ensured fairness by providing each respondent with an equal opportunity to participate in the study. During the simple random sampling process, respondents were asked to select folded pieces of paper, with those selecting “yes” being included in the study while those selecting “no” not included. The selection procedure was thoroughly explained to all respondents prior to the commencement of the sampling process.

Study Instruments

Data collection employed a predesigned questionnaire and observational checklist. The questionnaire had two components: the socio-demographic characteristics of respondents and the study objectives 1 and 2, which is; food safety knowledge and food safety attitudes of respondents. The observational checklist was used to evaluate the food safety practices of vendors. Both study instruments were adapted from the WHO’s five key principles to food safety. Socio-demographic characteristics entailed the age, gender, location of vending food, type of vending food, vendors role at the vending site and education level.

Prior to full implementation, the questionnaire and the observational checklist were pretested for internal consistency using a small sample size (15 respondents) at different study area with characteristics similar to the main study areas. The pretest gave the

opportunity to refine the questions in both tools, as well as texting the data collection skills of the data collection assistants.

Data Collection Procedure

Administration of the tools employed interviewer-administration. This helped respondents with lower educational background to participate in the study with ease. The respondents were assisted by reading and explaining the questions to them in the local language (Twi) and allowing them to select the option(s) they deem correct. The essence of this was to help lower the non-response rate. To eliminate interviewer bias, the field assistants were properly trained to administer the questionnaire without interfering with the selection of the answers. The questionnaire was drafted in English.

The observational checklist component on the questionnaire was administered by the researcher while observing vendors food safety practices and rated according to standards on the checklist as correct or not correct. Each respondent spent 10-15 minutes in all.

Validity and Reliability

The study data collection tool was pre-tested using 15 respondents with similar inclusion criteria from different study area to ensure reliability. Also, the Cronbach’s Alpha test was run to ensure that the results fall within an accepted reliability. Supervisor(s) on the other hand reviewed the data collection tool for content validity.

Data Analysis

The socio-demographic characteristics of respondents, the three specific objectives and the research hypothesis served as pivotal benchmarks and headings guiding the data analysis. Data collected were cleaned and analyzed using Microsoft Excel and Statistical Package for Social Science (SPSS) version 26. Upon receipt, questionnaires were meticulously reviewed for completeness by tallying the

returned submissions. The data analysis made used of descriptive statistics and results were presented in tabular format. Socio-demographic characteristics of food vendors was summarized using frequencies and percentages. For continuous variable like age, the mean, minimum and maximum values were calculated.

Objective one, the knowledge of respondents regarding the WHO's five keys to safer food was evaluated using a 17 individual questions. Five questions under key 1, which was 'keep clean' and three questions under each of the remaining four keys. Each correct answer to a question received one (1) point, while incorrect answers and 'no idea' responses received zero point. This resulted in possible scores ranging from 0 to 17 points. A cumulative calculation was performed using the benchmarks; Good Food Safety Knowledge (≥ 9 points or 52.94% and above), while Poor Food Safety Knowledge (< 9 points or 52.94% and below). This meant that, respondents' that scored 9 points or more out of the total 17 points, corresponding to (52.94%) and above were classified as having 'Good food safety knowledge'. Whereas those that scored below 9 points (less than 52.94%) were classified as having 'Poor food safety knowledge'.

Objective 2, examined food safety attitudes of respondents. In all 17 questions were asked under the five keys using a five-point Likert scale from 'strongly agree to strongly disagree'.

Answers given were analyzed and rated for appropriateness. Each correct answer to a question received one (1) point. Respondents' having positive or negative food safety attitude was rated based on the same benchmark as; Positive Food Safety Attitude = (≥ 9 points or 52.94% and above) and, Negative Food Safety Attitude = (< 9 points or 52.94% and below).

Objective 3, evaluated food safety practices. It was rated against the WHO standards. In all 17 questions were asked under the five major keys. One (1) point was allocated for each correctly executed practice and zero for wrong practice. Respondents' engaging in correct or wrong food safety practice was rated based on the benchmark as; Correct Food Safety Practice = (≥ 9 points or 52.94% and above) and Wrong Food Safety Practice = (< 9 points or 52.94% and below).

The analysis ensured a comprehensive and systematic accounts of the collected data, facilitating robust interpretations and insights into food safety knowledge, attitude and practice among vendors in the Seikwa community.

Results

Socio-demographic Characteristics of Respondents

Table 1 below shows the findings obtained for respondents' socio-demographic characteristics.

Table 1. Socio-demographic Characteristics of Respondents n=94

Variable	Frequency	Percentage (%)
Age (Years)		
16-21	19	20.2
22-27	20	21.3
28-33	27	28.7
> 33	28	29.8
Gender		
Male	21	22.3
Female	73	77.7

Location of food vendor		
Roadside	38	40.4
School premises	28	29.8
Market square	22	23.4
Community centre	6	6.4
Type of ready-to-eat food sell		
Rice and stew	30	31.9
Fufu and soup	4	4.3
Banku and soup	8	8.5
Fried yam and red plantain with beans	25	26.6
Kenkey and stew	5	5.3
Doughnut	7	7.4
Porridge	15	16.0
Responsibility at the vending site		
Vendor	68	72.3
Helper	26	27.7
Education level		
None	41	43.6
Basic	23	24.5
JHS	18	19.1
SHS	12	12.8

Based on the sample size calculated for the study, an answered questionnaires were obtained from all the ninety-four (94) respondents given a response rate of 100%. The overall internal consistency of the questionnaire using Cronbach's Alpha was 0.938. The minimum, maximum and mean ages of the respondents were 16, 48 and 29 years respectively. More female food vendors (77.7%) were sampled than males. Most of the food vendors (40.4%) were located by the Seikwa community roadside. The most two prominent ready to eat foods sold within the

community were rice and stew (31.9%) and fried yam with red plantain and beans (26.6%). Most of the interviewed respondents (72.3%), were food vendors that deals with cooking, serving and packaging foods for sale as compare to the helpers (27.7%). The highest education level attained by all respondents was secondary level (12.8%), with most respondents having no formal education.

Food Safety Knowledge

Table 2 below presents findings on respondents' food safety knowledge.

Table 2. Food Safety Knowledge n=94

WHO 5-key principles to food safety	Food Safety Knowledge	Yes	No
		N(%)	N(%)
Key 1: Keep food clean	Vending food can be unhealthy when sell in an unclean environment	90(95.7)	4(4.3)
	Vending food can be unhealthy when sell without apron and cap	49(52.1)	45(47.9)
	Vending food can be unhealthy when vendor has long and dirty finger nails	34(36.2)	60(63.8)
	Vending food can be healthy when covered whiles selling	59(62.8)	35(37.2)
	Vending food can be unhealthy when there is no dustbin for leftovers or the dustbin present has no lid	54(57.4)	40(42.6)
Key 2: Separate raw and cooked food	It is unhealthy to use the same ladle to dish out raw and cooked foods' whiles selling	59(62.8)	35(37.2)
	It is healthy to store raw and cooked foods in different Container	85(90.4)	9(9.6)
	It is healthy to package raw and cooked foods separately when using take away bowls	70(74.5)	24(25.5)
Key 3: Cook food thoroughly	Food should be dish out for sale whiles fully cooked	89(94.6)	5(5.4)

	It is healthy to reheat cold foods	68(72.3)	26(27.7)
	Food needs to be hot before selling	50(53.1)	44(46.9)
Key 4: Keep food at safe temperature	It is healthy to stored food in containers that keeps food warm	76(80.8)	18(19.2)
	It is advisable to have heating sources at vending site	20(21.3)	74(78.7)
	Foods kept at safe temperature does not rot faster	42(44.7)	52(55.3)
Key 5: Use safe water and raw materials	Same water for washing bowls cannot be use throughout the selling process	93(98.9)	1(1.1)
	It is healthy to cover the water customers use to wash their hand before eating	62(66.0)	32(34.0)
	It is not healthy to cook with sulfur as it adds harmful chemicals to the food	66(70.3)	28(29.7)
Overall Food Safety Knowledge	Good (≥ 9 points or 52.94% and above)	52 (55.32%)	
	Poor (< 9 points or 52.94% and below)	42 (44.68%)	

Food safety knowledge was assessed using the WHO Five Keys to Safer Food. Overall, 55.3% of food vendors demonstrated good knowledge, while 44.7% had poor knowledge.

Key 1: Keep Clean: Most vendors (95.7%) understood that selling food in an unclean environment is unhealthy. However, knowledge of personal hygiene was weaker, only 52.1% recognized the importance of wearing an apron and cap, and just 36.2% were aware that long, dirty fingernails are unsafe.

Key 2: Separate Raw and Cooked Food: Although most vendors knew raw and cooked foods should be stored separately (90.4%), 37.2% wrongly believed the same utensils could be used for both, indicating poor understanding of cross-contamination.

Key 3: Cook Thoroughly: Nearly all vendors acknowledged that food must be fully cooked before sale (94.6%), and 72.3% recognized the need to reheat cold food. However, only about half (53.1%) knew that food should be hot at the point of sale.

Key 4: Keep Food at Safe Temperatures: While 80.8% were aware of using containers to keep food warm, only 21.3% recognized the importance of heating sources at vending sites, showing weak understanding of temperature control.

Key 5: Use Safe Water and Raw Materials: Knowledge in this area was strong: 98.9% understood that reused washing water is unsafe, and 70.3% knew cooking with sulfur is harmful.

On a whole, vendors showed moderate knowledge overall but had clear gaps related to cross-contamination, temperature control, and personal hygiene. Targeted education and training are needed to strengthen food safety practices in these areas.

Food Safety Attitude

Table 3 presents respondent food safety attitude.

Table 3. Food Safety Attitude of Respondents n= 94

WHO 5-key principles to food safety	Food Safety Attitude	SA N(%)	A N(%)	N N(%)	D N(%)	SD N(%)
Key 1: Keep food clean	Vending food can be unhealthy when sells in an unclean environment	25(26.5)	5(5.3)	50(53.2)	2(2.1)	10(10.6)
	Vending food can be unhealthy when sells without apron and cap	65(69.1)	40(42.6)	10(10.6)	33(35.1)	30(31.9)
	Vending food can be unhealthy when vendor has long and dirty finger nails	1(1.1)	9(9.5)	5(5.3)	50(53.2)	35(37.2)
	Vending food can be healthy when covered whiles selling	2(2.1)	30(31.9)	28(29.8)	8(8.5)	10(10.6)
	Vending food can be unhealthy when there is no dustbin for leftovers or the dustbin present has no lid	1(1.1)	10(10.6)	1(1.1)	1(1.1)	9(9.6)
Key 2: Separate raw and cooked food	It is unhealthy to use the same ladle to dish out raw and cooked foods' whiles selling	5(5.3)	30(31.9)	50(53.2)	5(5.3)	4(4.3)
	It is healthy to store raw and cooked foods in different container	60(63.8)	25(26.5)	1(1.1)	8(8.5)	1(1.1)

	It is healthy to package raw and cooked foods separately when using take away bowls	65(69.1)	5(5.3)	12(12.8)	6(6.4)	6(6.4)
Key 3: Cook food thoroughly	Food should be dish out for sale while fully cooked	80(85.1)	9(9.6)	3(3.2)	1(1.1)	1(1.1)
	It is healthy to reheat cold foods	60(63.8)	8(8.5)	24(25.5)	1(1.1)	1(1.1)
	Food needs to be hot before selling	25(26.5)	25(26.5)	40(42.6)	2(2.1)	2(2.1)
Key 4: Keep food at safe temperature	It is healthy to stored food in containers that keeps food warm	36(38.3)	40(42.6)	12(12.8)	4(4.3)	2(2.1)
	It is advisable to have heating sources at vending site	10(10.6)	10(10.6)	54(57.4)	18(19.1)	2(2.1)
	Foods kept at safe temperature does not rot faster	20(21.3)	22(23.4)	32(34.0)	18(19.1)	2(2.1)
Key 5: Use safe water and raw materials	Same water for washing bowls cannot be use throughout the selling process	70(74.5)	23(24.5)	0	1(1.1)	0
	It is healthy to cover the water customers use to wash their hand before eating	12(12.8)	20(21.3)	12(12.8)	35(37.2)	15(16)
	It is not healthy to cook with sulfur as it adds harmful chemicals to the food	8(8.5)	20(21.3)	6(6.4)	30(31.9)	30(31.9)
Overall Food Safety Attitude	Positive (≥ 9 points or 52.94% and above)	498 (53.04%)				
	Negative (< 9 points or 52.94% and below)	441 6.96%				

Food safety attitudes among Seikwa food vendors showed mixed results. Overall, 53.0% exhibited positive attitudes, while 47.0% demonstrated negative or indifferent attitudes. Across the WHO Five Keys:

Key 1 (Cleanliness & Hygiene): 57.6% had positive attitudes, though 42.4% remained neutral or negative, indicating limited appreciation for hygiene measures.

Key 2 (Separate Raw & Cooked Food): 67.4% showed positive attitudes, however 32.6% still failed to recognize the importance of preventing cross-contamination.

Key 3 (Cook Thoroughly): The highest positive response (73.4%) reflected strong agreement on proper cooking and reheating, though 26.6% still lacked full commitment.

Key 4 (Safe Temperatures): Attitudes were divided, 49% positive versus 51% poor, showing weak awareness of temperature control.

Key 5 (Safe Water & Raw Materials): 54.2% had good attitudes, but a substantial 45.8% did not prioritize safe water and quality raw materials.

Although just over half of vendors hold positive attitudes, significant gaps persist, especially regarding temperature control and safe water/raw materials. Strengthened training and sensitization are necessary to improve attitudes and reduce the risk of foodborne illnesses in the community.

Food Safety Practice

Table 4 illustrate respondent food safety practices.

Table 4. Food Safety Practice of Respondents n= 94

WHO 5-key principles to food safety	Variables	Correct Practices N (%)
Key 1: Keep food clean	Food is sole in clean environment	75(79.7)
	Vendor use apron and cap	28(29.7)
	Vendor has short and clean finger nails	50(53.1)
	Food is covered whiles selling	66(70.2)
	Vendor has dust bin with lid	28(29.7)
Key 2: Separate raw and cooked food	Raw and cooked foods are dish out with different ladles	34(36.1)
	Raw and cooked foods are stored in different containers	91(96.8)
	Raw and cooked foods are packaged separately into take away bowls	52(55.3)
Key 3: Cook food thoroughly	Food dish out for sale are well cooked	89(94.6)
	Vendor reheat cold foods	85(90.4)
	Food is sole hot	90(95.7)
Key 4: Keep food at safe temperature	Vendor has containers that keeps food warm	29(30.8)
	Vendor has fire, gas stove, etc.	91(96.8)
	Vendor has no rotten foods	94(100)
Key 5: Use safe water and raw materials	Vendor changes water for washing bowls frequently	72(76.5)
	Water for washing hands before eating is well covered	15(15.9)
	Vendor does not use sulfur in food preparation	72(76.5)

Overall Food Safety Practice	Correct Practice (≥ 9 points or 52.94% and above)	1061 (66.4%)
	Wrong Practice (< 9 points or 52.94% and below)	537 3.6%)

Assessment of food safety practices in Seikwa showed that 66.4% of vendors followed correct practices, while 33.6% engaged in unsafe behaviours. Across the WHO Five Keys:

Key 1 (Cleanliness): Although 79.7% sold food in clean environments and 70.2% covered food properly, only 29.7% wore aprons/caps or used dustbins with lids. Personal hygiene practices also varied, with just 53.1% maintaining clean, short fingernails.

Key 2 (Separate Raw & Cooked Food): Storage practices were strong (96.8% separated food in containers), but only 36.1% used separate utensils and 55.3% packaged foods separately, indicating cross-contamination risks.

Key 3 (Cook Thoroughly): Vendors showed the highest compliance, over 90% sold fully cooked food, reheated cold food, and ensured food was hot before sale.

Key 4 (Safe Temperatures): Most vendors (96.8%) had a heating source, and none kept rotten food. However, just 30.8% used insulated containers to maintain heat, revealing gaps in temperature control.

Key 5 (Safe Water & Raw Materials): While 76.5% used fresh water and avoided sulfur in cooking, only 15.9% covered hand-washing water, presenting a major hygiene concern.

On a whole, vendors generally follow food safety practices but have critical weaknesses in hygiene, temperature maintenance, and prevention of cross-contamination. Strengthened training, consistent monitoring, and enforcement of standards are recommended to enhance food safety and consumer health in the Seikwa community.

Discussion

The general evaluation of the respondents' knowledge concerning food safety showed that there are many weaknesses although a little above half of the total respondents had good knowledge. Unfortunately, close to fifty percent of the vendors were not well conversant with the WHO 5 keys to food safety that are vital in avoiding foodborne diseases. Some of the major gaps identified were in matters concerning the right temperature for cooking and the right approaches to food storage which are in support with studies from Yakubu et al. [1]. Also, studies have urged the development of enhanced training programs to enhance the food safety awareness of the food handlers [6]. Reviewed literature pointed out that HACCP is vital in maintaining the food safety and posed the possibility that current training programs may not be implemented effectively or may be lacking [20]. Vendors in the age group of 22-27 years and the vendors with higher education knowledge had the best knowledge while the vendors above 33 years of age and the illiterates had the worst knowledge. This implies that age and education are some of the major predictors of food safety knowledge [16]. The interventions should be aimed at the vendors who are older and less educated so they can be in a better position to understand as well as apply the food safety principles.

The study revealed that most of the vendors had a positive attitude towards food safety but with some differences. For example, the perceptions towards sanitation and the use of appropriate protective wears were quite different. Kangate and Pawar in their empirical review highlighted the role of attitudes on food safety behaviours [21]. This research also sought to find out the effects of positive attitude

on the safe practices by vendors and this was proved by the results that indicated that vendors who have positive attitude are more likely to practice safe measures [21]. But Lawal was of the opinion that increasing the attitudes would be very crucial in increasing the level of compliance to food safety standards [22]. This study also found out that female vendors and those operating within restricted areas such as school compound and market squares had better attitude towards food safety. This indicates the fact that gender and vending location are predictors of food safety attitudes [23]. The interventions should therefore be gender sensitive and take into consideration the vending environment in order to enhance the right attitudes towards food safety.

Sanitation practices in the vendors' handling of foods were observed to be good, but there were some poor practices. Although many vendors kept to the best practices including proper reheating of foods and appropriate temperatures of storage, others lacked basic measures like cleanliness and proper handling of foods. Such a situation indicates that there are flaws in the application of food safety measures [1]. A study pointed out that adequate practice sessions and periodic assessments are crucial to adherence to food safety measures [22]. The disparities obtained in this study indicate that training programmes may not be implemented equitably to the vendors or that there is a lapse in the application of foods safety standards. It is imperative to constantly review and remind the food safety practices in order to sustain the best standards [10]. Some vendors such as those operating in regulated areas such as school compound and market squares were more compliant due to monitoring and physical facilities available to check on them, and this agrees with the literature that monitoring is also a predictor to food safety [6].

Conclusion

Overall, the findings indicate that food vendors in Seikwa demonstrate generally good

food safety knowledge, positive attitudes, and appropriate practices. Nevertheless, the study identified notable gaps across key domains of food safety. These deficiencies include the use of the same ladle for serving both raw and cooked foods, low compliance with the use of protective clothing such as aprons and caps during food vending, inadequate waste management as evidenced by uncovered dustbins at vending sites, and poor hygiene practices related to the use of uncovered water for handwashing and utensil cleaning. Addressing these gaps through targeted training, regular monitoring, and enforcement of food safety regulations is essential to improving food safety standards and protecting public health.

Conflict of Interest

There is no conflict of interest to be declared.

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Ethical Approval

The study protocol was reviewed and approved by the University of Port Harcourt research ethical committee board. An introductory letter was presented to the Environmental and Sanitation Officer of the Tain District, Bono Region, Ghana, to obtain a written permission letter, before commencing the data collection. The study adhered to established ethical standards for research involving human participants. Participants' rights, confidentiality, and welfare were protected throughout the study. Informed

consent was obtained from all respondents before their inclusion, and participation was entirely voluntary, with the option to withdraw at any stage without any consequence.

Data Availability

The data used for generating the result of this study may be made available from the corresponding author upon request and with permission from the institutions.

Author Contribution

- **Christian Ankamah Ababio:** Conducted the primary research including; drafting the research report and manuscript; helped in all aspect of the methodology of the research, data collection, data analysis and interpretation; integrating feedback from other authors; coordinated the revision process and finalized the article for submission; assisted with data collection; assisted with manuscript corrections.
- **Juabie Douri Bennin:** Provided overall guidance and support throughout the research work; provided critical feedback and intellectual inputs throughout the research process; including reviewing and revising the manuscript; ensured the research adhered to ethical guidelines and institutional protocols.
- **Nawaane Patience:** Provided critical feedback and intellectual inputs throughout the research process; including reviewing and revising the manuscript; Ensured the research adhered to ethical guidelines and institutional protocols; assisted with manuscript corrections.
- **Naomi Manu:** Contributed to the research design; contributed to drafting the ethical

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