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KNOWLEDGE, ATTITUDE AND PRACTICE OF FOOD HYGIENE AMONG FOOD VENDORS IN LAFIA, NASARAWA STATE, NIGERIA

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ABSTRACT

Most nations, including Nigeria, have large populations that consume street food, and most of those who would not otherwise be employed make a living by selling it. Because the majority of street sellers are underprivileged, illiterate, and care little to nothing about food safety and hygiene, serious worries about the safety of these meals have been growing. This study evaluated the actions, attitudes, and knowledge of food vendors in Lafia Town, Nasarawa State, with regard to food safety. A basic random sampling procedure was used to choose a sample of 261 respondents for a descriptive cross-sectional survey design. A methodical questionnaire was employed to gather information. Descriptive statistics (frequency percentage, mean, and standard deviation) were used to analyse the data, and Chi-square was used to test hypotheses at the 5% significance level. The research results revealed that the participants' average age was 39.20 ± 9.536. Considering the respondents' general level of knowledge, most of 234 (89.7%) have a good comprehension of the significance of safety of food. Most of respondents, or 230 (88.1%), indicated that vendors of food had a generally positive attitude on food cleanliness. The results demonstrated that the most of respondents, 163 (62.5%), practise good food hygiene. A few of the factors that the study found affected the food vendors' practices of food hygiene were: 100 (38.3), forgetting to follow food hygiene guidelines, 0 (0.0%), not having monitoring teams visit, 22 (8.4%), and not receiving regular scores to check the method of food preparation and how it is served. The respondents' attitude and knowledge levels did not significantly correlate (Fisher's exact 0.918 and p=0.338). According to the study, even though food vendors' knowledge, attitudes, and practices seemed adequate, there is still a need for all parties involved to put in place regulatory measures to guarantee that food vendors adhere to standards appropriate for the public consumption and to continuously raise public awareness of the need of observing food hygiene practices and outbreaks of food-borne illnesses, which are common in our society.

KEYWORDS: Food hygiene, Knowledge, Practice, Attitude, Food vendors.

INTRODUCTION

An estimated 40% of urban populations 1 eat food on the streets in underdeveloped nations due to its accessibility and affordability. Worldwide, some 2.5 billion individuals purchase food from mobile vendors; for these vendors, particularly women, is a significant source of revenue with little initial investment needed (Aluh and Aluh, 2017). Food handlers must get instruction to improve their knowledge of the significance about food safety, alter how they handle and prepare food, and eventually reduce the number of food-borne illnesses that result from improper food handling (Raji et al, 2021). Estimating the scope of the issue is challenging, especially in countries still developing. However, considering that over 2 million people annually mostly children die from diarrhoea, a significant fraction of these cases can be linked to food and drinking water contamination. While street food has become an essential component of diets in both urban and rural areas, there are some hazards 1 about public health when consuming it in nations that are still developing (Aluh and Aluh, 2017). Street cuisine ought to be able to satisfy customers' nutritional needs, but they also need to be protected from impurities and microbes (hygienic). Food hygiene is defined by the World Health Organisation (WHO, 2020) as all the circumstances and procedures required during the manufacturing, processing, storage, distribution, and preparation of food to guarantee that it is wholesome, safe, and suitable for human consumption. To guarantee that food is safe to eat, proper food hygiene is a crucial practice. According to Etim (2017), food hygiene is the activity of preparing, cleaning, cooking, storing, and preserving food in a way that minimizes the risk of bacterial cross-contamination and spread, which can result in food poisoning. Food handlers (vendors) must be medically suitable for handling food intended for public consumption. Other activities related 4 to food hygiene include inspecting food preparation, inspecting the premises before they open for business, licensing the food premises after meeting the minimum requirements for such a license, and so on (WHO, 2020).

Since the beginning of urbanization, street food sellers have been an essential component of the food supply chain in many emerging nations, including Nigeria (Oludar et al., 2016). Research conducted in various African nations, such as Nigeria, Morocco, and Kenya, has revealed that the street food business has made significant contributions to both human and economic growth. Major street food sellers in these nations typically make more money than the minimum wage (Okojie and Isah, 2019). In Nigeria, people who live in metropolitan areas may spend up to half of their food budget on food sold in the street (Okojie and Isah, 2019). Comparable to other emerging nations, Nigeria's street food industry has difficulties. Food handlers frequently lack guidance in terms of food security and good hygiene procedures, and in addition, food safety officials provide insufficient supervision and effective monitoring. Teffo and Tabit (2020) also found that there is lax in implementing of food safety regulations. Consequently, street food is susceptible to contamination, frequently during the handling process. There are instances where street food is kept in inappropriate storage conditions and sold from temporary buildings such as push carts, makeshift tents, and kiosks. (Oludar et al., 2016). They are made in filthy conditions with trash and waste water disposed of nearby, giving mice and vermin food and a place to reproduce (Igbokwe et al., 2015).

Hygiene in both the surroundings and oneself are the other two parts of hygiene, together with food hygiene. Keeping food clean is described as all the practical steps required to preserve the Security of food as well as wholesome from all phases of production to the place of consumption or selling. It's a purposeful effort attempt to keep food safe from potential contamination and preserve the health of

customers (Odo and Onoh, 2018). According to White, who was cited by Odo and Onoh (2018), this definition implies that food needs to be kept safe from spoilage and harmful microorganisms, that harmful microorganisms already present in food must not multiply to the point where they could infect CONSUMERS, that harmful bacteria in the food needs to be destroyed by thorough cooking or processing, and that food must be wholesome, safe, and sound when it is consumed.

MATERIALS AND METHODS

Research Design

The researcher used a descriptive cross-sectional survey design, which includes quantitative data collection and analysis techniques. Quantitative data was derived from questionnaires. The descriptive survey involves the collection of data from participants in a group, students, teachers, or other persons related to the educational process. Survey design allows the researcher to observe the status quo as well as facts rather than manipulate variables. The design was therefore appropriate for the study since this study was interested in establishing the facts as they are about food and hygiene practices among food vendors. The design also allowed the researcher to describe, explain, and examine facts, trends, and patterns that emerged from the study, based on the argument that descriptive survey focuses on people, opinions, attitudes, beliefs behavior, and motivations. This study also used 17 both inferential and descriptive statistics to fully describe and explain the conditions of the present using many subjects and questionnaires. The design was used since the study involved observing and describing the behaviors of different groups of respondents from various institutions without influencing them in any way. The quantitative methods used in this study involved quantifying data and generalizing results from a sample of the target population (Yin, 2013). Surveys were used for this purpose.

Study Setting

The study area in the State capital of Nasarawa State is one of the six (6) States (Benue, Kogi, Niger, Kwara, and Plateau States) and Federal Capital Territory (FCT) in the Middle belt region (Now North Central Geo-political zone) of Nigeria. The State shares border with Plateau, Kaduna, Kogi, Benue, Taraba States and FCT.

Study Population

The study population comprised of estimated one thousand seven hundred and twenty (1,720) food vendors in Lafia metropolis

Sample size

The sample size was determined by using the formula proposed by Leslie Fishers for cross sectional study, where d= degree of precision set at 0.05% level of precision or error margin allowed, z=alpha deviate at 95% confidence level, p = probability and q=1-p, the complimentary probability.

$$n = \frac{z^2 p(1-p)}{d^2}$$

Where;

n = the desired sample size
N = n + NRR (Non – Response Rate)
N = 261

Sampling Technique

The sampling technique that was used to gather data was simple random sampling and it was used to gather the 261 samples used for the study. 8 Simple random sampling is the selection of samples without following any pre-order. In this method, every unit of the population has the same chance of being selected (Singh et al., 1996).

Instrument for data collection

Structured Questionnaires were designed and used to gather data for this research. The study using the close-ended questionnaire adopted a Four Point rating Scale and consequently, most variables/questions were ordinal in nature. Section A contained 9 items such asthe Socio-demographic profile of respondents and vending types while section B questions were closed-ended questions that has to do with the knowledge of the respondents on food hygiene. The questions on Section C were on attitude of respondents and were graded based on a rating scale. Section D comprised of 15 questions on Work place practices and section E comprised 10 closed ended questions that deals with Barriers 4 to food hygiene practices. Two Research assistants were employed and trained.

Validity of Instrument

Face and content validity of the instrument was done in line with the research objectives by two experts in the field of public health and measurement and evaluation from Nasarawa state University. Their observations and comments were taken into consideration in producing the final version of the instrument.

Reliability of Instrument

The reliability of the questionnaire was determined using split-half model of test of internal consistency A pretest was conducted using 26 respondents (10% of the sample size) in Akwanga, a location different from the study area. Cronbach's Alpha value of 0.718 (>0.7) for section B, 0.814(>0.7) for section C, 0.732(>0.7) for section D and 0.758(>0.7) for section E. The overall coefficient value for the tool was 0.755 which suggests that the instrument is reliable and utilised it for the study.

Method of Data Analysis

Statistical analysis of the responses extracted from the questionnaire and collated in Microsoft Excel was performed using the IBM Statistical Package for Social Sciences (SPSS) software version 26. Means and standard deviation was computed to summarize numerical variables, frequencies and percentage were computed to describe categorical variables. Relationship between numerical variables were assessed using Spearman's correlation with the correlation coefficient adjudged between 1 and -1 with 1 denoting positive correlation and -1 denoting negative correlation at 95% level of significance.

Association between dependent variables and two categorical independent variables were assessed using independent samples t-test while association between dependent variable as well as independent factors with more than two categories were assessed using analysis of variance (ANOVA).

RESULTS

Table 1 *(Socio-demographic characteristics (n = 261))*

Variables	**Freq (%)**
Age: Mean ± SD	39.20 ± 9.536
21 – 30	75(28.7)
31 – 40	74(28.3)
41 – 50	67(25.7)
51 – 60	45(17.2)
Gender	
Male	58(22.2)
Female	203(79.8)
Level of Education	
Non-Formal Education	96(36.8)
Primary	102(39.1)
Secondary	56(21.5)
Tertiary	7(2.7)
Type of food vendor	
Permanent	179(68.6)
Stationary	55(21.1)
Mobile	27(10.3)
Vendor site	
Open area	83(31.8)
Shade/Bukka	52(19.9)
Mama put	75(28.7)
Restaurant	51(19.5)
Religion	
Islamic	82(31.4)
Christianity	179(68.6)
Traditional religion	0(0.0)
Marital status	
Single	52(19.9)
Married	189(72.4)
Widowed	10(3.8)
Single parent	5(1.9)
Divorced	5(1.9)
Place of residence	
Rural	30(11.5)
Urban	214(82.0)
Semi-urban	17(6.5)

The median age of participants within the research was 39.20 ± 9.536 with majority 75(28.7%) between ages 21 and 30 years. There were more females 203(79.8%) than males 58(22.2%), majority of the food vendors, 102(39.1%) had finished their primary education. There were more vendors, 179(74.3%) operated a permanent structure.

Table 2a *(knowledge on food hygiene among food vendors in Lafia town.)*

Variables	**Yes/Freq (%)**	**No/Freq (%)**
Have you heard of food hygiene	252(96.6)	9(3.7)
Did you obtain a certificate of medical fitness before starting food vending business	43(16.5) *	218(83.5)
Do you believe lack of good food hygiene leads to food poisoning	252(96.6) *	9(3.7)
Have you ever heard that food poisoning means when one eats food and falls sick	250(95.7) *	11(4.3)
Do you believe in the importance of food hygiene	250(95.7) *	11(4.3)
Are you satisfied with surrounding environmental conditions	250(95.7)	11(4.3)
Do you see a need for regular medical check-up	250(95.7) *	11(4.3)
Do you believe in working when ill	261(100.0)	0(0.0) *
Hands should be properly washed after sneezing or blowing your nose.	245(93.9) *	16(6.1)
Should food service staff with cuts on their hands avoid unwrapping food	41(15.7) *	220(84.3)
Lack of monitoring refrigerator temperature and improper storage can lead to food spoilage	249(95.4) *	12(4.6)
Food not properly cooked can cause disease	261(100.0) *	0(0.0)
Is there need for inspection of food vending premise by health personnel	261(100.0) *	0(0.0)
Refrigerators should be washed periodically	261(100.0) *	0(0.0)

Table 2a above shows the Knowledge of respondents on food hygiene was high as most, 252(96.6%) have heard about food hygiene, however 218(83.5%) did not obtain a certificate of medical fitness before starting food vending business, most, 252(96.6%) believe lack of food hygiene leads to food poisoning and all of the food vendors, 261(100.0%) do not believe in working when ill. Similarly, all of the vendors, 261(100% believe food not properly cooked can cause disease, says there is need for

inspection of food vending premises by health personnel and refrigerators should be washed periodically. Majority, 145(55.6%) have radio as their source of information on food hygiene

Table 2b *(degree of food vendors' awareness of food hygiene in Lafia Town.)*

Classification of level of knowledge	**Frequency (f)**	**Percentage (%)**
Good knowledge (50-100%)	234	89.7
Moderate Knowledge	0.0	0.0
Poor knowledge (0-49%)	27	10.3
Total	**261**	**100.0**

Table 2b above shows the overall level of knowledge among the respondents. It shows that 234(89.7%) have good knowledge of food hygiene while only 27(10.3%) have poor knowledge.

Items variable	Strongly agree (4) **Freq (%)**	Agree (3) **Freq (%)**	Disagree (2) **Freq (%)**	Strongly disagree (1) **Freq (%)**	**X**	**SD**	**REMK**
1. Protective clothing reduces the risk of food contamination	245(93.9)	16(6.1)	0(0.0)	0(0.0)	3.934	0.37	
2. Washing hands before and after handling food is mandatory	246(94.2)	15(5.8)	0(0.0)	0(0.0)	3.94	0.38	
3.Freshness should be considered as important when buying food	249(95.4)	12(4.6)	0(0.0)	0(0.0)	3.95	0.37	
4. Do you believe that water used in washing utensils should be disposed frequently	232(88.9)	29(11.1)	0(0.0)	0(0.0)	3.89	0.39	
5.Hand washing should be done using warm water, Soap and towel dry	249(95.4)	11(4.6)	0(0.0)	0(0.0)	3.94	0.38	
6.Nails should be trimmed on weekly basis	249(95.4)	11(4.6)	0(0.0)	0(0.0)	3.94	0.38	
7.Apron and caps should be worn while preparing and serving food	249(95.4)	11(4.6)	0(0.0)	0(0.0)	3.94	0.38	

8.Cutting boards should be disinfected after each use	249(95.4)	11(4.6)	0(0.0)	0(0.0)	3.94	0.38	
9.Quality should be considered when buying food	221(91.7)	20(8.3)	0(0.0)	0(0.0)	3.62	0.39	
10.When handling fruits gloves should be worn	231(88.5)	20(7.7)	10(3.8)	0(0.0)	3.85	0.38	
11.After taking money from customers' hands should be washed	24(9.2)	221(84.7)	15(5.8)	0(0.0)	3.02	0.43	
12.Drinking water should be treated before consumption	229(87.7)	32(12.3)	0(0.0)	0(0.0)	3.88	0.37	
13.Methods of treating drinking water should be by boiling or use of alum	0(0.0)	11(4.6)	249(95.4)	0(0.0)	2.03	0.49	
14.Hands should be washed after visiting the toilet	221(84.7)	30(11.5)	10(3.8)	0(0.0)	3.81	0.38	
Gran average mean					3.69		

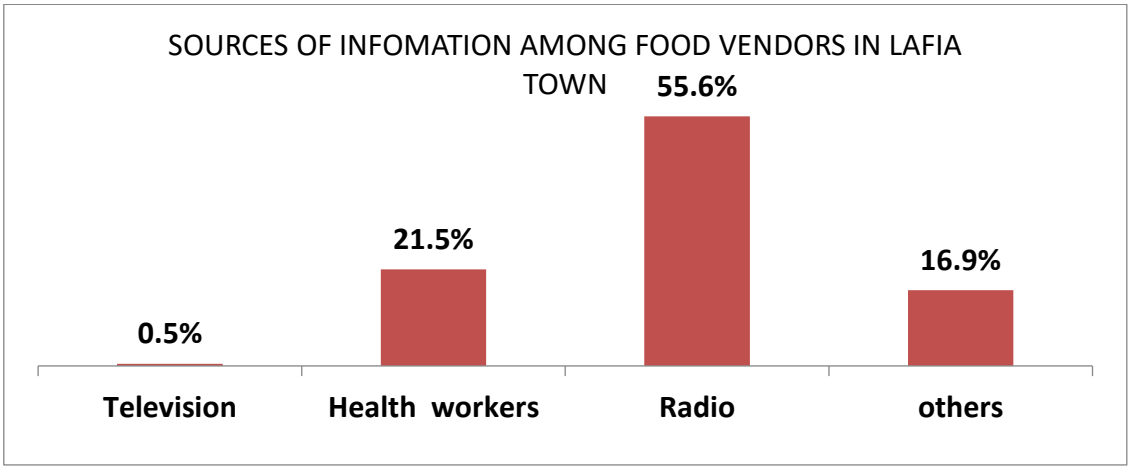

Fig 1 *(Information sources among Lafia town's food merchants.)*

The figure revealed the highest informational source for food cart sellers in Lafia town is the radio (55.6%), followed by healthcare workers (21.5%), other sources (21.5%) and television (0.5%) being the least informational source.

The table above showed the attitude of food sellers towards food hygiene, majority 245(93.9%) strongly agree that protective clothing lowers the possibility of contaminated food, 246(94.2%) reported hand cleaning both before and after working with food as mandatory. Similarly, every food vendor agree water used in washing utensils should be disposed frequently and nails should be trimmed on weekly basis. On what to do after taking money from customers, 221(84.7%) agreed that hands ought should be cleaned and 221(84.7%) strongly agreed hands ought should be cleaned after visiting the toilet.

Table 3a *(Food vendors' attitudes towards food hygiene procedures in Lafia Town.)*

Attitude	Frequency(f)	Percentage (%)
Positive attitude	230	88.1
Negative attitude	31	11.9
Total	261	100.0

Table 3 above shows the overall perspective on food hygiene among the caterers in lafia town. Majority 230(88.1%) have a favourable outlook on food hygiene procedures.

Table 3b *(Overall attitude of towards the food vendors in Lafia Town's adherence to food hygiene standards.)*

Variable	Never (1) Freq (%)	Rarely (2) Freq (%)	Often (3) Freq (%)	Every time (4) Freq (%)	X	SD	RMK
1. Do sanitary officers come regular inspection of food premises (for adequacy of size, lighting, water supply, toilet facilities etc	46(17.6)	208(79.7)	12(4.6)	0(0.0)	1.91	0.50	
2. Is there Meat inspection in your work place	218(83.5)	36(13.7)	7(2.7)	0(0.0)	1.30	0.53	
3. Do you notify the local authority of carriers or food handlers with communicable diseases	46(17.6)	7(2.9)	208(78.9)	0(0.0)	2.62	0.45	
4. Do you wear polished nails while serving food	230(88.1)	21(8.1)	10(3.8)	0(0.0)	1.2.0	0.54	
5. Do you prepare food in advance (i.e overnight)	230(88.1)	11(4.2)	20(7.7)	0(0.0)	1.20	0.54	
6. Do you check expiration date of foods at time of delivery	0(0.0)	10(3.8)	206(78.9)	45(17.2)	3.13	0.42	

7. Do you clean storage area thoroughly before restocking new food stuff	11(4.2)	20(7.7)	30(11.5)	210(80.6)	3.76	0.38	
8. Do you wash your chopping board after chopping raw meat before using it for fruits	0(0.0)	0(0.0)	7(2.7)	254(97.3)	3.97	0.37	
9. Do you maintain personal hygiene in your workplace	4(1.5)	0(0.0)	7(2.7)	250(97.3)	3.93	0.37	
10. How often do you brush your teeth (dental hygiene)	0(0.0)	20(7.7)	7(2.7)	234(97.3)	3.82	0.38	
11. Do you keep your your waste bin covered all the time	30(11.5)	0(0.0)	7(2.7)	224(97.3)	3.63	0.39	
12. Is your prepared food always protected from flies	0(0.0)	0(0.0)	0(0.0)	261(100.0)	4.00	0.37	
13. Do you store food items directly on bare floor	100(38.3)	161(61.7)	0(0.0)	0(0.0)	1.62	0.52	
GRAND AVEAGRE MEAN					2.78		

Table 4a (Food vendors in Lafia town and their standards for food cleanliness.)

Mean cut off for decision rule =2.5. Any items with a mean <2.5 is considered a bad practice (BP), >2.5 is considered a good practice (GP)

Most of the food vendors, 198(82.2%) reported that sanitary officers rarely come regularly for inspections (for adequacy of size, water supply, lighting, and toilet facilities), 198(82.9%) reported no meat inspection in their workplace, 230(95.4%) reported never preparing food in advance (overnight) and 237(98.4%) reported not having the habit of biting nails. Everyone 241(100.0%) reported protecting prepared food from flies every time and store food directly on bare floor every time.

Table 4b *(degree of food vendors' adherence to food hygiene regulations in Lafia town.)*

Classification of level of practice	Frequency(f)	Percentage (%)
Good practice	163	62.5
Bad practice	98	37.5
Total	261	100.0

The table above showed that 163(62.5%) of the respondents exhibit good practices of food hygiene

Table 5 *(elements influencing the food vendors in Lafia Town's food hygiene standards.)*

Variable	Yes Freq (%)	No Freq (%)

Have you ever received training on food hygiene practices?	100(38.3)	161(61.7)
Refrigerators should be washed periodically?	254(97.3)	7(2.7)
Do monitoring teams visit you from time to time to see how you cook and serve food?	239(91.6)	22(8.4)
Do you wash hands frequently before and after serving food?	254(97.3)	7(2.7)
Do you have adequate water supply?	261(100.0)	0(0.0)
Does your culture believe that eating contaminated food can lead to illness?	261(100.0)	0(0.0)
Do you out of forgetfulness skip some guiding rules of food vending?	239(91.6)	22(8.4)
Do you think all jewelries except wedding rings should be removed while cooking and serving food?	261(100.0)	0(0.0)
Do you sanitize your sponge daily with boiled water?	83(31.8)	178(68.2)
Is your dumping site about 30 meters away from you?	98(37.6)	163(62.4)

A good number of the food vendors, 161(61.7%) have never received any training on food hygiene, 7(2.7%) do not wash hands frequently, 22(8.4%) skip some guiding rules of food vending out of forgetfulness and 178(68.2) do not sanitize sponge daily with boiled water. Similarly, 163(62.4%) do not have dumping sites 30metres away from vending site.

Hypothesis one: there is no significant relationship between the level of knowledge on food hygiene and attitude towards practices of food hygiene among the food vendors in Lafia town, Nasarawa state.

Table 6 *(A chi-square test of association was used to evaluate the relationship between food vendors' attitudes towards food hygiene procedures and their level of knowledge about food hygiene in Lafia town.)*

	Attitude towards practice of hygiene		**Chi-square**	**P-value**
	Positive attitude	**Negative attitude**		
Level of knowledge				
Good Knowledge	195(87.1%)	29(12.9%)	Fisher's	0.338
Moderate Knowledge	0	0	exact	

Poor knowledge	35(94.6%)	2(5.4%)	0.918
Total	230(88.1%)	31(11.9%)	

There was no significant correlation with Fisher's exact 0.918 and p=0.338 (p>0.05)

Hypothesis two: there is no significant association between the degree of food hygiene compliance and the sociodemographic makeup of food vendors in Lafia, Nasarawa state.

DISCUSSION

Demographic background of food vendors

This study findings showed that the average age of participants was 39.20 ± 9.536 with the majority between ages 21 and 30 years. There were more females than males with the majority operating a permanent structure. This indicates that food vending was one of the popular businesses among women and the best choice for them. Similar findings were reported by Aluh et al. (2017) where the respondents were located, in the Orlu Local Government Area of Imo State, Nigeria mainly females (94.1%, n=192) and between the age of 31 and 40 years (40.2%, n=82). However, Over 50% of the respondents in that study had secondary school education (59.8%, n=122) as against the present study where less than half had secondary education. Also, Galgamuwa et al (2016) in Sri Lanka stated that the mean age of their respondents was (mean 33.4 ± 7.2) with 88% of them being females. While the current study's findings are in conflict with those of Akabanda et al. (2017) in Ghana, who reported that the majority of the food vendors were in the 41–50 age range, their results do concur with those of the current investigation with regards to female representation, as they reported that 76.6% of their respondents were female.

The study's conclusions are consistent with African culture, where women are heavily involved in food preparation and serving starting at a young age. It follows that their domination in the food vending business is not unexpected. The findings also suggest that the food vending industry mostly serves the youth (20–30-year-old) age group, which may be related to how the business is operated. This is mostly done on site not at their own homes or in the vicinity of their places of residence.

According to the survey, the majority of food vendors only completed their primary schooling, and only 2% of them went on to earn a tertiary degree, suggesting that they were marginalised in the formal economy. This is further supported by the fact that a sizable portion of them (36%) did not complete any formal education, suggesting that they may know very little or nothing about food safety and cleanliness, which is a crucial necessity for protecting consumers. Research conducted in several developing nations has repeatedly demonstrated that the primary factors contributing to street vending entrepreneurship are poor educational attainment and unemployment. The educational profile of street food vendors documented the current study is comparable to those documented by other researchers (Elechi, and Allison, 2018; Odo and Onoh, 2018). This further implies that the industry is dominated with unskilled labourers, which could be a challenge to food safety.

Food vendors' awareness of food cleanliness

In the present study those that maintained washing of hands after sneezing or blowing of nose were significantly much greater: 245 (93.9%) than those that did not regularly wash their hands after sneezing: 16 (6.1%). This reveals the consciousness of hand washing among the respondents as way of preventing the transmission of illnesses to food materials or to utensils used in preparation of meals.

Similarly, in the study of Hossen et al. (2020), knowledge prompted majority of the participants to wash their hands before work: 200 (100%), after work 192 (96%); as a way to properly reduce risk of food contamination: 183 (91.5%), and to wash hands with other media apart from clean water 188 (94%).

The current study suggests that this is because inadequate hygienic and food safety practices are associated with ignorance about food safety and cleanliness, which in turn leads to a lack of awareness. The majority of respondents (89.7%) demonstrated an excellent degree of general food hygiene awareness, according to the study's findings. This implies food vendors are only partially and not completing ignorant of the very basic food hygienic practices. These findings are supported by Faremi et al. (2018), in Ile-Ife, South Western Nigeria where 76 (31.9%) of respondents were reported to have adequate knowledge on food hygiene and safety. Also, Aluh et al. (2017) in the Imo state of Nigeria's Orlu Local Government Area, a mean proportion of knowledge of 78%. Similarly, Galgamuwa et al (2016) in Sri Lanka in a community reported that 59.5 percent of the respondent possessed a solid understanding of foods practice and hygiene. Furthermore, Akabanda et al. (2017) found that nearly all food handlers in Ghana understood the importance of general sanitary practices in the workplace, including hand washing (98.7% correct answers), wearing gloves (77.9%), properly cleaning tools and utensils (86.4%), and using detergent (72.8%).

Furthermore, research conducted in Saudi Arabia by Ahmed et al. (2018) revealed that 75.7% of people had positive attitudes and behaviours about food safety, health, and hand washing before eating. The people also shown a negative attitude towards other relevant items, such as the significance of checking the refrigerator temperature (77.9%), reading the instructions on canned goods (59.5%), and switching out the cutting knife used for cutting vegetables and meat (66.9%). In terms of knowledge, 61.8% of people were well-versed in the ideal temperature range for bacterial growth, which is between 4 and 50 °C. Additionally, roughly 73.5% of people were well-versed in diseases that could be spread through food, but only 27.2% of people knew the proper way to thaw meat. Similar findings were also reported by other researchers (Iwuet al, 2017; Elechi, and Allison, 2018; Lema et al, 2020)

Although, the overall good knowledge in the present study was high, the findings also showed that majority did not know that food service staff those who have cuts on their hands ought to avoid unwrapping food or contacting food items, majority did not also know they are to obtain a certificate of medical fitness before starting food vending business. This observation further necessitates the need for formal instruction in food safety and cleanliness. Ensuring the production of high-quality foods requires training on food safety and cleanliness. Street food vendors require such training on regular basis to ensure that their food meets standards required of them. Even in situations where there is modern facility such as potable water, many routine traditional or normative practices affect the quality of food sold by food vendors. As documented by FAO (2008), food handlers should have the required knowledge and skills to enable them to handle food in good and safe manner. In addition, it is recommended that basic training on food hygiene to every food vendor/helper is very important before they can be licensed. Chouthury (2011) further insists that food vendors should be well trained on food hygiene and safety.

Food vendors' perspectives on food safety and hygiene

A person's attitude constitutes an essential feature that can diminish the occurrence of food borne diseases and other health hazards with proper food safety approach and practice (Munir and Ali, 2019). In the present study, the overall perspective regarding food safety among food providersin Lafia town

was positive as majority 230(88.1%) have favourable outlook on food hygiene procedures. This is contrary to the findings of Ahmed et al. (2018) in whose study about half among the responders (50.9%) showed good perspective on the safety of food and in tandem with the results of Munir and Ali (2019) in whose study over 80% of participants agreed that one's attitude can impose risk on foodborne illnesses.The summative responses for the two, that is, strongly agree and agree ranged from 77.4 to 99% which implies a positive altitude of street sellers concerning the safety of food (Table 3). Furthermore, a grand average mean of (3.692; >2.5) implies a favourable outlook among responders about food safety and cleanliness.

Supporting these findings is Letuka and Nkhebenyane (2021) in Lesotho, where Regarding food safety, 84% of the respondents were thought to have favourable sentiments. In addition, Ahmed et al (2018) in Saudi Arabia reported that 75.7% of the population had good attitude towards health and food safety. Similarly, Iwu et al (2017) in Imo State, Nigeria revealed that (71%) of their respondents had positive attitude towards food hygiene, However, Tuglo et al (2021) in North Dayi District, Ghana reported a lesser percentage (58.2%) of positive attitude towards food hygiene safety. Nevertheless about 87.2% of their respondents showed a good attitude of separating uncooked and prepared meal before storage.

In contrast to the findings of the present study, Aluhet al. (2017) in Imo state, Nigeria reported that A smaller percentage of respondents (43.5%, n = 89) showed a suitable attitude about food hygiene. Which implied that majority of their respondents have negative attitude towards food hygiene and safety.

Despite the vendor's positive attitude towards food hygiene, it was observed that more than almost (95.4%) did not have the appropriate attitude towards water treatment/purification. The need and importance of food handler to ensure proper cleaning of hands with soap and water after every activity which are possible to bring in physical hazards, biological and chemical (e.g, after handling raw food or animal origin, after using the toilet, after handling unhygienic substance like refuse containers, after touching animal and after contact with toxic matter such as pesticides and sanitizers well documented by WHO

The food safety and hygiene procedures of street food sellers

Lack of instruction regarding food hygiene procedures was among the issues in this study that affected the food sellers' food hygienic practices, others were refrigerators, monitoring teams, adequate water supply and forgetfulness were identified as factors that affected food handlers' customs. Corroborating with the present findings are; Ahmed et al (2018) in Saudi Arabia where 75.7% of the population good practice food hygienic practices and safety, Elechi, and Allison (2018), in a in Port Harcourt where the most frequent food hygiene practice was proper disposal of waste which 64.0%, 60.7% always trim and clean their finger nails, Isah et al (2021) In the city of Sokoto, 78.2% of people practiced proper food hygiene. Furthermore, Hassan and Fweja (2020), in Urban district of Zanzibar indicate an overall compliance of 0.50 on environmental hygiene of vending site, 0.45 on food handling practices, and 0.66 on vendors' hygiene and sanitary practices. Similar findings was also reported by Leslie et al, (2021), Ogun State, Nigeria where (33.3%) moderately practice food safety and hygiene and 66.7% highly practice food safety and hygiene.

The result finding, however, conflict with those of Iwu et al. (2017), who found that just 37% of their study participants in Imo State, Nigeria, practiced adequate hygiene. Similarly, a Bangladeshi study by Hossen et al. (2021) revealed that only 0.5% of the subjects had good practices, and at the University of

Gondar Lema et al. (2020) revealed that 46.7% of the study subjects had good self-reported procedures for food hygiene. The present study reports good knowledge and a positive attitude that can be linked to the observed differences in food hygiene practices. Furthermore, the fact that the current investigation was conducted in a semi-urban environment may also have contributed to the reported good food hygiene standards.

Nevertheless, despite the high percentage good usage of food in practice hygiene reported In the current investigation, it was also observed as as stated by the majority of respondent that sanitary officers never/rarely come for regular inspection of food premises (for adequacy of size, water supply, lighting, toilet facilities), no meat inspection in your work places. Very few respondents reported not cleaning storage area thoroughly before restocking new food stuff. These findings indicate poor practice of food hygiene Food education programs is low in developing countries including Nigeria and few who study them remain in cities and not distributed in the villages of different districts that is why food vendors like in other rural areas have less skilled in the act of food handling as such there is no expectation of good service delivery and good hygiene practice in their restaurants.

In Nigeria, there is still a street food poses a danger of food sickness, and one clear risk factor is the vendors' lack of knowledge about the origins of foodborne infections. Street food sellers frequently operate in unhygienic environments, without a licence, and lack training in food cleanliness, safety, and sanitation. Furthermore, customers are put at risk by their careless application of pesticides, chemical ripening agents, additives, and packaging materials on food goods. However, these have put a great burden on public health and resulted in several reports of health issues linked to eating street food. Since everyone has an interest in food safety, the United Nations has declared June 7 to be World Food Safety Day. As a result, it is imperative that everyone be inclusively encouraged to adopt food safety behaviours and practices, as doing so will greatly aid in the achievement of sustainable development goals, particularly those that have to do with ending hunger, lowering poverty, and enhancing citizen wellbeing. Most significantly, though, it is important that the NAFDAC Food Safety and Applied Nutrition Directorate, whose job it is to make sure that food produced, imported, exported, distributed, and sold in Nigeria complies with food safety regulations, pay equal attention to the formal and informal food sectors. Furthermore, various organisations are tasked with overseeing, observing, and assessing the nation's food vendors' standards of hygienic practices.

Factors affecting the practices for maintaining food hygiene among Lafia Town's food vendors

The study's respondents had access to enough water and practiced proper hand washing. This observation conflicts with those made by Letuka and Nkhebenyane (2021) in Lesotho and Leslie et al. (2021) in Ogun State, Nigeria, where they reported that facilities for hand-washing and clean water supplies were scarce and that vendors operated in filthy conditions. Despite not having received any training on food procedures, the majority of research participants continued to follow some hygienic behaviors, like hand washing, taking off jewelry before and while cooking, and routinely sanitizing the refrigerator. However, According to Tuglo et al. (2021), among respondents from Ghana, the likelihood of following hygienic practices for those who have completed food safety courses had a six-fold higher level of food safety than those who had not. (aOR=5.97, $p<0.001$). This implies that a major factor influencing food safety and practices of hygiene is inadequate training in the area.

In Gauteng, Nyawo and colleagues (2021) observed that food handlers' disregard for food safety and hygienic practices could be attributed, in part, to inadequate knowledge and comprehension. Their

research also showed that, to stop the transmission of pathogens (cross-contamination) during food preparation and avoid foodborne illnesses, food workers should be required to complete training under the NSNP.

Hypothesis tested show that there was no significant relationship between level of knowledge (Fisher's exact 0.918 and p=0.338 (p>0.05) and attitude of respondents. Only age of respondents among the The respondents' sociodemographic traits reveal a strong correlation between the degree of food hygiene practiced (Fisher's exact 9.445 and p=0.018).

Prior research has demonstrated the influence of understanding of food safety and instruction on standard food safety practices. Rahman & associates (2012). In a similar vein, they proposed that age, food safety training, knowledge, attitude, and duration of food vending are characteristics that influence proper food safety measures. Conversely, Okojie et al. (2014) contended that sellers may not always maintain proper environmental hygiene after completing food safety training. This suggests that putting newly learned knowledge into practice requires a attitude that is positive.

Implication for Nursing Practice

The study will serve as baseline data for the healthcare system and feedback to healthcare providers on what is to be expected as regards food suppliers' standards for food safety and hygienic practices. The knowledge of food safety protocols and the factors influencing them that this study has generated will allow nurses to develop and put into practice basic, user-friendly guidelines for educating and reforming food sellers regarding proper food handling. It also provides a point of discussion where patients attend hospitals based on preventable diseases from contaminated foods. The need for training of food handlers on the food preservation is crucial, especially for Public Health Nurses and Environmental Health Officers. The restaurants should have a systems-based approach to food safety often called a HACCP (Hazard Analysis and Critical Control Point) plan; that is set procedures on how to perform most tasks in the restaurants from receiving food to preparation and service to the customers. Incorporating other relevant health professionals, environmental, and other regulatory agencies is relevant to ensuring a standard of food safety and hygiene among vendors of food.

CONCLUSION

Although the study indicates that food vendors' knowledge, attitudes, and practice levels were good. Nonetheless, it was determined that the following elements had an impact on the food vendors' behaviors regarding food hygiene: inadequate instruction about food hygiene procedures, lack of Refrigerators and light, lack of visit by monitoring teams from time to time to see how you cook and serve food, lack of adequate water supply and forgetfulness. There is need for all stakeholders to rise up to the occasion in ensuring that food sold by vendors of food are of good standard that are devoid of contamination thereby preventing food poison and foodborne outbreaks which is now a common phenomenon.

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Conflict of Interest

The authors declare that they have no conflict of interest

Ethics approval and consent to participate

. Ethical approval for the present study was sought and obtained from Nasarawa State Health Research Ethics Committee, Ministry of Health, Lafia having reviewed the research protocol.Respect for the respondents was maintained by approaching them politely. The researcher made sure that all information given by the respondents were kept in confidence and anonymous. The respondents were given the right to participate. The research also ensured that full information about the study was given and explained to the respondents.

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