



Knowledge, attitude and practice of food hygiene and safety among food vendors in a rural tertiary health facility in south South Nigeria

Francis Osemhoahu Erah ^{1,*}, Blessing Ilobekemen Otobhiale ², Noruwa Patience Ekhaton ³, Bodeno Ehis ⁴, Everistus Aniaku ⁵, Favour Okhainamen Okoduwa ¹, Osezuwa Success Okoene ¹, Blessing Isibor ¹ and Petra Edeawe ¹

¹ Department of Community Health, Ambrose Alli University, Edo State, Nigeria.

² Department of Surgery, Nigerian National Petroleum Corporation Medical Services Limited (NMSL), Abuja, Nigeria.

³ Department of Medicine, University of Benin Teaching Hospital, Edo State, Nigeria.

⁴ Department of Community Medicine, Igbinedion University, Okada, Edo State, Nigeria.

⁵ Subnational support Department, Nigeria Center for Disease Control and Prevention, Abuja, Nigeria.

World Journal of Advanced Pharmaceutical and Medical Research, 2024, 07(02), 102–108

Publication history: Received on 11 August 2024; revised on 09 October 2024; accepted on 12 October 2024

Article DOI: <https://doi.org/10.53346/wjapmr.2024.7.2.0043>

Abstract

Background: Food hygiene and safety is a public health concern that requires the practices to prevent microbial and other contaminants of food from production to consumption.

Study design: A descriptive cross-sectional study.

Methods: One hundred (100) food handlers/vendors from ten food premises within the teaching hospital environment were interviewed using a semi-structured validated questionnaire. All food handlers/vendors who consented to participate in the study were interviewed (total population). Data were entered and analyzed using SPSS version 23. Statistical significance was set at 95% confidence level with $p < 0.05$. Results were presented in tables and charts.

Results: One hundred (100) participants were interviewed and of this, 44% were cooks and 67% had good knowledge of food hygiene and safety. Majority (70%) had positive attitude towards food hygiene and safety and about half (53%) had good practice of food hygiene and safety. Majority of those who had work experience of 26 years and above (77.8%) had good practice and positive attitude (88.9%) towards food hygiene and safety. More with no formal education (62.5%) had good practice of food hygiene and safety but this association was found not to be statistically significant.

Conclusion: Two third of the respondents had good knowledge of food hygiene and safety with majority of them having positive attitude. This positive attitude and good knowledge of the respondents did not quite translate to good practice as only about half of them had good practice of food hygiene and safety.

Keywords: Food hygiene; Food vendor; Knowledge; Practice; Safety

1. Introduction

Food safety is a significant public health concern since billions of people are at risk of eating contaminated food which causes millions to become sick resulting in hundreds of deaths annually [1]. Safe food enhances individual and population health and over time, as the standard of living continues to improve, concerns over food safety and hygiene will continue to be an issue of public health concern [1]. During the process of food preparation and handling, germs can contaminate food by the use of dirty cutting boards, rusted knives, and rusted kitchen utensils, and from one already

* Corresponding author: Francis Osemhoahu Erah

contaminated food to another especially from raw to cooked meals [2]. Food vendors are vital to the prevention and control of foodborne illnesses and as such, any gap in their knowledge and expertise regarding food safety and proper food hygiene practices put customers' safety at risk and contribute to the rise in the incidence of foodborne illness [3].

Foodborne illnesses pose a major risk to public health in both developed and developing nations. Thirty one food borne hazards caused 600 million foodborne illnesses and 420,000 deaths in 2010 and Food borne diarrheal disease agents also caused 230,000 of the 420,000 deaths due to foodborne hazard [4]. About 200,000 people die every year in Nigeria due to unsafe food and about 3.6 billion dollars goes into medical bills during the treatment of food-borne diseases yearly [5]. Expertise in food production process is required for the effective implementation of proper hygiene standards to lower the health risks of ingesting contaminated meals [6]. Food safety is the guarantee that, when food is consumed, it will not negatively impact on consumer's health [7-8]. Food safety involves several practices: personal hygiene, which includes maintaining personal hygiene standards, washing hands frequently, using aprons and hairnets to cover hair when cooking, using clean water, and using properly cleaned and washed utensils; environmental hygiene, which includes maintaining a clean and well-maintained workspace, selecting an appropriate layout, providing adequate lighting and ventilation, controlling pests and waste; and quality control, which includes practices such as Hazard Analysis and Critical Control Points (HACCP), labeling, traceability, and employee training. The food safety system is a management system that must be in place in each establishment that sells food [9]. Globally, the World Health Organization (WHO) indicated that about 1 in 10 people worldwide are estimated to have foodborne illnesses every year [10]. There are no sufficient studies on food hygiene and safety in tertiary hospitals in Nigeria. As a result, there is a significant risk to the health and safety of students, teachers, patients and other visitors in these settings [11]. Approximately 97% of food poisoning cases that are recorded are attributed to inappropriate food handling by catering professionals [12]. Improper handling of food in healthcare facilities as well as poor hygiene procedures amongst food vendors and handlers can invariably lead to the transmission of food-based diseases [13]. The specific objectives of this study was to assess the knowledge, attitude and practice of food hygiene and safety among food vendors in a rural teaching hospital in south-south Nigeria.

2. Methods

This was a descriptive cross-sectional study among 100 food handlers and vendors in a rural teaching hospital. All staff involved in food handling within the food handlers premises in the hospital were included in the study. The food premises were 10 at different locations within the hospital premises. The food handlers included the cooks, attendants and managers within the food premises. Sample size for a cross-sectional study was determined using the Cochran formula for a cross-sectional study which gave a value of 123.3 when computed ($n = z^2pq/d^2$ where p was 91.2% from a previous study [14]. z is 1.96, q is 1-p and d is 0.05). All food handlers who agreed to participate in the study were included in the study (total population). The population in the entire food handler's premises were 105 but 5 were absent at the time of sample collection. Therefore, 100 participants were used for the study. A semi-structured questionnaire was used to retrieve information from participants. Data was analyzed using the Statistical Package for Scientific Solution (SPSS) version 23. Level of statistical significance was set at 95% with $p < 0.05$. There were 17 questions on knowledge. Each correct responses to the questions was scored 1 while each wrong response was scored zero. A maximum of 17 points were possible. Any participant who scored 13 points and above (75-100%) were regarded as having good knowledge, participants who scored between 8.5 and 12.9 (50-75%) were regarded as fair knowledge while those that scored below 8.5 (0-49%) were regarded as having poor knowledge. Attitude was assessed with the use of a Likert scale of strongly agree, disagree, neutral, agree and strongly agree to questions on attitude. Those who responded to 50% of the questions correctly was regarded as having a positive attitude while those who correctly responded to less than 50% of the questions were regarded as having a negative attitude. The respondents whose responses to the questions on practice of food hygiene and safety with satisfactory practice of up to 50% of the time to all the questions were regarded as having good practice while those who scored less than 50% were regarded as having poor practice of food hygiene and safety.

Ethical approval was sort and obtained from the Health Research Ethics Committee of Irrua Specialist Teaching Hospital. Verbal and written informed consent was obtained from respondents before questions are administered.

3. Results

More of the respondents (48.0%) were in the age group 21-30 years and females (68.0%). More of them (45.0%) were married and half of them (50.0%) had tertiary level of education. A little above half of them (53.0%) had work experience of 5 years or less. See table 1.

More of the respondents (44.0%) were cooks and a few of them (5.0%) were dispatch riders. See table 1.

More of the respondents (67.0%) had good knowledge of food hygiene and safety (see figure 1) and majority of them (70.0%) had positive attitude towards food hygiene and safety. See figure 2.

About half of the respondents (53.0%) had good practice of food hygiene and safety. See figure 3.

Majority of the respondents (77.8%) who had work experience of 26 years and above had good practice of food hygiene and safety as compared to those who work less than 26 years but this association was found not to be statistically significant. $P=0.93$. See table 2.

Majority of the respondents (88.9%) who had work experience of 26 years and above had positive attitude towards food hygiene and safety but this association was not statistically significant. $P=0.432$. See table 2

Majority of the respondents who had work experience of 26 years and above had good practice but this association was found not to be statistically significant. $P=0.1$. See table 2.

More of the respondents (62.5%) who had no formal education had good practice of food hygiene and safety but this association was not statistically significant. $P=0.738$ See table 3.

Table 1 Socio-demographic characteristics of respondents

Variables	Frequency, n = 100	Percent
Age group (years)		
≤20	3	3.0
21-30	48	48.0
41-50	15	15.0
≥51	8	8.0
Sex		
Female	68	68.0
Male	32	32.0
Marital Status		
Married	45	45.0
single	43	43.0
Cohabiting	5	5.0
Divorced	4	4.0
Widowed	2	2.0
Separated	1	1.0
Level of Education		
No formal	8	8.0
Primary	7	7.0
Secondary	35	35.0
Tertiary	50	50.0
Duration of work of respondents(Years)		
≤5 year	53	53.0

6-15	28	28.0
16-25	10	10.0
≥26	9	9.0
Position at work		
Cook	44	44.0
Supervisor/manager	23	23.0
cleaner	13	13.0
waiter	10	10.0
Dispatch rider	5	5.0
Security officer	5	5.0

Table 2 Work experience, Knowledge, attitude and practice of food hygiene and safety

Work experience (Years)	Knowledge of food hygiene and safety			Total	Fisher's exact	P-value
	Good	Fair	Poor			
≤5	37(69.8%)	12(22.6%)	4(7.6%)	53(100%)		
6-15	17(60.7%)	8(28.6%)	3(10.7%)	28(100%)	1.887	0.93
16-25	6(60%)	3(30.0%)	1(10.0%)	10(100%)		
≥26	7(77.8%)	2(22.2%)	0(0.0%)	9(100%)		
	Attitude towards food hygiene and safety				χ^2	p-value
	Positive		Negative			
≤5	37(75.5%)		12(24.5%)	49(100.0%)		
6-15	17(60.7%)		8(28.6%)	28(100.0%)	2.752	0.432
16-25	6(66.7%)		3(33.3%)	9(100.0%)		
≥26	8(88.9%)		1(11.1%)	9(100.0%)		
	Practice of food hygiene and safety				χ^2	p-value
	Good		Poor			
≤5	25(47.2%)		28(52.8%)	53(100.0%)		
6-15	16(57.1%)		12(42.9%)	28(100.0%)	6.248	0.100
16-25	4(40.0%)		6(60.0%)	10(100.0%)		
≥26	8(88.9%)		1(11.1%)	9(100.0%)		

Table 3 Level of education and Practice of food hygiene and safety

Level of education	Practice of food hygiene and safety		Total	χ^2	P-value
	Good	Poor			
No formal education	5(62.5%)	3(37.5%)	8(100.0%)		
Primary	4(57.1%)	3(42.9%)	7(100.0%)	1.265	0.738
secondary	16(45.7%)	19(54.3%)	35(100.0%)		
Tertiary	28(56.0%)	22(44.0%)	50(100.0%)		

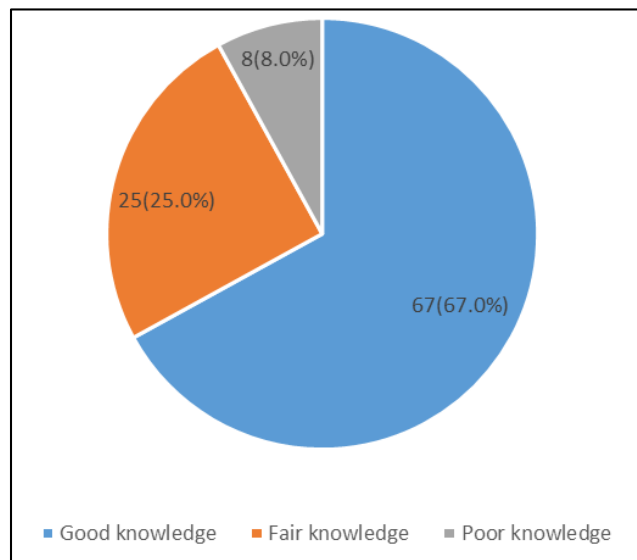


Figure 1 Knowledge of respondents

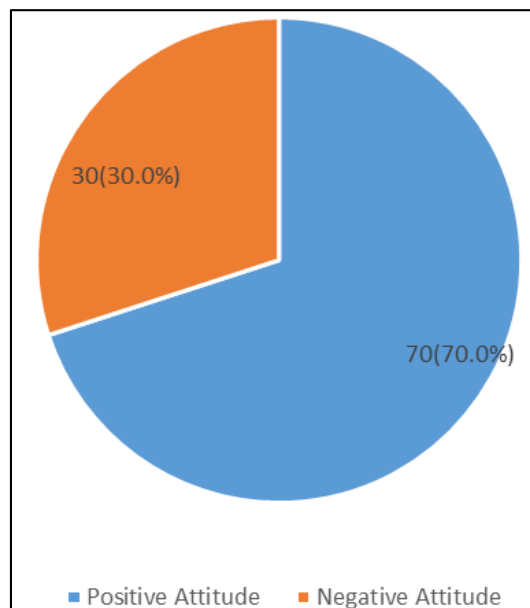


Figure 2 Attitude of respondents

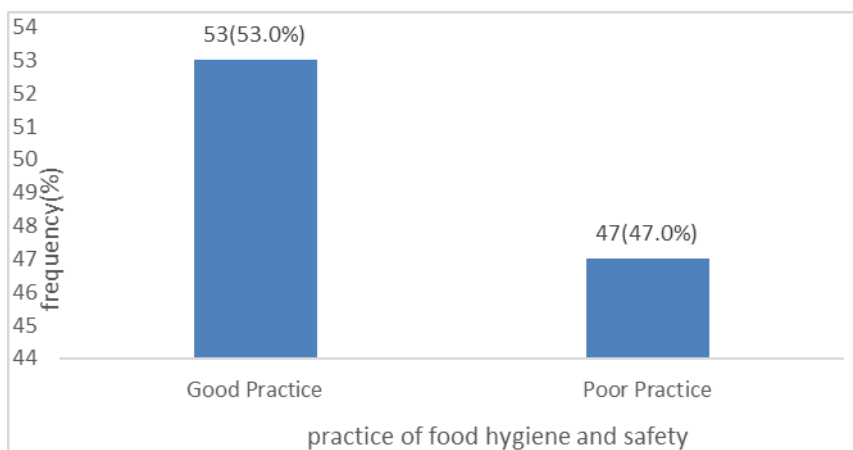


Figure 3 Practice of respondents

4. Discussion

Finding from this study showed that about two third of the respondents had good knowledge of food hygiene and safety. This finding align with a descriptive cross-sectional study carried out among 350 respondents in Benin City, Edo state which showed that majority of the respondents had good knowledge of food hygiene and safety¹⁵ and another study carried out in Calabar [16] which showed that majority of the respondents had good knowledge of food hygiene and safety but contradicts the study carried out in Northwest Ethiopia in 2020 which showed that of the 408 randomly selected food handlers in Debre Markos town only 34.1% of food handlers had good knowledge of food hygiene and safety [16]. Good knowledge of food hygiene and safety is important among food vendors because it will go a long way in their acceptance of the regulation of food handling process and actual practice of food safety since this will also boost their sales. A single episode of food poisoning traceable to a particular food vendor may discourage clients from visiting that particular food vendor which is not going to be beneficial to the food vendor. A knowledge food hygiene and safety among the food vendor is therefore very important.

Moreover, this study also showed that majority of the respondents had positive attitude towards food hygiene and safety. This is similar to the study carried out in Calabar [16], which showed that majority of the respondents had positive attitude towards food hygiene and safety. A positive attitude as well as a good knowledge of food hygiene and safety is a good mix because it is likely to translate to good practice of food hygiene and safety which will save several lives.

In addition, findings from this study showed that just about half of the respondents had good practice of food hygiene and safety. This is similar to a study carried out in Northwest Ethiopia [17] which showed that half of the respondents had good practice of food hygiene and safety but contrary to the study carried out in Benin city [15] and Calabar[16] which showed that majority of the respondents had good practice of food hygiene and safety. The good knowledge and positive attitude towards food hygiene and safety did not quite translate to good practice as just about half of the respondents in this study had good practice of food hygiene and safety.

5. Conclusion

- One hundred food handlers/vendors were interviewed with a semi-structured validated questionnaire
- About two-third of respondents had good knowledge of food hygiene and safety
- Majority had positive attitude towards food hygiene and safety
- About half of respondents had good practice of food hygiene and safety

Compliance with ethical standards

Disclosure of conflict of interest

None of the authors in this research have any conflict of interest. No conflict of interest at all.

Statement of ethical approval

This research was approved by the ethics research committee of Irrua Specialist Teaching Hospital.

Statement of informed consent

Individual informed consent was sort and obtained from all the participants before they were included in the research

References

- [1] Fung F, Wang HS, Menon S. Food safety in the 21st century. Vol. 41, Biomedical Journal. Elsevier. 2018; 41: 88–95
- [2] Ma L, Chen H, Yan H, Wu L, Zhang W. Food safety knowledge, attitudes, and behavior of street food vendors and consumers in Handan, a third tier city in China. BMC Public Health. 2019; 16:19(1).
- [3] Lema K, Abuhay N, Kindie W, Dagne H, Guadu T. Food hygiene practice and its determinants among food handlers at University of Gondar, Northwest Ethiopia. 2019. Int J Gen Med. 2020;13:1129–37.
- [4] Havelaar AH, Kirk M, Torgerson PR, Gibb HJ, Hald T, Lake RJ, Pract N, Bellinger DC, Silva NR, Gargouri N, Speybroeck N, Cawthorne A, Matthers C, Stein C, Angulo FJ, Derleesschauwer B. World Health Organization estimates and regional comparisons of the burden of foodborne diseases in 2010. PLOS Med. 2015;12(12): e1001923. Doi: 10.1371/journal.pmed.1001923.
- [5] World Health Organization. Food safety. 1999. Available at http://applications.emro.who.int/emhj/1006/10_6_2004_794_800.pdf. Accessed 21st June 2024 at 22:40hours.
- [6] World Health Organization (WHO. General Principles of Food Hygiene). Available at https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252Fstandards%252FCXC%2B1-1969%252FCXC_001e.pdf. Accessed 17th July 2024 at 12:16 hours.
- [7] Insfran-Rivarola A, Tlapa D, Limon-Romero J, Baez-Lopez Y, Miranda-Ackerman M, Arredondo-Soto K. A systematic review and meta-analysis of the effects of food safety and hygiene training on food handlers. Foods. 2020;9(9):1169. Doi: 10.3390/foods9091169.
- [8] World Health Organization. WHO global strategy for food safety 2022-2030: towards stronger food safety systems and global cooperation. World Health Organization; 2022 Sep 16.
- [9] Wilson Kassy C, Chidinma Ojielo N, Victoria Iloabachie U, Ndubuisi Ochie C, Juliet Ogugua I, Charles Ntat, Onyinye Hope C, Chioma Amarachi O, Ann Chigedu N, Uzoamaka Susan A, Nwabueze Emmanuel A, Adaeze Theodora O. "From Preparation to Consumption." Food Safety Practices among Public Food Handler's in Enugu Metropolis. Available from: <https://doi.org/10.1101/2023.10.10.23296821>. Accessed 14th June 2024 at 13:00hours
- [10] Desye B, Tesfaye AH, Daba C, Berihun G. Food safety knowledge, attitude, and practice of street food vendors and associated factors in low-and middle-income countries: A Systematic review and Meta-analysis. PLoS One. 2023; 1:18.
- [11] Khuluse DS, Deen A. Hygiene and safety practices of food vendors. African Journal of Hospitality, Tourism and Leisure. 2020 Aug 1;9(4):597–611.
- [12] Chapman B, Gunter C. Local Food Systems Food Safety Concerns. Microbiol Spectr. 2018 Apr 6;6(2).
- [13] Lee HK, Abdul Halim H, Thong KL, Chai LC. Assessment of food safety knowledge, attitude, self-reported practices, and microbiological hand hygiene of food handlers. Int J Environ Res Public Health. 2017 Jan 10;14(1).
- [14] Alqurashi NA, Priyadarshini A, Jaiswal AK. Evaluating food safety knowledge and practices among foodservice staff in Al Madinah Hospitals, Saudi Arabia. Safety. 2019;5(1).
- [15] Isara A and Isah EC. Knowledge and practice of food hygiene and safety among food handlers in fast food restaurants in Benin City, Edo State. ResearchGate. 2009;16(3):207-12. Doi: 10.4103/1117-1936-181340.
- [16] Okon RE, Okon AJ, Inah SA, Olanrewaju OE and Nji EL. Food hygiene knowledge, attitude and practices among food handlers in Calabar Municipal, Cross river State, Nigeria. WJARR. 2022;16(01):088-11.
- [17] Alemavehu T, Aderaw Z, Giza M, Diress G. Food safety knowledge, handling practices and associated factors among food handlers working in food establishments in Debre Markos Town, Northwest Ethiopia. 2020: Institution based cross-sectional study. Risk Management and Healthcare Policy. 2021;2021(14):1155-1163. Doi: 10.2147/RMHP.5295974