

Knowledge of Food Safety, Handling Practices and Provision of Safe Food Among Food Vendors in Federal College of Education Kontagora

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Article DOI: 10.48028/iiprds/ijsrsmms.v7.i1.17

Abstract

Food business is taking almost every space in recent time and because people stay away from home for many hours during the day, many are forced to eat outside the home. The need for having food available in the place of work or study is something of interest on the one hand; provision of hygienic food is more paramount on the other. The study examined the knowledge of food safety and handling practices of food vendors for providing safe food in Federal College of Education Kontagora. A descriptive survey design was adopted in the study. The population consisted of both registered food vendors selling food within the school premises and unregistered food vendors operating outside the school gate. A structured “Vendors Food Handling Practices Questionnaire [VFHPQ]” was used for data collection. Descriptive statistics on frequencies and percentages obtained from the data was used to answer the three research questions formulated to guide the study. Similarly, an inferential t-test statistics tested the hypothesis. Results showed that some habits displayed by food vendors rendered food contaminated, yet safe food was obtained when food safety and hygienic handling practices were cultivated. It was recommended therefore that food vendors and their cohort should have both the skills in and knowledge of food safety and food hygiene matters, as well as maintain proper barriers that prevented bare hand contact with food ready for consumption among others.

Keywords: *Knowledge, Food safety, Handling practices and Vendors*

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Background to the Study

Food business has become the fastest and the cheapest business in recent time. The business is helping to sustain people who stay away from home for many hours during the day. For that reason, many are compelled to eat outside the home. This has opened an opportunity for food to be sold on every street, on institution campuses, office environments or being hawked around. This being so because foods at these eateries are available, accessible and sometimes affordable. Due to industrialization and urbanization of some communities in Nigeria, many people buy food which they eat outside home that in return contributes to sustainable low scale enterprise. This falls in line with the view of Bamidele (2015) who found in her study that “food vending is one of the operations that promoted the economy of Lagos state.

It was observed in the area of this study that even underage children hawked food and could tempt one to assume that hygiene might not be practiced when the food was being prepared by the vendors from their homes. It has been recognized that “good hygiene practices prevent several food-borne diseases (FBD) when accomplished” (Funmilayo, Matthew & Greg, 2018). Bad hygiene practices such as poor personal and environmental hygiene, inadequate storage of food and drinks, improper preparation and cooking however, are known to interfere with the safety of food. Generally, according to Faremi, Olatubi and Nnabuife (2018), improper handling of food-by-food vendors at any level poses danger to the consumer.

Marras and AgBendrech (2016) in an effort to justify how food should be handled, presented a suggestion in the Food and Agriculture Organization of United Nations that “the Environmental Health Department of every community should ensure that food vendors are medically screened and accredited fit and are also trained periodically on food hygiene and sanitation”. This affirms the fact that food vendors play important role in ensuring food safety throughout the food chain production and storage. Food safety is a scientific discipline that illustrates the better way to handle, prepare and store food in ways that will prevent food borne diseases, as entrenched in food chain-handling of food from the farm to the table.

The food handlers are responsible for food safety throughout the food chain of producing, processing, cooking and storage. This is why it was not out of place for researchers to opined that “mishandling and paying no attention to hygienic measures on the part of the food vendors may result in food contamination and consequently food poisoning” (Adewunmi, Ajayi & Omotoso, 2014; Bamidele, 2015). In the same vein Akintaro (2012) concurred that “large quantity of food produced and distributed gets contaminated before reaching the consumers due to poor handling methods, inefficient processing equipment and storage practices, high ambient tropical temperature and humid conditions.

Food contamination which is the main cause of FBD can occur at any point in the process of handling food such as during its production on the farm, preparation, cooking, serving and storage. Consequently, establishing the importance of food safety and handling in the educational institutions for the prevention of food borne diseases cannot be out of sense. Food borne diseases are more common in the developing countries due to bad food handling practices (WHO, 2015). The fundamental causes of improper food safety practices have been

attributed to many factors such as inadequate food handling and sanitation safety laws, weak regulatory system, lack of financial resources, (Fasanmi, Makinde, Popoola, Fasina, Matere & Ogundare, 2018).

Other similar study conducted by Mukhopadhyay, Joardar, Bag, Samanta and Sain (2012) on the key risk behaviours regarding personal hygiene and food safety practices of food handlers working in eating establishments located within a hospital campus in Kolkata revealed that “about 70% of diarrhoea cases were attributed to food borne routes in developing countries”. Food-borne diseases (FBD) are associated with outbreaks and threatened public health, and have pricked international apprehension (Adesokan, Akinseye & Adesokan, 2015). A keen observation of many caterings establishment in institutions of higher learning in Nigeria and most importantly the study area shows that they do not pay required attention to hygiene practices in handling food that is being cooked and sold probably because there was no regulatory protocol.

The free operation attitude of vendors made Funmilayo, *et al.*, (2018) in a study to lament that “since vendors who sell both raw and cooked food items were not being regulated, many of them operated with no monitoring”. Osimani, Aquilanti, Tavoletti and Clement (2013) also affirmed that Food safety is a growing public health issue. In agreement, Gizaw, Gebrehiwot and Teka (2014) reported that FBD is responsible for significant morbidity and mortality rates. Similarly, Azanaw, Gebrehiwot and Dagne (2019) claimed that approximately 10% to 20% of FBD outbreaks were because of contamination due to poor food handling practice of the food handlers, hence, the concern for food safety training should be the yearning of all and sundry. Food is said to be hygienic when it is free of hazardous substances. It is only the hazardous substances that could be harmful to human health. For example, microbiological hazards from bacteria, viruses, parasites and fungi in food are possible in raw (unpasteurized) milk, contaminated fruits and vegetables, and raw or undercooked meat and sea food; chemical hazards may however include pesticides from agricultural products like fresh vegetables and fruits in ready to eat food. Other substances that may pose danger in food chain as pointed out by Azanaw, *et al.* (2019) include presence of high levels of heavy metals such as lead, cadmium, arsenic, mercury and copper from utensils, raw materials or transportation methods used.

Purpose of the Study

Food borne diseases due to improper food handling practices is becoming a public health concern. Prevalence of these diseases could be reduced significantly if hygiene practices are observed and proper monitoring by the government and school authorities is enforced to enhance adherence to hygiene practice by food vendors. The main purpose of this study was to:

- (i) Examine the means through which safe food could be provided through the knowledge of food safety and
- (ii) Ascertain the food handling practices observed among the food vendors in FCE Kontagora Niger state.

Objectives of the Study

The study specifically examined:

1. Knowledge of vendors on the causes of food contamination.
2. Knowledge of food safety practices of the food vendors in FCE, Kontagora.
3. The food safety and handling practices used by the food vendors of FCE Kontagora.
4. The provision of safe food by food vendors in FCE Kontagora.

Research Questions

1. What are the causes of food contamination?
2. What are the important food safety and handling practices every food vendor should observe?
3. Which food safety and handling practices do food vendors observe in their shops?

Research Hypothesis

H₁: Registered food vendors provide safe food better than unregistered food vendors through their safety food and handling practices.

Methodology

Study Design

This study used survey design to collect data from participants who were selected based on purpose of registration or otherwise as a food vendor. Quantitative method was used because the study collected information from a small group of a population and generalised the findings on the entire population.

Study Population

The population for the study consisted of the thirty-two (32) registered food vendors selling food within the school premises and twenty (20) unregistered food vendors operating outside the school gate, making a total of fifty-two (52) food vendors.

Instrument for data Collection

A structured “*Vendors Food Handling Practices Questionnaire [VFHPQ]*” was used as instrument for data collection. The questionnaire was divided into two (2) sections. Section A comprised the demographic information of respondents, section B consisted of ten (10) questions each on knowledge of the causes of food contamination; food safety and handling practice every food vendor observed; food safety handling practices observed in vendors' shops. It was an adapted 4-point Likert Scale format with responses ranging from mostly, more, less and not as well as very well, well, not well and not very well. The questionnaire was validated by lecturers in Home Economics and department of Agriculture. A refined copy of the instrument was then produced, and ten copies were pilot tested on street food vendors in “Tudun-wada” area of Kontagora. The data collected as a result were analysed using Guttman split-half for its reliability which yielded an index of .78. This value provided an assurance that the instrument could measure the parameters stipulated. The researcher administered the questionnaire personally and also collected the completed ones from the population selected for the study location to provide the data analysed in this study.

Results

The personal data of the respondents in this study were analysed through descriptive statistics using frequency count and percentage estimation as summarised in table 1.

Table 1: Respondents' Personal Information

Variable	N	%
Sex:		
Male	6	11.50
Female	46	88.50
Marital status:		
Single	20	38.50
Married	32	61.50
Educational status:		
Cannot read and write	10	19.22
Primary education	8	15.38
Secondary education	12	23.10
Higher education	22	42.30

Source: Amos & Arowolo Field work (2022)

The information contained in the table 1 reveals the distribution of the personalities of the respondents who participated in this study with 6 (11.50%) male, 46 (88.50%) female, 20 (38.50%) single, 32 (61.50%) married, 10 (19.22%) non literate, 8 (15.38%) with primary education knowledge, 12 (23.10%) with secondary education knowledge and 22 (42.30%) of higher education. The participants with the attributes indicated provided the responses transcribed into the data analysed in the study.

Research Questions

What are the causes of food contaminations in FCE Kontagora?

The data on causes of food contaminations as obtained through the instrument were analysed and the result presented on table 2.

Table 2: Causes of Food Contamination

S/N	ITEM	RESPONSES				
		MOSTLY	MORE	LESS	NOT	DECISION
1	Dirty hand	32(61.5)	6(11.5)	2(3.8)	6(23.2)	Mostly
2	Infected food handler	24(46.2)	4(7.7)	2(1.8)	22(42.3)	Mostly
3	Eating food in the restaurant	10(19.2)	2(3.8)	12(23.1)	22(53.8)	Not*
4	Pests	22(42.3)	8(15.4)	4(7.7)	18(34.6)	Mostly
5	Dirty work environment	30(57.7)	8(15.4)	4(7.7)	10(19.2)	Mostly
6	Buying food	12(23.1)	6(11.5)	8(15.4)	26(50.0)	Not*
7	Dirty Equipment	28(53.8)	4(15.4)	2(3.8)	6(26.9)	Mostly
8	Exposing cooked food	34(65.4)	8(15.4)	-	10(19.2)	Mostly
9	Bacteria	28(53.8)	10(19.2)	2(3.8)	12(23.1)	Mostly
10	Virus	26(50.0)	8(15.4)	2(3.8)	16(30.8)	Mostly

Source: Amos & Arowolo Field work (2022)

It is indicated by the result on table 2 that food contamination can be caused by a variety of factors. The respondent's responses showed that food contamination can be caused mostly by: dirty hands, infected food handler, pests, dirty work environment, dirty equipment, exposing cooked food, bacteria, and virus respectively but not by: eating in the restaurant and buying food. It is evident from the result that some habits of food vendors/handlers can contaminate food which people buy and eat outside their homes.

1. What are the important food safety handling practices every food vendor should observe?

The data on important food safety handling practices every food vendor should observe were analysed and the summary of the result is indicated on table 3.

Table 3: Important Food Safety and Handling Practices Observed by Vendors

S/N	ITEM	RESPONSES				
		MOSTLY	MORE	LESS	NOT	DECISION
1.	Wash hand after visiting toilet	36(69.2)	10(19.2)	2(3.8)	4(7.7)	Mostly
2.	Not to smoke, spit or snuff in food area	38(73.1)	8(15.4)	---	6(11.5)	Mostly
3.	Cover cuts or properly	38(73.1)	10(19.2)	2(3.8)	2(3.8)	Mostly
4.	Wash hand before and after food preparation	32(73.1)	14(26.9)	---	---	Mostly
5.	Wash hand after touching money	36(69.2)	10(19.2)	2(3.8)	2(7.7)	Mostly
6.	Cover hair when preparing cooking food	46(88.5)	2(3.8)	2(3.8)	2(3.8)	Mostly
7.	Keep working environment and surface clean	42(80.5)	10(19.2)	---	---	Mostly
8.	Cooked food should be well covered	46(88.5)	4(7.7)	---	2(3.8)	Mostly
9.	Train the staff on food and safety	34(65.4)	8(15.4)	2(3.8)	8(15.4)	Mostly
10.	Always sanitize equipment and cooking area	32(61.5)	4(7.7)	6(11.5)	10(19.2)	Mostly

Source: Amos & Arowolo Field work (2022)

Table 3 reveals that important food safety practices mostly include washing of hands after visiting toilet, not to smoke, spit, or snuff in food area, cover wounds or cuts properly, wash hands before and after food preparation, wash hands after touching money, cover hair when preparing and cooking food, keep working environment and surfaces clean, cooked food should be well covered, train the staff on food hygiene and safety and always sanitise equipment and cooking area respectively. This implies that people can get safe food in and outside their homes if food safety and handling practices are strictly adhered to, by food vendors.

2. Which food safety and handling practices do food vendors observe in their shops?

Table 4 presents the result on the food safety and handling practices observed by food vendors in FCE Kontagora.

Table 4: Observed Food Safety and Handling Practices in Food Vendors Shops

S/N	ITEM	RESPONSES				DECISION
		MOSTLY	MORE	LESS	NOT	
1.	Wash hand after visiting toilet	34(65.4)	10(19.2)	2(3.8)	6(11.5)	Very well
2.	Not to smoke, spit or snuff in food area	38(73.1)	8(15.4)	4(7.7)	2(3.8)	Very well
3.	Cover cuts or properly	26(50.0)	4(7.7)	12(23.1)	10(19.2)	Very well
4.	Wash hand before and after food preparation	40(76.9)	4(7.7)	6(11.5)	2(3.8)	Very well
5.	Wash hand after touching money	36(69.2)	8(15.4)	10(19.2)	2(3.8)	Very well
6.	Cover hair when preparing cooking food	20(38.5)	14(26.9)	8(15.4)	8(15.4)	Very well
7.	Keep working environment and surface clean	32(61.5)	6(11.5)	2(3.8)	6(11.5)	Very well
8.	Cooked food should be well covered	36(69.7)	8(15.4)	6(11.5)	6(11.5)	Very well
9.	Train the staff on food and safety	26(50.0)	14(26.9)	6(11.5)	6(11.5)	Very well
10.	Always sanitize equipment and cooking area	12(23.1)	14(26.9)	6(11.5)	20(38.5)	Not Very well

Source: Amos & Arowolo Field work (2022)

Table 4 shows the responses on the observed food safety and handling practices by the respondents in their shops with **very well** for items 1 to 9: which bothered on cleaning the food area before beginning to cook, washing of hands before cooking, not using the same hand for serving food and collecting money, covering of hair when cooking, washing of hands after visiting the toilet, ensuring that each staff is trained, never cough over food when cooking or serving, always cover cooked foods, and washing plates immediately after use. The 10th item which emphasizes on sanitizing equipment and cooking environment from time to time received a **not very well** response. This implies that the food vendors in the study area observed food safety and appropriate handling practices in their shops.

Research Hypothesis

H₁: Registered food vendors provide safe food better than unregistered food vendors through their safety food and handling practices.

The result of the t-test analysis of observing safety food and handling practices between registered and unregistered food vendors is presented on table 5.

Table 5: t-test Analysis of Provision of Safe Food through safety food and Handling Practices Observed by Registered and Unregistered Food Vendors

Variable	N	x	SD	df	t	sig. (2-tailed)	x diff
Registered	32	20.13	5.340	50	2.457	.022	5.43
Unregistered	20	14.70	5.697				

*Significance $p < .05$

The result on table 5 indicates that registered food vendors significantly provided safe food through their observance of food safety and hygienic handling practices better than unregistered vendors, $t = 2.457$ at $df = 50$ and $P = .022$ (ie, $p < .05$) with a mean difference of 5.43. This implies that most of the food contamination/unhygienic food available in FCE Kontagora emanated from unregistered vendors who found their market into the college premises by intermingling with the registered others. The hypothesis was not rejected.

Discussion

It is evident from the results in this study that some habits of food vendors/handlers contaminated food which people buy and eat outside their homes; people could obtain safe food in and outside their homes if food safety and hygienic handling practices are strictly adhered to by food vendors; food vendors in the study area observed food safety and appropriate handling practices in their shops and that registered food vendors significantly observed food safety and hygienic handling practices better than unregistered vendors. These findings prick one's bone to the marrow because observations have revealed that putrid cooked groundnut, exposed soybean cake, improper cooked maize to pick a few have been sold to consumers at their seasons on the campus without any check. Aside from loss of benefit of purchasing power and required nutrients, consumers were unfortunately equally predisposed to be infected with pathogens.

Food handling has been thought of as very important since unsafe food handling has been linked to outbreaks of food borne illnesses or food poisoning, the implication of which according to WHO (2015) "can cause long-lasting disability and even death". This could probably be responsible for incessant sicknesses which most staff and students who patronised the vendors in the college fell flat. It could as well be felt that, since the nutrients in foods which are most vulnerable to losses during food handling and preparation are water-soluble vitamins like B-complex vitamins (ie, folate and thiamine) and vitamin C in vegetables for instance, consumers would no doubt be prone to calculated but avoidable infection. Since food handling could be a possible threat to public health and safety, it is required that it should be closely monitored by government agencies and college management. One of the means to sanitize the businesses is to engage vendors in routine inspections and failing to pass the inspections or not complying with regulations should end any erring vendor an involuntary shutdown of business.

Conclusion

Jobs are hard to come by in Nigeria as in many countries today, and in battling with the issue of unemployment food vending has become a common business. It is imperative therefore as a food supplier, manufacturer, or food business owner to always prioritise a means of protecting the customers from food borne illnesses, allergies, and poisoning. This is because any violation in the form of food handling oversights or lack of preparation can result in huge business losses, which in societies that value life can be penalised through fines, lawsuits, rejected products, or business closure. This study has revealed that the ability of food vendors to implement food safety practices requires knowledge about food contaminants that can affect any part of the food supply chain. Thus, the most important food handling practices that vendors should consider for food safety that include maintaining proper hygiene, segregating food to avoid cross-contamination, storing food at the correct refrigerator temperatures, and cooking at the right internal temperatures to prevent serving undercooked food were examined.

Recommendations

For food safety practices in food businesses to be ascertained particularly in institutions of higher learning and at the society in general, the following steps are recommended.

Food vendors and their cohort should:

1. Be responsible for ensuring that food handlers have both the skills in and knowledge of food safety and food hygiene matters.
2. Ensure and maintain proper barriers to prevent bare hand contact with food ready for consumption.
3. Wash hands with warm water and soap, use, store, and sanitize wiping cloths
4. Guarantee that cooked meat and fish reach the right temperatures.
5. Maintain refrigerator temperatures at or below 4°C (40°F) and freezer temperatures at or below -17°C (0°F)
6. Sustain clean non-food contact surfaces at food preparation premises

Acknowledgements

We hereby register our profound gratitude to the Federal College of Education Kontagora for permitting the use of the premises for the study. We equally value the food vendors for their participation in supplying the required information transcribed for data analysis. We cannot but express our unreserved appreciation to the available literatures consulted both text and online materials for comparison of manners of vendors' food handling attitudes on food consumed at workplace.

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