

KNOWLEDGE, ATTITUDE AND PRACTICE OF FOOD VENDORS ON FOOD HYGIENE IN HIGHER INSTITUTIONS IN OGUN STATE, NIGERIA

Kolawole Olanrewaju AYODELE, Ph.D

Babcock University Ilishan,
Ilishan-Remo, Ogun State
ayodelewole@gmail.com

and

Kayode OKE, Ph.D

Department of Human Kinetics and Health Education,
Faculty of Education,
Olabisi Onabanjo University, Nigeria

Abstract

The outbreak of food borne illness continues to hit various communities and institutions in the country; this, perhaps, is an indication of poor food hygiene by food vendors. Thus, food hygiene is a subject of great concern to anyone who cares about eating healthy and staying alive. This research work was carried out among food vendors in four higher institutions in Ogun State, Nigeria. It assessed the knowledge, attitude and practice on food hygiene by food vendors in higher institutions in Ogun State. The study is descriptive in nature and involved 308 food vendors. Data were collected with the use of pre-tested questionnaires with the aid of two research assistants, and analysed using computer software package. The results of this study revealed significant positive relationship between participants' gender and practice of food hygiene ($r = .463, p < .05$), practice of food hygiene positively correlated with knowledge of health hygiene ($r = .397, p < .01$), participants' attitude towards food hygiene has a significant relationship with knowledge ($r = .518, p < .05$), and practice ($r = .437, p < .01$). 77.9% of the participants have moderate knowledge of food hygiene, positive attitude while the food vendors have a mean score of 14.0 which is equivalent to 87.3%. Thus, their practice of food hygiene is good. It was recommended that nutritional education among food vendors should be encouraged to promote healthier food preparation, processes, and sales.

Keywords: knowledge, Attitude, Practice, Food Hygiene, and Food Vendors

Introduction

Food is essential for the existence of all living things. Our bodies need food for energy production, to survive and remain strong. For good health, you need a balanced diet; this means that one does not just eat one food item, but one eats a range of food so

that you can get everything your body needs. The health of the individuals will be improved and healthier if they are given a healthy, balanced diet rich in protein, energy and vitamins.

However, in many societies today, foods sold out of home either on the street through hawking or in cafeteria in a designated area, generally referred to ready-to-eat food and beverages. Foods from food vendors is well patronised in many developing countries since they are affordable, easily accessible and also serve as an important source of income (Feglo and Sakyi, 2012, DeWaal and Rober, 2013). The statistics by the Food and Agriculture Organization (2011) revealed that about 2.5 billion people eat daily from food vendors. Also, most food from vendors largely do not meet proper hygienic standards and can, therefore, lead to morbidity and mortality due to food borne illnesses and concomitant effects on trade and development (Food and Agriculture Organization of the United Nations; World Health Organization, 2013). These foods serve as a major source of livelihood providing a means of self-employment and the opportunity to develop business skills with low capital investment.

Despite the numerous benefits provided to people, vended foods can also be a source of food borne illnesses resulting from poor hygiene practices by vendors, insanitary conditions at food vending points, among others (Annor and Baiden, 2011). Studies of Chapman, Eversley, Fillion, Maclaurin, and Powell (2010) on the assessment of food safety practices of food service by food vendors showed that 70% of disease outbreaks have been linked to street-vended foods.

Food vendors play a major role in ensuring food safety throughout the chain of producing, processing, storing and preparation. Mishandling and disregard for hygiene measures on their part may result in food contamination and its attendant consequences. Food poisoning is a challenge

that has been on rampage in our society. The symptoms of food poisoning include diarrhoea, vomiting, abdominal pains, chills, prostration and gastroenteritis.

The five key principles of food hygiene, according to World Health Organization (2015), are (1) prevent contaminating food with mixing chemicals, spreading from people, pets, and pests; (2) separate raw and cooked foods to prevent contaminating the cooked foods; (3) cook foods for the appropriate length of time and at the appropriate temperature to kill pathogens; (4) store food at the proper temperature; and (5) use safe water and raw materials.

Omemu and Aderaju (2008) reported in a study that only 12% of the vendors had formal knowledge on food preparation; 31% had annual medical health certificate, while most vendors only consider volume and price rather than freshness and cleanliness when buying raw materials for cooking. Some of the food safety knowledge cannot be translated to practice due to the absence of basic facilities such as water and toilets at their vending sites.

Ifeadike, Ironkwe, Adogu, Prosper and Nnebue (2014) found that the overall knowledge level of food vendors at the two residential cafeterias and canteen of the University Kebangsaan Malaysia was moderate and with a mean value of 57.8%. Also, Ayehu, Kassahun and Daniel (2014) reported that the level of knowledge of food safety and hygiene was poor as the majority (98.5%) of their respondents had poor knowledge of food hygiene.

Ayehu, Kassahun and Daniel (2014) in their study carried out in Plateau state, food hygiene attitude of 132 food vendors in boarding secondary schools was determined. It was observed that about 64.4% of the respondents had good attitude towards food

safety while respondents with 16-20 years of working experience had 3 times the likelihood of having good attitude towards food safety and hygiene.

The study by Isaac, Dominic and Wellington (2013) on hygienic practices among food vendors in educational institutions in Ghana found that food vendors in educational institutions generally adhered to good food hygiene practices such as regular medical examination (93%), protection of food from flies and dust (55%); proper serving of food (100%); good hand hygiene (63%); and the use of personal protective clothing (52%). They asserted also that regulatory bodies legally mandated to efficiently monitor the activities of food vendors lacked the adequate capacity to do so. They recommended that efforts should be geared towards developing training programmes for food vendors as well as capacity building of the stakeholders. The study by Mizanur, Muhammad Taha and Kamaluddin (2012) noted that out of the 361 street food vendors recruited, only 10.8% of them practiced good food hygiene, 71.5% had fair practice whereas 16.9% had poor practice.

However, food and water borne diarrheal disease do occur in epidemic proportion resulting in large number of avoidable deaths, especially, in Nigeria. Academic institution cannot afford to be caught napping as far as food hygiene is concerned. There is still very scanty information on the food safety and hygiene practices of food vendors and vendors within the academic settings. Therefore, this study focused on assessing the knowledge, attitude, and practice of food safety and hygiene among food vendors.

Statement of Problem

Unhygienic food prepared and sold for the consumption of people will primarily

result in food poisoning, diarrheal, and many other diseases that have negative effects on human health. It is a well known fact that the burden of food borne illnesses is transmitted from poor hygienic practices, either by food handlers, during food production or during sales. As reported by the *Nigerian Tribune*, food poisoning killed ten (10) secondary school teachers and hospitalised several others in the Northern Nigeria town of Katsina on June 1st, 2011. The teachers became ill shortly after eating lunch during a weekend workshop, organized by the state Ministry of Education, for some six hundred and fifty (650) teachers.

The case of the death of seven (7) persons (grandmother, mother, and 5 children) at Odo Oba community close to Ogbomoso, who were suspected to have died of food poisoning after a meal of fish and amala as reported by *Tribune Newspaper* of 15th December, 2011, is devastating. Equally worthy of note is the report of FAO (2010), in Bekwara Local Government Area of Cross River State, where two (2) children died and one hundred and twenty- two (122) people hospitalised as a result of food poisoning due to indigestion of *moi-moi* and beans that were said to have contained a large dose of highly toxic pesticides.

The incidence of food and water borne diarrheal is common in Nigeria, resulting in large number of avoidable deaths. Academic institutions must not relent efforts as far as food hygiene is concerned considering the huge number of students and staff buying and eating from food vendors daily. Higher institutions have a huge responsibility in keeping both students and staff safe from the adverse consequences of food poisoning. Therefore, there is a great need for this study.

Research Questions

The following four major research questions were raised and tested at the .05 level of significance in order to achieve the purpose of this study:

1. Would there be any significant relationship among the variables (knowledge, practice, and attitude) of the study?
2. What is the level of knowledge of food hygiene among food vendors at higher education institutions in Ogun State?
3. What will be the attitude of food vendors at higher education institutions towards food hygiene?
4. What will be the practice of food vendors at higher education institutions towards food hygiene?

Methodology

A descriptive survey design of an *ex-post-facto* type was used to collect data from the participants on the variables of the study. A total of three hundred and eight (308) respondents involved in the production and sales of foods and snacks were selected from four universities (2 public and 2 private universities) in Ogun State, Nigeria. The age range of the respondents is between 19-47 years with mean age of 25.31 and standard deviation of 9.54. The respondents consist of 101 (32.8%) males and 207 (67.2%) females. Also, 73 (23.7%) of the respondents were graduates, 180 (58.4%) had secondary education, while the remaining 55 (23.7%) had between primary education and no education at all.

One main instrument was used for data collection. A 25-item self-developed

questionnaire was used to explore the socio-demographic characteristics of the respondents and the knowledge, attitude and practice of food hygiene. The instrument titled "Food Hygiene among Food Vendors Questionnaire (FHFVQ)" adopted the Likert rating scale pattern. In this regard, the respondents were requested to record their responses on a four-point continuum of the scale ranging from 'strongly agree' to 'strongly disagree', with a weighted point of 4 to 1 respectively for the attitude and knowledge sections. The practice was measured using "Yes" or "No" options.

The instrument was validated by giving it to experts in Test and Measurement to examine and assert its suitability and appropriateness regarding the item content and purpose of study. A reliability test using spilt-half method was also carried out to determine the reliability of the instrument. The results produced a reliability coefficient of .77

The researchers with the help of two other assistants administered the questionnaire on the participants. The data collection lasted three (3) weeks. The completed inventories were thoroughly checked to ensure that they were properly filled. All the inventories were returned. Thus, 100% success of inventory administration was recorded.

Analysis was carried out using mean, simple percentages, Pearson Product Moment Correlation Coefficients and T-test statistics. Results were tested for at the 0.05 level of significance.

Results

Table 1: Correlation Matrix of the Dependent and Independent Variables

Variable	Mean	SD	G	Ag	K	P	AT
Gender (G)	1.50	.582	1.00				
Age (Ag)	27.69	4.292	.061	1.00			
Knowledge (K)	46.05	11.530	.127	.105	1.00		
Practice (P)	12.98	9.731	.463**	.101	.397*	1.00	
Attitude (AT)	14.01	8.053	.279*	.067	.518**	.437**	1.00

a. Gender was graded 1 = male, 2 = female

b. Age was graded 1 = 20-30yrs, 2 = 31-40yrs, and 3 = 41yrs above

* Correlation is significant at the 0.01 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

The correlation matrix results as shown on Table 1 reveal significant positive relationship between participants' gender and practice of food hygiene ($r = .463$, $p < .05$). Practice of food hygiene was found to be positively correlated with knowledge of health hygiene. Also, participants' attitude towards food hygiene has a significant relationship with gender ($r = .279$, $p < .01$), knowledge ($r = .518$, $p < .05$), and practice ($r = .437$, $p < .01$). No significant relationship was shown between gender, age ($r = .061$, p

$> .05$), knowledge ($r = .127$, $p > .05$), as well as knowledge and age ($r = .105$, $p > .05$). No relationship was found between practice and age, as well as attitude and age. Thus, the implication of this finding is that individual gender of the food vendors to an extent does not necessarily affect their inclination to observe food hygiene. Also, how knowledgeable an individual is, will determine their degree of food hygiene practices.

Table 2: Level of knowledge of food hygiene among food vendors
N = 308

Category	Criteria	Frequency	%	Remark
54-63	High	32	10.4	Number of participants with High level of knowledge of food hygiene among food vendors
44- 53	Moderate	262	85.1	Number of participants with moderate level of knowledge of food hygiene among food vendors
34-43	Low	14	4.5	Number of participants with low level of knowledge of food hygiene among food vendors
Mean			49.1039	
Std. Deviation			3.86398	

Table 2 above presents the level of knowledge of food hygiene among food vendors. Their knowledge was categorised as high (54-63), moderate/average (44-53) and Low (34-43). Majority 262.

85.1% of the participants have moderate knowledge of food hygiene, 10.4% had high

knowledge, and the remaining 4.5% had low knowledge. However, going through the descriptive data on the food vendors, it could be deduced that 77.9% has moderate knowledge of food hygiene.

Table 3: Food vendors' attitude towards food hygiene

Attitudinal Behaviour	Agree	%	Disagree	%
Washing of hand before handling of food in the kitchen is good measure of food safety and hygiene.	280	90.9	14	9.1
Proper washing of hands after using the toilet as a food handler can prevent contamination of food.	298	96.8	5	3.2
Covering of hair while preparing food is a good measure to prevent contamination of food.	300	97.4	4	2.6
Clean environment prevents contamination of food.	294	95.5	7	4.5
Covering of cuts immediately after any form of accident in the kitchen by the food vendors promotes food safety and hygiene.	290	100	-	-
Use of hand sanitizers is not part of food hygiene practice.	228	74.0	40	26.0
Refrigeration of food is not a good measure to prevent food contamination.	154	50.0	77	50.0
<i>Mean</i>	<i>14.5325</i>			
<i>Std. Deviation</i>	<i>1.21628</i>			

The outcome of the research question measuring the positive attitude of food vendors towards food hygiene revealed that 90.9% of the respondents washed hands before handling of food as a good measure of food safety and hygiene; 96.8% respondents properly washed hands after using the toilet to prevent contamination of food; 97.4% covered their hair while preparing food; while 95.5% cleaned their environment to prevent contamination of food. All the respondents covered their cuts immediately after any form of accident in the

kitchen to promote food safety and hygiene; 74% agreed that use of hand sanitizers is not part of food hygiene practice, while 50% felt that refrigeration of food is not a good measure to prevent food contamination.

The table also reveals food vendors' positive attitude towards food hygiene with a mean score of 14.533 (90.831%). This is because their mean score is far higher than the minimum score of 8 which is 50%. It could then be deduced, generally, that the food vendors has positive attitude towards food hygiene, which may be as a result of their knowledge of food hygiene.

Table 4: Information on the practice of food hygiene among food vendors

Table 4: Information on the practice of food hygiene among food vendors				
S/N	VARIABLE		Freq N=308	%
1	Do you wear gloves when handling food?	Yes	198	64.3
		No	110	35.7
2	Do you cover your hair when handling food?	Yes	284	92.2
		No	24	7.8
3	Do you wear apron when handling food?	Yes	288	93.5
		No	20	6.5
4	Do you use sanitizers and Disinfectants at work?	Yes	242	78.6
		No	66	21.4
5	Do you cover your cut with Plaster when cooking?	Yes	260	84.4
		No	48	15.6
6	Do you talk when preparing food?	Yes	212	68.8
		No	96	31.2
Mean			13.9740	
Std. Deviation			1.42777	

Table 4 shows that the practice of food hygiene among the food vendors is good and encouraging. Only 64.3% of the population sampled revealed that they wear gloves when handling food. 92.2% do cover their hair when handling food, while 93.5% wear apron when handling food. On the use of sanitizers and disinfectants at work, 78.6% of the respondents consented to this; 84.4% covered cuts with plaster when cooking. However, the results showed that 68.8% talked when preparing food.

It was revealed further that the food vendors has a mean score of 13.974 which is equivalent to 87.336%, thus their practice of food hygiene is good. This is because their mean score is higher than the minimum score of 8 which is 50%. It could then be deduced that the food vendors have good practice of food hygiene, which may be as a result of the influence of their knowledge on food hygiene.

Discussion

The findings of the first research question on the significant relationship among the variables (knowledge, practice, and attitude)

of the study revealed that the practice of food hygiene was found to be positively correlated with knowledge of health hygiene. Also, participants' attitude towards food hygiene has a significant relationship with knowledge and practice. This finding is supported by the findings of Isaac, Dominic and Wellington (2013) on hygienic practices among food vendors in educational institutions in Ghana. They found that food vendors in educational institutions adhered to good food hygiene practices, due to their knowledge of good food hygiene.

The outcome of second research question lends credence to the findings of Ifeadike, Ironkwe, Adogu, Prosper; and Nnebue (2014) that the overall knowledge level of food vendors at the two residential cafeterias and canteen of the University Kebangsaan Malaysia was moderate and with a mean value of 57.8%. It also contradicts the findings of Ayehu, Kassahun and Daniel (2014) that the level of knowledge of food safety and hygiene was poor as the majority (98.5%) of their

respondents had poor knowledge of food hygiene.

The findings on the attitude of food vendors at higher education towards food hygiene corroborate the findings of Ayehu, Kassahun and Daniel (2014) in their study carried out in Plateau state on food hygiene attitude of 132 food vendors in a boarding secondary school. It was observed that about 64.4% of the respondents had good attitude towards food safety while respondents with 16-20 years of work experience had three (3) times the likelihood of having good attitude towards food safety and hygiene.

Results of this study on the practice of food vendors at higher education institutions towards food hygiene are in line with the findings of Isaac, Dominic and Wellington (2013) that food vendors in educational institutions generally adhered to good food hygiene practices, namely, regular medical examination (93%), protection of food from flies and dust (55%); proper serving of food (100%); good hand hygiene (63%); and the use of personal protective clothing (52%).

Conclusion

Food hygiene is an environmental health practices which is very important because when an environment is dirty, one becomes ill and when proper food hygiene or proper personal hygiene is very low, sickness, diseases come into the system and cause harm to the body and this may lead to death. This study is of significance to the nation and general human health as it bring awareness to the health related issues in terms of handling food and hygiene that some are not aware of. Owing to the importance of personal food hygiene and environmental health practices, the findings of this research work would be used as a document for decision making on practices

of food hygiene and environmental health practices.

Recommendations

The following recommendations were made:

Government should help to make training on food hygiene and safety effective and compulsory for every food handler and vendor in the country. This training must come out as a strong forward planner for change of attitude and food hygiene practices among food handlers and vendors.

Also, incorporating into the training basic principles of food safety and microbial surveillance in foods is essential to optimising food hygiene and safety practices into food premises.

Every food handler should be registered with government and environmental health **officers**. This is to bring about adequate monitoring and training of food vendors on food hygiene practices such as hand washing with soap after visiting toilet and before handling food. They should provide adequate functioning hygiene facilities on their food premises such as hand wash basins with running water and soap.

Regular check by environmental health officers should be sustained. This will strengthen supervision and regular monitoring of food premises to ensure adequate food hygiene practices among food handlers. Training of food vendors on food hygiene and safety, such as medical examination, hand hygiene and protection of food from flies and dust will have crucial relationship with food hygiene and safety practices. This underscores the importance of training among food vendors to ensure perpetuation of best practices in food handling business thereby protecting public health.

References

- Annor, G. A. and Baiden, E. A. (2011). Evaluation of Food Hygiene Knowledge Attitudes and Practices of Food Vendors in Food Businesses in Accra, Ghana. *Food and Nutrition Sciences*, 2: 830-836
- Ayehu G.Tessema, Kassahun A. Gelaye and Daniel H. Chercos, (2014). Factors affecting food handling Practices among food handlers of Dangila town food and drink establishments, North West Ethiopia. *Public Health*, 14, 571-580
- Chapman B, Eversley T, Fillion K, Maclaurin T and Powell D. (2010). Assessment of food safety practices of food service food vendors (risk assessment data): Testing a communication intervention (evaluation of tools). *Journal of Food Protection*, 73(6),1101-7
- DeWaal, C.S. & Rober, N. (2013). Global and Local: Food Safety around the World. Available online: http://safefoodinternational.org/local_global.pdf (accessed on 16 April 2013).
- Feglo, P. and Sakyi, K. (2012). Bacterial contamination of street vending food in Kumasi, Ghana. *J. Med. Biomed. Sci.*, 1, 1-8.
- FAO (2011). World Hunger Report (2011): High Volatile Price set to Continue. Available on line: <http://www.fao/news/story/en/item/92495/icode/>. (Accessed on April 22, 2017)
- Food and Agriculture Organization of the United Nations; World Health Organization. Assuring Food Safety and Quality: Guidelines for Strengthening National Food Control Systems. Available online: http://www.who.int/foodsafety/publications/capacity/en/Englsih_Guidelines_Food_control.pdf (accessed on 4 April 2013).
- Ifeadike, C. Ironkwe, O., Adogu, P. and Nnebue, C. (2014) Assessment of the food hygiene practices of food handlers in the Federal Capital Territory of Nigeria. *Tropical Journal of Medical Research*, 17(1), 10-15
- Initiative to Estimate the Global Burden of Foodborne Diseases. Available online: http://www.who.int/foodsafety/foodborne_disease/ferg/en/index.html (accessed on 4 April 2013).
- Isaac M, Dominic A, and Wellington O. (2013). Hygienic practices among food vendors in educational institutions in Ghana: the case of Konongo. *Foods*, 2, 282-94.
- Lues, J.F.R., Rasephei, M.R., Venter, P. and Theron, M.M. (2006). Assessing food safety and associated food handling practices in street food vending. *Int. J. Environ. Health Res.*, 16, 319-328
- Mizanur R, Muhammad TA, Kamaluddin B and Zainab T. (2012) Food safety knowledge, attitude and hygiene practices among the street food vendors in Northern Kuching city, Sarawak, Malaysia. *Borneo Sciences* (30, 95-103.
- Muleta D. and Ashenafi. M. (2001). Salmonella, Shigella and Growth potential of other food-borne pathogens in Ethiopian street vended foods. *East African Medical Journal*, 78 (11), 576-580
- Omemu, A. M, and Aderoju, S. T. (2008). Food safety knowledge and practices of street vendors in the city of Abeokuta, Nigeria. *Food control*. 19(4):396-402.

The Nigerian Tribune (2011) Food poisoning kills 10 Nigerian teachers. The Nigerian Tribune, 1st June, 2011. Accessed from http://www.upi.com/Top_News/World-News/2011/06/01/Food-poisoning-kills-10-Nigerian-teachers/UPI on 7th June, 2011.

WHO (2015). Essential Safety Requirements for Street Vended Foods. Available on line:http://www.who.int/foodsafety/publications/fs_management/en/streetvend.pdf. [Accessed on 29/04/ 2017]