



The Effect of Health Education on Food Vendors Behaviour towards Food Safety in Universities in Rivers State

¹Ejomarie, Lois. E. & Ernest I. Achalu²

¹Department of Human Kinetics, Health and Safety Education, Ignatius Ajuru University of Education Rumuolumeni, Rivers State, Nigeria
lois.obed-ujukwu@uniport.edu.ng

²Department of Human Kinetic, Health and Safety Education, University of Port Harcourt, Rivers State, Nigeria
achalu@uniport.edu.ng

ABSTRACT

The study investigated the effects of health education on knowledge, attitude and behaviours of food vendors towards food safety in universities in Rivers State. Six objectives, six research questions and six null hypotheses guided the study. The population of the study consisted of 500 food vendors in universities in Rivers State. The research design was quasi-experimental. Purposive sampling technique was used to select 500 participants from seventy restaurants, fast food, kiosk, and eateries in universities in Rivers State. A validated researcher-developed questionnaire titled “Food Safety Behaviours questionnaire (FSBQ)” with a reliability index of 0.773 was used to collect data from five hundred respondents (250 control and 250 treatment). Out of five hundred (500) copies of the questionnaire administered, four hundred and seventy (470) were properly filled, and used for data analysis. Percentage, mean standard deviation were used to analyse the research questions while z-test, and ANCOVA were used to test hypotheses at 0.05 alpha level. It was found that health education had significant effect on food vendors’ behaviours towards food safety $P < 0.05$). Also result showed that health education had no significant effects on food vendors’ behaviours towards food safety based on gender, age, class level and location ($f = 0.287, p > 0.05$). It was therefore recommended among others that Health Educator’s should also focus on food vendors to sustain and improve on their existing food safety behaviour, while Environmental Health Officers should also enforce the extra laws on food safety, ensure compliance and punish offenders.

Keywords: Food Safety Behaviours, food vendors, Health Educator

INTRODUCTION

The concern over food safety is long standing, and problems accompanying improper food safety practices is well documented all around the world. Food safety is an increasingly important public health issue, to put an end or to minimize the cases of food borne illnesses which is a great public health problem in the developed and developing world (Chinenye-Julius & Atulomah, 2021). Lack of good safety lead to various food borne illness which are liken to food poisoning. Such as typhoid and paratyphoid fevers, cholera, shigellosis (bacillary dysentery) among other and Lassa fever which are

responsible for temporary morbidity and mortality worldwide. Unfortunately, most of these health challenges are linked to consumption of food in public places (food vendors). Hence, poor food safety practices especially among food vendors is one of the many health issues that the globe is dealing with.

Food vendors are informal small food traders whose businesses are to process and serve the public with cooked food. Majority of food vendors in developing countries are unlicensed and untrained in food hygiene and sanitation (Hill, 2016; Lamin-Boima, 2017; Rathod 2017). Food vendors can be stationary, such as by renting space in a store, or mobile, such as by going from place to place with their wares on push carts, wheelbarrows, bicycles, or baskets on their heads, or by selling their foods on moving trains, buses, and so on. Every day, 2.5 million people throughout the world eat meals sold on the street (Samapundo, Thanh, Xhaferi, & Devlieghere, 2016). Food is a critical and basic requirement for human survival; its acquisition, preparation, and consumption are all essential for survival. Diseases disseminated through the consumption of contaminated food, on the other hand, are a prevalent and persistent problem that result in a high rate of morbidity and death, thus it is a fundamental need of any food process that the food produced by a food vendor is safe for consumption. Food handling professionals, according to the World Health Organization (WHO), play a crucial role in ensuring food safety throughout the food production and storage chain (WHO, 2017). Foodborne diseases (particularly *E. coli* and *Salmonella*) kill over 200,000 people in Nigeria every year, according to the WHO (WHO, 2017). These deaths were caused by tainted foods that had been improperly processed, preserved, and served (WHO, 2017). Proper refrigeration, lengthy handling and inadequate reheating of cooked food, and contamination of food by commercial or household food handlers who worked while sick or had poor personal hygiene have all been identified as contributing factors to foodborne outbreaks.

The emergence of unofficial, unregistered, and illegal food companies, as well as inappropriate food preparation, storage, and handling, result in food-related health issues. Food that is unsafe to eat poses a global health risk to everyone who consumes it. Infants, young children, pregnant women, the elderly, and those with underlying illnesses are most vulnerable. Foodborne illnesses are a leading cause of morbidity and mortality around the world, with severe public health implications. In the United States, the United Kingdom, and France, an estimated 47.8 million, 2 million, and 750,000 people become ill as a result of eating food containing pathogens or disease-causing substances, respectively, while 5.4 million cases of food-borne illness are estimated to occur annually in Australia, resulting in 18,000 hospitalizations, 120 deaths, 21 million people missing work, 1.2 million people receiving medical consultations, and 30 people receiving medical treatment (Ifenkwe, 2012; Akintaro, 2012).

Health education is a process of inculcating into the youth and general society, the value of good health and how to maintain healthy life (Yol, 2014). Food vendors need education on safe hygiene practices knowing that knowledge without practice is bitty and fruitless. So far, available record revealed that studies on the effect of health education on behaviour among food vendors towards food safety in universities in Rivers State have not been made. Hence, the nexus of this study. This study is aimed at investigating the effects of health education on the food safety behaviour among food vendors in Universities in River State.

1.2 Aim and Objectives of the Study

The aim of the study was the effects of health education on knowledge, attitude and behaviour of food vendors towards food safety in Universities in Rivers State

Specifically, the objectives of this study were to:

1. determine the effects of health education on behaviour of food vendors towards food safety in Universities in Rivers State;
2. determine the effect of health education on behaviour towards food safety of food vendors in Universities in Rivers State based on gender, age, class level and location;

1.4 Research Questions

The following research questions formulated guided the study and were answered.

1. What is the effect of health education on food vendor behaviour in relation to food safety in Universities in Rivers State?

2. What is the effect of health education on the behaviour of food vendors as regards food safety in Rivers State Universities based on gender, age, class level and location?

1.5 Hypotheses

The following hypotheses were tested at 0.05 level of significance.

1. Health education has no significant effects on food vendor's behaviour in relation to food safety in Universities in Rivers State;
2. Health education has no significant effects on the behaviour of food vendors as regards food safety in Universities in Rivers State based on gender, age, class level and location.

METHODOLOGY

The quasi-experimental design was adopted in the study. Quasi experimental design is an empirical interventional study used to estimate the causal impact of an intervention on target population without random assignment. The study population comprised of 500 female and male food vendors in major hostels, classroom vendors and hospital on campus vendors in the cafeterias, fast food restaurants, food kiosks, food hawker and roadside food seller in three universities premises in Rivers State. The sample for the study was 500 male and female food vendors operating within university campuses in Rivers state. The sample was drawn using two sampling techniques which consisted of a purposive sampling technique and non-proportionate random stratified random sampling technique. Purposive sampling techniques were used to attract three prominent universities in Rivers State. The universities were – University of Port Harcourt, Rivers State University and Ignatius Ajuru University of Education. The criteria for selected universities are as follows: It must be an accredited university; Must have nothing less than 30 food vendors; Must have been in existence for at least 10 years; and must have residential accommodation and hostel for students. While the Exclusion criteria are as follows: Frame ownership of the universities; Street food vendor's absence for the commencement of this study; others who sell others foods other than cooked foods;

The instrument for data collection was a self-structured questionnaire titled "Food Safety Behaviour Questionnaires (FSBQ)"The instrument contain sections, (section A) which was designed to measure the demographic variables of the participants while (section B) were made up of fifteen (15) items which sought information on food safety behaviour (KFB). The instrument was administered by the researcher with the help of three research trained research assistants. Four hundred and seventy (470) out of 500 questionnaires administered and the return rate was 94%. The researcher organized all activities in both the experimental and control groups. Prior to the commencement of the instructions in both groups, the participants in each group took part in a baseline test (pre-test) for the behaviour. The completed copies of the questionnaire were collated, code and analysed using descriptive statistics with simple percentage for research questions using mean, standard deviation. The hypotheses were tested at 0.05 alpha levels using Z-test and Analysis of CoVariance (ANCOVA)

In table 3, the ANCOVA of the effect of health education on the behaviours among food vendors in universities in Rivers State towards food safety based on gender, age, level of education and location was shown. The results revealed that health education had no significant effect on the practices of food safety based on gender, age, level of education and location ($F=0.453$, $df = 4$, $P>0.05$). Hence, Health Education had no significant effects on food vendors behaviour in universities in Rivers State towards food safety based on the interactive effects of gender, age, class level and location.

RESULTS

Research Question 1: *What is the effect of health education on the behaviours of food vendors as regards food safety in Universities in Rivers State?*

Hypothesis 1 There is no significant effect of health education on the behaviours of food vendors as regards food safety in Universities in Rivers State.

Table 4.3.3: Summary of z-test analysis of the effect of health education on behaviours of food vendors towards food safety in Universities in Rivers State.

		N	Mean	SD	Mdif	Df	Z-cal	Z-crit.	P. val	Decision
Control	pre-test	235	2.69	0.998	0.04	234	0.4557	1.650	0.590	Ho rejected
	post-test	235	2.72	1.081						
Treatment	pre-test	235	2.61	1.059	0.49	234	7.2944	1.650	0.000	
	post-test	235	3.10	1.152						

*P.val<0.05

Table 1 showed the summary of z-test analysis of the effect of health education on behaviours of food vendors towards food safety in Universities in Rivers State. First the result revealed that the control pre-test and post-test mean scores on food safety behaviour were 2.66 ± 0.998 and 2.72 ± 1.081 respectively with a mean difference of 0.03. While the pre-test and post-test means scores of the treatment group were 2.61 ± 1.059 and 3.10 ± 1.152 respectively with a mean difference of 0.49. This result indicated that the pre-test and post-test mean difference of the treatment group was higher than the pre-test and protest mean difference of the control group. Suffice to conclude that health education intervention had effect on the food vendors' food safety behaviour.

Also, for the control, the Z-cal was 0.4557 and Pval was 0.590 at 234 df and 0.05 alpha level. Since the Pval was greater than 0.05, it was drawn that there is no significant difference in the pre-test and post-test mean scores of the control group. However, the Z-cal and Pval of the treatment group were 7.2944 and 0.000 respectively. Based on the fact that the Pval was lesser than the 0.05, it was concluded that there is a significant difference in pre-test and post-test mean scores of the treatment group. There, the null hypothesis was rejected and the alternative hypothesis accepted. Hence, health education had a significant influence on food vendors' food safety behaviour.

Research question 2: *What is the effect of health education on the behaviour of food vendors as regards food safety in Universities in Rivers State based on gender, age, class level and location?*

Table 2: summary analysis of effect of health education on the behaviour of food vendors with regard to food safety in Universities in Rivers State based on gender, age, class level and location

Treatment post-test group = 235		Mean	Std.
Gender	Female	3.16	±0.976
	Male	3.13	±1.116
Age	15-20	2.56	±0.888
	21-25	2.79	±1.023
	26-30	2.98	±0.896
	36-40	3.20	±0.876
	31-35	3.27	±0.881
	41 & above	3.44	±1.045
Education	Secondary	2.98	±0.967
	Tertiary	3.17	±1.003
	No formal education	2.70	±1.123
Location	UNIPORT	2.98	±0.665
	RST	2.90	±0.867
	IAUE	2.81	±0.769
	Aggregate	3.10	+0.769

Table 2 revealed that attitude of the food vendors towards food safety were slightly different based on gender (male = 3.13 ± 1.116 and female = 3.16 ± 0.976), based on age, the food vendors who were 41 years and above had the highest mean score of 3.44 ± 1.045 while the youngest age group had the lowest mean 2.56 ± 0.888 ; based on education, the food vendors with tertiary education scored the highest mean (3.17 ± 1.003) while those with no formal education had the lowest mean score (2.70 ± 1.123); based on location, the mean scores of the respondents were similar (RSU = 2.90 ± 0.867 , UNIPORT = 2.98 ± 0.665 and IAUE = 2.81 ± 0.769). Hence, health education had significant effect on food vendors' behaviour in universities in Rivers State.

Hypothesis 2: There is no significant effect of health education on the behaviour of food vendors towards food safety in Universities in Rivers State based on gender, age, level of education and location.

Table 3: ANCOVA of the effect of health education has no significant effects on the behaviours of food vendors towards food safety in Universities in Rivers State based on gender, age, class level and location

Source	Type III Sum of Squares	df	Mean Square	F	P=	Partial Eta Squared
Corrected Model	198.667 ^a	5	39.733	7.311	.038	.143
Intercept	16152.211	1	16152.211	532.898	.000	.535
Gender	8.251	1	8.251	.272	.602	.001
Age	40.047	1	40.047	7.321	.001	.131
Class Level	7.925	1	7.925	5.261	.009	.221
Location	17.771	1	17.771	.586	.444	.001
Gender*Age	8.251	2	8.251	.272	.602	.001
Gender*Education	40.047	3	40.047	1.321	.251	.003
Gender*Location	7.925	2	7.925	.261	.609	.001
Age*Education	17.771	2	17.771	.586	.444	.001
Age*Location	7.925	2	7.925	.261	.609	.001
Education*Location	17.771	3	17.771	.586	.444	.001
Gender*Age*Education*Location	8.251	5	8.251	.453	.602	.001
Comparison group	141.626	1	141.626	4.673	.031	.010
Error	14063.894	464	30.310			
Total	806466.000	470				
Corrected Total	14262.562	469				

- a. Independent variable: Gender, Age, Class level and Location
- b. Dependent Variable: Food Safety Behaviour

DISCUSSION OF FINDINGS

The result was aimed at finding out the effect of health education on behaviours of food vendors towards food safety in universities in Rivers State. The finding of this study revealed the behaviours of food vendors on food safety with positive improvement from (2.69 ± 2.72) indicating a mean difference of 0.03 to (2.61 ± 3.10) with a mean difference of 0.49 in the control group and treatment group respectively. Ma et al, (2019) result of behaviour of the street food vendors shows barely half stored raw and cooked food in sealed and separated containers, and they were generally poor at cleaning their utensils with only 1/3 using soapy water and 60% lack health permits or health certificates. Food-borne disease cases were likely to occur because food handlers generally had insufficient beliefs about the nature and origin of food-borne diseases and underestimate their negative impacts. Ellinda-Petra et al (2020) in the above mentioned situation indicated that relationship among knowledge, attitude and behaviour was found to be dependent on the universities community due to different demographic profile. Owing to the important economic contribution, there is a necessity to understand the level of food safety knowledge, attitude and behavior among food vendors Rivers State Food safety training for food vendors is important to ensure the safety of the food Despite 95% of respondents receiving food hygiene training, 63% admitted to sometimes not carrying out food safety behaviour. All the food handlers also perceived their business to be of relatively low risk and yet all business prepared high risk foods. Again, Ifeadike et al, (2014) study

on the assessment of the food hygiene practices of food-handlers in the Federal Capital Territory of Nigeria was similar to this study though the data were taken using food hygiene practices questionnaires checking (FHPQ) from 168 food handlers drawn through multistage sampling techniques from the 45 food established, Federal Capital Territory (FCT) revealed that poor and faulty food handling practices have been identified as the leading cause of the majority of food-borne diseases. It has a strong indication of the poor health status and poor hygiene practice of food handlers/ establishments in the FCT. This was variance from this in term of location, population of studies and the sampling techniques used for this study. One hundred and fifty (89.3%) of them wash their hands after the use of toilets, only 44 (26.7%) change their hand gloves at work ,One hundred and twenty (71.4%) of them undergo regular medical checkup, whereas 53 (31.5%) are isolated from workplace when ill, 51 (30.4%) used sanitizers/ disinfectants at workplace, whereas 38 (22.6%) check food temperature with thermometer and 103 (61.3%) use ideal waste disposal methods at workplace ($P < 0.01$). 1.99 ± 1.025 to 2.08 ± 1.083 in control group deposited of refuse in open areas around their restaurant while in the treatment group 2.27 ± 1.009 to 2.36 ± 1.264 respectively. This had a positive effect analysed. Also those that don't throw refuse or waste around the kitchen premises equally had a positive effect in the statistical analysed indicating that food vendor don't practice what they know. This study was contrary to Addo- Tham et al, (2020) who studied knowledge of food safety and food handling practices of street food vendors in Ejisu- Juasen Municipality of Ghana. It could be time factor and geographical location of the study. Though observational checklist was used on 340 street food vendors drawn using simple random sampling and Pearson, Chi- Square as against Cronbach's alpha and Z-test used for this study. Though it is in line with Hurkey et al, (2017) study, who researched on the assessment of food safety knowledge, attitude, self-reported practices and microbiological, hand hygiene of food handler's in Kuala Lumpur, Malaysia. Though the population sampled was small and the data analysis used was T-test and IBM SPSS version 22 against this study method of data analysed. Aimi et al, (2018) study was contrary to this study because the method of data analysis was SPSS Version 21, Likert scale and T - Test and ANOVA. Aimi et al, (2018) researched on knowledge, attitude and practice towards food poisoning among food handlers and dietetic students in a public university. Malaysia. Population of study was small compared to this study. Results showed negative attitude towards food hygiene practice

Furthermore, the study found no significant difference in the effects of health education on the behaviour food vendors towards food safety based on gender, age, education and location. This finding is consistent with Ninigi and Hassan (2019) study in Bauchi State. These authors for o significant difference n the food safety behaviour of street food vendors in relation to gender, age and level of education. Another study carried out by Turnbull-Fortune and Badrie (2012) also found no difference in the scores for food safety behaviour between genders but the difference was significant for knowledge. He also discovered food safety knowledge skills of male food handlers at secondary level were significantly lower than that of the females. The result is contrary with the findings of Nee and Sani (2011) was found that neither age nor working experience had significant effect on both food safety knowledge and practice. The is in line with another study conducted by Afolaranmi et al,(2014) who reported that years of working experience had positive statistical significant influence on the knowledge, attitude and practice of food safety and hygiene Ifeadike et al, (2014) revealed poor and faulty food handling practices have been identified as the leading cause of the majority of food-borne diseases. It has a strong indication of the poor health status and poor hygiene practice of food handlers/ establishments in the FCT in the 45 food establishment. Afolaranmi et al, (2014) finding revealed that majority (98.5%) of the food handlers had good practices food safety and hygiene after the training as against 51.5% who had same before the training($X^2=76.6$: $P < 0.001$) which agreed to this study. however, the behaviour did not differ significantly based on gender and age.

CONCLUSION

Food vendors in universities in Rivers State had good food safety behaviour. Male food vendors in universities in Rivers State do not significantly differ from their female counterpart in behaviour towards food safety. There was no significant difference in behaviours among food vendors in universities in

Rivers based on gender age, location and class level. The study demonstrated the effectiveness of training programme aimed at improving food safety behaviour. Therefore, the need for Government, University authorities, students, health educators, stakeholders, philanthropists and others to play their roles in ensuring food safety and health for staff, students in public universities in Rivers State.

RECOMMENDATIONS

Based on the findings of this study, the researcher made the following recommendations:

1. The University authorities should use Environmental Health Officers to sustain and improve on food vendors practice.
2. The Environmental Health Officers should enforce the extra laws on food safety, ensure compliance and punish offenders.
3. The Health Services Department should as a matter of urgency, carryout pre- employment and periodic medical examinations on food vendors.
4. There should be strict monitoring of eateries at interval within the university campus.
5. The committee should be training and re-training by the committee irrespective of age, gender, level of education and location.
6. Staff and students should also make themselves available for comprehensive entrepreneurship education on good hygiene practices from food vendors.

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