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

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ABSTRACT
The study investigated the effects of health education on knowledge of food vendors towards food safety in universities in Rivers State. Two objectives, two research questions and three 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 Self-structured questionnaire titled "Knowledge towards food safety questionnaires (KFSQ)"with a reliability index of 0.773 was used to collect data from five hundred respondents. Out of five hundred (500) copies of the questionnaire administered, four hundred and seventy (470) were dully filled, returned and used for data analysis representing 94% rate of return. Simple percentage, mean standard deviation were used to analyze the research questions while z-test, Likert's Scale and ANCOVA were used to test hypotheses at 0.05 alpha level. It was found that health education had significant effect on food vendors' knowledge about food safety. The control group pretest and posttest knowledge were 59.6% and 60.4% respectively while that of treatment pretest and posttest were 58.3% and 64.7% respectively(% knowledge gain = 6.4%, $P<0.05$).However, health education had no significant effects on food vendors' level of knowledge of food safety based on the interactive effects of gender, age, level of education and location ($f = 0.572$, $p>0.05$), but had based on the interactive effects of age and level of education ($F = 6.926$, $p<0.05$ It was therefore recommended among others that Health Educator's should also focus on food vendors to sustain and improve on their existing knowledge of food vendors in universities in Rivers State.
Keywords: Knowledge of food safety, food vendors, Universities in Rivers State

INTRODUCTION

Food borne diseases are a major public health problem globally affecting millions of people every year despite numerous information campaigns and educational efforts towards food safety. Food safety is the act of handling, preparing and storing food in a way to best reduce the risk of individuals becoming sick from food-borne illnesses (World Health Organization, 2015). This definition implies that food can be contaminated when it is handled, stored or prepared incorrectly. Food borne diseases are a major public health problem globally affecting millions of people every year despite numerous information campaigns and educational efforts towards food safety. Food safety is a scientific area which describes handling, preparation, and storage of food in ways that prevent food borne illnesses (Suleiman, 2014). Ningi and Hassan (2019) stated that food safety deals with the prevention of contamination of food stuffs at all

stages of production, collection, transportation, storage, preparation, sales and consumption. Food safety is a very essential part of prevention with all measures to ensure that food items gotten from the field (farm) are transported, neatly package, neatly prepared, neatly stored, as well as dishing aspect while observing all hygienic protocols before it get the consumers. According to Vorvick (2014) food safety refers to the situation and behaviour put up by vendors that save the quality of food, prevent contamination and food – borne illnesses and it is essential in preventing outbreak of illness resulting from food borne after consumption. Food safety is an act of been extremely careful for everything in our environment including additives put in food that causes harm to consumers.

The knowledge of food safety involves the vendors' consciousness of things to be done why under pressure or not in the course of either acquiring food containers for packaging, processing food or dishing food to consumers (Udgiri & Yadavnnavar, 2006). Food vendors knowledge must include knowing that getting fresh items from the market for food preparation, the best methods to store food items at any given time, separation of raw food items from ready-to-eat food, the need to wash hands frequently and perfectly after being exposed to certain or no contaminants, proper waste management, the right temperature for cooking and knowing the duration correctly, the necessary dress code and good personal hygiene, proper washing of fruits and vegetable, availability of wholesome portable water for drinking among others all have critical roles in ensuring the safety of food and drink for the consumers (Suleiman, 2014).

Adesokan and Akinseye (2015) reported an association between training and knowledge as well as practices of food safety while different training areas contributed similarly to food handlers' knowledge and practices with an increase in training duration. Food service employees with refresher training demonstrated significantly higher knowledge and practice level than those without, being about 45 and 14 times more likely to, respectively, improve their knowledge and practice. Food handler training is seen as one strategy whereby food safety can be increased, offering long-term benefits to the food industry (Smith, 1994).

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. 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. Therefore, public health issue on food safety worldwide continues as quality and safe food is the demand of staff and students.

Adesokan (2015) reported that refresher training and short duration training in addition to previously reported determinants which are essential to prevent food safety failures that often result from poor knowledge and practices of food safety among food handlers. However earlier reports stated that increased knowledge from food safety training might not necessarily translate into improved attitudes and practices of food safety. Adesokan (2015) results revealed insights into several studies that reported inconsistent results regarding the effectiveness of food safety training on behaviour in food service establishments. As urbanization increases worldwide, eating meals outside the home are more frequent and despite the growth of this vendors sector, there is no law enforce on vendors to sell and not to sell food on the streets. Globally, the world's increasing population of the staff and students desire to be equalized with a wider range of foods despite it has resulted in a longer and more complex food chain. Today, food gets to consumers after being collected from the field, farms and factories and then transported from one country to many countries; passing distance of hundreds to thousands of kilometers through this wide international distribution of food, and any infection that occurs at any point within the transition has the capability of affecting any population in the world.

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 knowledge, attitude and behaviour (KAB) among food vendors towards food safety in universities in Rivers State have not been made. The following research questions formulated guided the study and were answered.

1 What is the effect of Health Education on knowledge of food safety among food vendors in Universities in Rivers State?
2 does the effect of health education on food safety knowledge of food vendors in Rivers State Universities differ based on gender, age, class level and location?

Hypotheses

The following hypotheses were tested at 0.05 level of significance.

1. Health Education has no significant effects food vendors' knowledge of food safety in Rivers State Universities;
2. Health Education has no significant effects on food vendors knowledge of food safety in Rivers State Universities 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. Stage I: 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 Knowledge Questionnaires (FSKQ)"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 knowledge of food safety (KFS). 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 knowledge. The completed copies of the questionnaire were collated, code and analyzed 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,

RESULT

Testing of Hypotheses

Hypothesis 1: Health Education has no significant effect of on knowledge of food vendors towards food safety in Universities in Rivers State Universities.

Table 1: Summary of Z-test analysis of the effect of health education on knowledge of food vendors towards food safety in Universities in Rivers State.

		N	Mean	SD	Df	Z-cal	Z-crit.	P. val	Decision
Control	pretest	235	2.77	0.881	234	0.657	1.650	0.430	Ho rejected*
	posttest	235	2.81	0.875					
Treatment	pretest	235	2.79	1.004	234	5.612	1.650	0.003	
	posttest	235	3.11	0.765					

In Table 1, The Z-test analysis of the control group pretest and posttest showed a p.val of 0.430 while that of treatment was 0.003. For the treatment ($p<0.05$), the null hypothesis was rejected. Thus, health education had a significant effect on the knowledge of food safety among food vendors in universities in Rivers State

Hypothesis 2: Health Education has no significant effect on food vendors knowledge of food safety in Rivers State Universities based on gender, age, class level and location;

What is the effect of health education on knowledge of food vendors in Rivers State Universities towards food safety based on gender, age, class level and location?

Table 2: ANCOVA of effect of health education on knowledge of food vendors towards food safety in Rivers State Universities based on gender, age, class level and location

Source	Type III Sum of Squares	Df	Mean Square	F	P.value	Partial Eta Squared
Corrected Model	70.576[a]	5	14.115	3.305	.006	.034
Intercept	3745.704	1	3745.704	877.029	.000	.654
Gender	1.026	1	1.026	.240	**.624**	.001
Age	33.634	1	33.634	7.875	**.005**	.217
Level of Education	44.947	1	44.947	9.158	**.002**	.342
Location	1.195	1	1.195	.280	**.597**	.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	6.926	.004	.212
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**	**4**	**8.251**	**.572**	**.602**	**.001**
Comparison group	54.551	1	54.551	12.363	.001	.210
Error	1981.699	464	4.271			
Total	200555.000	470				
Corrected Total	2052.274	469				

a. R Squared = .340 (Adjusted R Squared = .024)

b. Dependent Variable: Posttest scores on knowledge

In table 2, the ANCOVA analysis on the effect of health education on the knowledge of food vendors in universities in Rivers State on food safety based on gender, age, level of education and location. The result revealed that health education had no significant effect on the knowledge of food safety based on gender, age, level of education and location ($F=0.572$, $df = 4$, $P>0.05$).

The outcome of the study revealed that significant difference did existed between male and female food vendors in universities in Rivers State toward food safety. This proved that the food vendor service industry is still dominated by the females. And despite female were more, health education had no significant effects on food vendors' knowledge in universities in Rivers State towards food safety based on the interactive effects of gender ($f = 0.572$, $p>0.05$), health education had no significant effects on food vendors attitude in universities in Rivers State towards food safety based on the gender ($f = 0.287$, $p>0.05$), and also 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 ($f = 0.453$, $p>0.05$).

DISCUSSION

The study was aimed at finding out the effect of health education on knowledge of food vendors in universities in Rivers State on food safety. The findings revealed there was improved knowledge due to health education (60.4-59.6) 0.8% to (64.7-58.3) 6.4% for control and treatment group respectively. Though, the result was not surprising to me because most food vendors attest to how useful the training meant to them especially those who had not attended trainings before. The study is in line with Ningi and Hassan (2019) studied, who obtained similar results in a studied in Bauchi State. The study was on knowledge of food safety among food handlers in boarding secondary schools. The findings revealed that food handlers in boarding secondary schools in Bauchi State had knowledge of food safety ($x^2=192.645$, df:1: $p< 0.05$) cited Afolaranmi et al, (2015). The findings also showed the overall percentage of the participant (56.6%),(16.6%) had knowledge to micro-organism can cause food poisoning, while (74.9%) agreed that food vendors, packaging materials, animals and birds, insect, rodents, garbage, sewage and food ingredient are sources of food contaminants and (71.1%) accepted that harmful bacteria are destroyed by thorough and complete cooking. Unsafe foods can be identified by the way they look and smell (23.4%) while majority (73.2%) agreed that in kitchen, contamination of food with harmful bacteria can occur during handling and storage. About 82.6% had good knowledge of hand washing, 82.1% had knowledge of food borne illness to be life threatening. The major points of contamination to ready to eat food equipment, utensils and food vendors at all points of processing and handling while only 49.4%. Also Ma, et al, (2019) highlighted improvement of knowledge of food safety. Who studied knowledge and practice of food safety among food vendors in primary school in Jos. Plateaus State Nigeria, which opined that one hundred and six (60.9%) of the respondents had good knowledge with a mean knowledge score of 18.59±5.90.The results of this study was also consistent with the finding of Iwu et al (2017) which revealed that knowledge on food safety was good as well as attitude 81%and 71% respectively. This was as a result of training done like this study. Iwu et al, (2017) revealed that the main sources of information were from television (38.5%), health workers (36.2%) and radio (35.1%). Ma et al, (2019) results was similar even though, there was variance in location and time of study, the sample size was almost the same but difference in statistical method. The finding shows highlight scope for improvement of 430 street food vendors' residents advancing their knowledge of food safety practice. Street food suppliers have generally poor food handling practices and most are operating under unsanitary conditions on a food safety knowledge, attitude and behavior of street food vendors and consumers in Handan, a third Tier city in China. This study is in line with Ellinda-Petra et al,(2020) finding also suggested that knowledge affects food safety attitude and behaviour significantly. However, a significant positive correlation was observed between knowledge with training ($rs=0.107$, $P<0.05$), Knowledge with personal hygiene ($rs= 0.303$,$P<0.05$), Training with personal hygiene ($rs=0.174$, $P<0.05$) Al-Shabib et al, (2016) in the study of food safety knowledge, attitude and practices of male food handlers employed in restaurants of King Saud University Saudi Arabia, where were data was collected with knowledge, attitude and practice questionnaires (KAPQ) from 87 male food handlers drawn though cross-sectional sampling techniques Addo-Tham et al, (2020) results showed the level of knowledge of the food vendors

majorly was graded good (98.8%). Indicated the food vendors had good knowledge and handling. The knowledge on food safety was associated with training (P value≤ 0.011), Addo- Tham et al, (2020) studied knowledge on food safety and food- handling practices of street food vendors in Ejisu- Juaben Municipality of Ghana. Data were collected with knowledge of food safety and food-handling practices questionnaires (KFSFHPQ) and observational Checklist from 340 street food vendors as against 470 of this study and location variance and statistical tool were difference from this study and However, food safety knowledge was negatively affected by food safety behaviour of the respondents (B^1= -0.128, P<0.05). Also, Lim et al, (2016) results showed contrary due to difference in variable, time and location. Faremi et al, (2018) stated that in the face of adequate knowledge on food safety among participants, the majority had unsafe hygiene practice as most vendors do not wear a hat or cover hair when serving or preparing food in the study of food safety hygiene practice among food vendors in tertiary institution.

The finding was not consistent with the study of Akabanda et al, (2017) who studied food safety knowledge, attitude and practices among institutional food handlers in Ghana. The findings indicated that microorganisms can cause food poisoning and food borne disease (16.6% agreed) against 83.3% which denotes food vendor lack health professional training. The finding was consistent with the study of Adebukola et al, (2015) who reported that 41.6% food handlers had poor knowledge of food borne infection despite the difference in time and location. Ruby et al, (2019) was contrary to this study because the study result shows that the respondents had very poor knowledge. Ruby et al,(2019) studied food safety knowledge among adult consumers in East. Malaysia. Population of the study was small in comparison to this study and method of data analysis was different

Moreb et al, (2017) had a variance in knowledge of food safety practices as well even though the population sampled was so high 821 food handlers against 470 of this study. Moreb et al, (2017) studied knowledge if food safety and food handling practices among food handlers in the Republic of Ireland.

The finding revealed that 63.98% knowledge among the female and 65.66% among the male. This indicates less than 2% difference. This proved that the food vendor service industry is still dominated by the females. For age, the highest level of knowledge was held by food vendors that were 41 years and above (95.24%) while the youngest age had the lowest level of knowledge (57.50%). In terms of education, food vendors with tertiary level of education scored the highest level of knowledge (75.47%) while those without any formal education scored the lowest (44.62%). All the food vendors across the location scored above 60%. Samapundo et al (2014), gender, level of education and location did not have significant effects (p<0.05). The findings is inconsistent with the report of Norazmir et al,(2012) who showed that a high level of food safety knowledge and practices among male and female students. The study was not in line with Ningi & Hassan (2019) study, who studied knowledge of food safety among food handlers in boarding secondary schools in Bauchi State Nigeria. The mean scores (59.63) of the male respondents on food safety knowledge was greater than the mean scores (59.50) of female respondents which means that male were relatively knowledgeable than the female food handlers.

He discovered significance difference between male and female food handlers on knowledge of food safety rt=148, df: 302; p>0.05). The difference in significance for Knowledge (Addo-Tham et al, 2020). Most of the food vendors findings were female (91%), more than half of the participants (53.2%) attained junior high school education. Marital status was more than half 55.5%. Association between knowledge on food safety based on socio-demographic characteristics of participants is stated as follow; No statistical difference was found between the food safety knowledge of food vendors based on their education level.(x^2=4.28; P-value ≤0.369), age group (x^2= 680; p value ≤0.236), sex (x^2= 0.41; p value≤ 0.524).

CONCLUSION

Food vendors in universities in Rivers State had good Knowledge of food safety. Male food vendors in universities in Rivers State do not significantly differ from their female counterpart in knowledge towards food safety. There was no significant difference in knowledge 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 the knowledge. 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. Health Educator's should focus on food vendors to sustain and improve on their existing knowledge.
2. Health Educator should carry out health awareness campaign on food hygiene best practices
3. The Universities authorities should provide equal opportunity and concern to food vendors in respective of the gender to maintain and promote food safety knowledge and to change their negative practice.
4. The university should set up a committee to access, evaluate person before they are given business space.
5. There should be strict monitoring of eateries at interval within the university campus.
6. The committee should be training and re-training by the committee irrespective of age, gender, level of education and location.

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