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The Impact of Education on Knowledge, Attitude and Practice of Food Vendors in Abia State Nigeria

[1]Dora O. Akinboye & [2]Ndu-Agomuo Ihuoma Lois
[1&2]Department of Public Health
Babcock University, Ilishan-Remo, Ogun-State, Nigeria

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Abstract

Educational intervention on food industry personnel on hygiene has been recommended as a means of improving food handling practices and food safety. This is because human handling errors are responsible for the major outbreaks of food poisoning and food-borne illnesses in developing and developed countries. The study aims to assess the impact of education on knowledge, attitude and practice of food vendors in study Areas in Abia State Nigeria. This study adopted a quasi-experimental study research design which involved one experimental group and one control group for the selection of the 52 food handlers in the five selected Local Government Areas in Abia State. Data were collected using a pretested semi-structured interviewer administered questionnaire and an observational checklist. Descriptive analysis was done with frequencies and summary statistics, T-test and independent sample test was computed to determine the mean difference and significant relationship of variables. Level of significance was set at 0.05 significant levels. The mean knowledge score of the control group was 4.02 ± 1.55 while the mean knowledge score of the experimental group was 7.92 ± 2.50 before the intervention. The difference between the means of the two groups was statistically significant (t=9.28; p=0.000). Also, the mean attitude score was 37.58 ± 3.31 in the control while mean attitude score was 37.79 ± 5.10 in the subjects. The difference between the groups was not statistically significant (t=0.24; p=0.813). The mean practice score was 8.21 ± 2.69 in the control group while the mean practice score was 8.73 ± 4.76 in the experimental group. The difference between the groups was not statistically significant (t=0.67; p=0.506). After the intervention, the mean knowledge score for the experimental group was 9.02 ± 1.58 while that of the control group was 5.55 ± 1.54. The difference between the group was statistically significant (t= 11.03; p=0.000). The mean attitude score for the experimental group was 40.33 ± 4.10 while that of the control group was 41.81 ± 1.963. The difference between the groups was statistically significant (t=2.26; p=0.026). Educational and training programs should be implemented to influence the food vendors' knowledge, attitude, and practice positively.

Keywords: *Food-borne illness, Food handlers, Food safety, Food vendor, Hygiene*

Corresponding Author: Dora O. Akinboye

Background to the Study

Education of food vendors is an approach that enhances the increase in the level of behavioral component such as attitude, knowledge, practice, subjective norms perceived behavior control, and self- efficacy. Educational intervention also increases the knowledge of food handlers on hazards associated with the products used in food preparation and its safe handling. According to World Health Organization and Food and Agricultural Organization, (WHO,1996; FAO, 1997), educational intervention on food industry personnel in hygiene matters has been recommended as a means of improving food handling practices and food safety. This is attributed to the fact that human handling errors have been responsible for the major outbreaks of food poisoning in developing and developed countries (Clayton, Griffith, Peters and Prince, 2002).Vended food and food vendors are an integral part of urban life, (Mahon, Sobel, Towens, Mendoza, Guiiellmus and Tauxe(1999) reported that in many cities worldwide, food vendors are an important part source of convenient, affordable medium of food supply for the urban poor and working classes in both developed and developing countries. Nurudeen, Lawal and Ajayi (2014), Adebukola and Omolara (2015) also reported very poor practice amongst participants, which was against the Codex Alimentarius guideline.

From the foregoing, the study assessed the impact of education on knowledge, attitude and practice of food vendors in study areas in Abia State Nigeria. To achieve this, various hypotheses were stated and tested. Followed by summary reviews of the study variables in form of literature review. The theoretical frame work was discussed with the employment of theory of planned behavior. The methodology adopted was indicated including study area leading to the presentations and analysis of data. Discussion of findings, conclusion and recommendations forms the last section of the study.

Literature Review

Food Vendors

Food vendors are the establishments that provide prepared food for public consumption on or off their premises, and include, but not limited to, a store, shop, sales outlet, restaurant, grocery store, supermarket, delicatessen, catering truck or vehicle, any other person/persons who preparefood, and any organization, group, or individual that provides food as part of its services (Law Insider Inc. 2020). Knowledge of the street food vendors has a crucial impact on food safety. In addition to this is the fact that street food vendors are often unlicensed, untrained in food hygiene and sanitation and work under crude unsanitary conditions (Muinde and Kuri, 2005). According to the World Health Organisation, street food vendors in most developing countries should be educated as they are currently not sufficiently organized and responsive to undertake the responsibility of their own training (WHO, 1996). Food vendors should be adequately educated on the role of food in disease transmission as well as on rules of personal hygiene and approved practices in handling street food.

Training of food Vendors

Training of food vendors is a strategy for enhancing /improving their knowledge, attitude and practice of food hygiene and safety. Training is a planned process of modifying/improving knowledge, attitude and behavior through learning experience in order to achieve effective

performance in any given task or activity. Kalua (2001) opined that knowledge, positively influence attitude formation, and the recipient's comprehension of health facts. Positive attitude formation leads to positive behavior. Satin (2007) reported that food vendors are often poor initially; uneducated and untrained people make up the greater percentage of the population. They are often ignorant about food hygiene, which are the conditions and measures necessary to ensure the safety and protection of food from production to consumption. Lack of adequate food hygiene and poor knowledge of nutrition can lead to food-borne illnesses due to improper food handling practices, food poising as a result of poor food combining and in extreme events, even death of customer, (Satin, 2007). Alfred (2018) reported that more than 200,000 persons die of food poison in Nigeria annually, that the deaths were caused by contaminated foods through improper processing, preservation and service. He also affirmed that there were many avenues through which food could be contaminated. He also stated that when people eat the foods, they would have problems which may result in deaths. He therefore suggested that in order to reduce the burden to the barest minimum, the food vendors were called for continuous sensitization and training on food handlers and how to operate in hygienic environment and sanitary conditions required for processing of food. Abuja Municipal Area Council (AMAC)

Training is one of the most effective ways to change behavior, is an early intervention programme that promotes healthy eating and an active lifestyle (Sharma, Gernand and Day 2008). There is, therefore, an urgent need for the promotion of effective health and nutrition education interventions to implement changes in food choice, diet and lifestyle (Brug, 2004). Hence, this study aimed to assess the impact of education on knowledge, attitude and practice of food vendors in selected Local Government Areas in Abia State Nigeria.

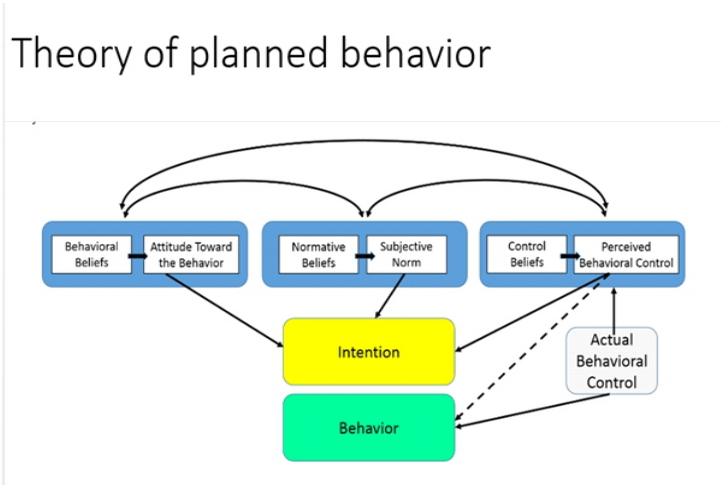
Theoretical Framework

Theory of Planed Behaviour(1985)

TPB postulates that perceived control is an independent determinant of behavioral intention, along with attitude toward the behavior and subjective norm. Holding attitude and subjective norm constant, a person's perception of the ease or difficulty of behavioral performance will affect his behavioral intention. Relative weights of these three factors in determining intentions should vary for different behaviors and populations. Few studies have operationalized perceived control using the underlying measures of control beliefs and perceived power; instead, researchers have mostly used the direct measure of perceived control (Ajzen, 2002).

TPB assume a causal chain that links behavioral beliefs, normative beliefs, and control beliefs to behavioral intentions and behaviors via attitudes, subjective norms, and perceived control. Hypothesized causal relationships among model components are clearly specified, and measurement and computation are delineated by Ajzen and Fishbein (Ajzen and Fishbein, 1980) This is one of the major strengths of the TRA/TPB approach. Other factors, including demographic and environmental characteristics, are assumed to operate through model constructs and do not independently contribute to explain the likelihood of performing a behavior.

Figure 1.



Methodology

Study Overview and Design

This study utilized a quasi-experimental design which were conducted using one experimental group and one control group, an observational checklist and research instrument was shared randomly, selected vending units was surveyed, and their operators interviewed on their food handling practice. The following sanitary facilities were observed in and around the respective food premises of the respondents: waste bin, refuse dump site, wash hand basins, and soap, disposable tissues, presence of flies, presence of rats and cockroaches and sanitary conveniences.

Respondents gender, age, marital status, level of education, ownership of the business, reasons for vending business, nature of the shop, nature of vending business, years in business, location of the shop, working schedule of the vendor, where food is prepared before vending, operational license, training on food safety, regular inspection from health officers, source of water, storage of water, purification of drinking water and water serving, food display ,customers convenience and method of cleaning toilet facilities, personal hygiene and method of refuse disposal of those who runs the business, all were compared among the vendors and their environment were measure to confirm if there were statistically significant association between educational status and hygiene status and food premises?

Structured Questionnaire and oral interview was used for the respondents. Further qualitative method was used to obtain pertinent information that was used to contextualize the design and implementation of the intervention in the Five Selected Local Government in Abia State.

Study Area

This study was conducted in Abia State in Nigeria using the food vendor selected in five (5) local Government areas extracted from the seventeen (17) local Governments in Abia state. The five selected Local Government Areas are Aba South, Aba North, Obi-Ngwa, Osisioma Ngwa, Umuahia South

Abia state is one of the States in the South Eastern part of Nigeria with its Capital in Umuahia and the major commercial city Aba, which was formerly a British Colonial Government outpost in the region. Abia State was created in August 27, 1991 out of Imo State. It is one of the constituent States of Niger Delta Regions.

It is made up of 17 Local Government Areas with a population of 193,392,500 according to 2016-03-21 projection and a total population of 140,431,790 according to population census 2006.with the area of 6,320 kmsq- Densities: 589.8/kmsq. Gender TOTAL NO of Males 1,430,298 and Females 1,415,082. Abia State is bounded in the East by Enugu and Ebonyi. In the South by Akwa Ibom and Cross River State. In the West by Rivers State and in the North by Imo State. Its major occupation is Agriculture and Merchandises.

Inclusion
Food vendors who, enroll and participate in the study after full explanation for the intervention were included.

Exclusion Criteria
All food hawkers that cannot be easily located
All the cashiers, general cleaners and others who do not handle food. All vendors who frequently change their locations especially those that always sale in the night.

Sample Size Determination
The formula for comparing two proportions was used to determine the minimum sample size required:

$$n= [z\alpha+z\beta]^2\times [p1(1-P1) + p^2(1-p^2)]^2$$
$$[P1-p2]^2$$

Where
n= minimum sample size in each group
$Z\alpha$= 1.96, the standard normal deviation at 5% level of significance
$Z\beta$= 0.84, the standard normal deviation at desired power of 80%
p1 = anticipated change in study group, that is the proportion of respondents with good knowledge of food sanitation and hygiene related practices among food vendors after intervention; taken at 50.5%
p2 =control group response, that is proportion of respondents with good knowledge on sanitation and hygiene related practices among food vendors before intervention; taken as 30.5%.

Inserting the required information in the formula:

$$n= [1.96+0.84]^2 \times 0.305\,(1-0.305]$$
$$[0.50-0.305)^2$$
$$= (7.84+ 1.96)^2\times 0.212$$
$$0.195^2$$
$$= 43.71 \text{ minimum } 44$$

Adjustment for drop-out (loss to follow-up): To compensate for loss to follow -up an adjustment was made to the calculated sample size leading having 52 in experimental group and 47 in control group. Considering the attrition rate of 20 % that is the response rate 80%, the sample size that was calculated by dividing the original calculated sample size by anticipated response rate are n/0.8 =50/0.8 gave approximately 52 in each group, a sample 104 food vendors, a total 52 of food vendors for each group.

Instrument for Data Collection
Questionnaire
Data collection was done using a structured questionnaire, and observational check list. The principal investigator and 5 trained research assistants (environmental health officers) carried out the data collection. The standardization of data was ensured by regular supervision by the research assistants who were always in the field and the researcher within two days intervals. The questionnaire was arranged into four sections and information was collected from respondents covering their socio-demographic particulars, food safety and hygiene knowledge, food safety attitude and practice of the food vendors.

Section 1: The food vendor's socio-demographic characteristics including sex, location, educational level, marital status, employment, vending time and age. Section II on understood on food safety and it included 11 multiple choice questions with Yes and No options. These questions covered general sanitation food safety training of food hygiene, food contamination, food storage, waste disposal, food handling, food poisoning and the general preventive measures on food vendor's health with strongly agree, Agree, Disagree and strongly disagree. Section III of the questionnaire covered 14 questions to assess the food vendor's attitude toward sanitation, hygiene and food safety. Section IV of the questionnaire comprised of four questions to assess the food vendors practice on sanitation, hygiene and food safety all with multiple choice answers like Every time, Sometimes and Not at all.

The Observational Checklist
The Environmental sanitation and infrastructural development was assessed during the visit of the research assistants and the researcher. The following was observed general environmental sanitation of the food premises, personal hygiene of the food vendor and her workers, availability of water supply, toilet facilities, refuse management and water used in washing the dishes and other facilities. The training methods and tools used were: (a) Handouts (b) interactive sections (c) power point projection which was used for its visual advantages.

Intervention
The last phase of the program was conducted for both the experimental and control group within a period of four contacts to ensure that every food vendor practices same and to ensure that the program had an in pact especially on the experimental group. Compliance to attending this training was achieved through the mobilization of the research assistants and the researcher during several encounters with the respondent's while organizing the frame work for this study and the baseline survey, with one on one contact as well as mobile phone calls and SMS. No fee was attached to the training. The instrument was prepared in English

and Vernacular (Igbo) and lecture was delivered in both languages and other local dialects in Abia State. The training started with registration of the participants followed by a Devotion each day the training was conducted. There was a pretest to assess their knowledge on sanitation and food hygiene practices and for comparison with post-test at the conclusion of the training program. The program was organized in different sections with short break for refreshment after which we had questions and interactive sections. After all the training post evaluation test was given to participants.

Post Intervention Survey

Three months after the initial intervention, the same questionnaire used for data collection at base line was administered to the same respondents surveyed at pre- intervention. The aim was to determine and compare knowledge attitude and practice of sanitation related practices among food vendors with the baseline data. The post -intervention survey was carried out in Aba Town Hall where we agreed to be converging in other to maintain social distancing. The same question on knowledge attitude and practice was administered for validity purposes. The respondents in the control group were trained at the end of the study using the same module because they were engaged in a different training on diabetes by two of the research assistants with the manual prepared for that purpose.

Data Collection Procedures

Data collection was carried out using the instrument that was designed for the study; the pre-intervention or base line, immediate post intervention was done after 10 weeks of the study. And a follow up was done by ten research assistants that were trained for this study.

Results

Table 1 shows that the experimental and control groups were dominated by females, 33 (63.5) and 28 (59.6) respectively. Vendors "Between" 30-39 of age were the majority (40.4%) in the experimental group, while those within 40-49 (44.7%) were the majority in the control. Those in the control group had a larger number who had attained tertiary level education (14, 29.8%). In both groups majority owned the food vending shops, 42 (80.8%) and 44 (93.6%) respectively.

Table 1: Demographic Characteristics of the participants in the study for each variable

Respondents in the study N -99					
Variables		N (%) Experimental		N (%) Control	
Sex	• Male	19	36.5	19	40.4
	• Female	33	63.5	28	59.6
Location	• Aba South	33	63.5	0	0
	• Aba North	11	21.2	0	0
	• Obingwa	5	9.6	20	42.6
	• Osisioma	0	0	24	51.1
	• Umuahia North	3	5.8	3	6.4
Educational Level	• No formal Ed	7	13.5	4	8.5
	• Primary	11	21.2	6	12.8
	• Secondary	22	42.3	23	48.9
	• Tertiary	12	23.1	14	29.8
Marital Status	• Single	17	32.7	11	23.4
	• Married	32	61.5	32	68.1
	• Divorced	1	1.9	3	6.4
	• Separated	1	3.8	2	2.1
Employment	• Shop owner	42	80.8	44	93.6
	• Spouse of shop owner	7	13.5	3	6.4
	• Laborer	3	5.8	--	--
Time of Vending	• Less than 12 months	15	28.8	15	31.9
	• 1-3 yrs	23	44.2	10	21.3
	• Above 5 yrs	14	26.9	22	46.8
Age	• 20-29	7	13.5	9	19.1
	• 30-39	21	40.4	14	29.8
	• 40-49	15	28.8	21	44.7
	• Above 50 yrs	9	17.3	3	6.4

The level of knowledge was computed based on a 22-point rating scale at two levels. A mean score of 0-11 points was considered as low level of knowledge, while a mean score of 12-22 points was considered as high level of knowledge. The computed mean level of knowledge in the experimental group before the intervention was 8.33 (±2.59; SE=0.36) and after the intervention the mean level of knowledge in the experimental was 9.12 (±1.54; SE=0.21). In the pre-intervention phase of the control, the mean level of knowledge was 4.71 (±1.81; SE=0.26), and post intervention the mean was 6.15 (±1.85; SE=0.27). Therefore, the level of knowledge of vendors about food hygiene practices in the groups was poor overall, however the mean level of knowledge in the post experimental group was highest as shown in table 3.2

The level of attitude was computed on a 55-point rating scale at 5 levels and can be considered as follows: Very poor= 1-12; Poor= 12.5-23.5; Fair= 24-35; Very good= 36-47; Excellent (48-59). Hence, given a mean score of 17.73 (SD=±4.49; SE=0.62), the level of attitude in the pre-experimental group was Poor. A mean score of 14.87 (SD= ±1.51; SE= 0.22) in post control group showed high level of attitude. The mean scores in the post experimental group

and pre-control were 18.44 (SD= ±4.81; SE=0.67) and 18.65 (SD= ±2.55; SD=0.37). Overall, the attitude in all groups was good as shown in table 2.

Overall poor attitude towards food hygiene, prior to interventions studies reported poor attitude towards food hygiene. Following the intervention, training sessions improved attitude in intervention sites. The level of food hygiene practice was computed based on a 21-point rating scale at three levels. A mean score of 0-7 points was considered as poor practice, a score of between 7.5 -13.5 was considered fair practice and a score of 14-21 was considered good practice. The computed mean level of practice in the experimental group before the intervention was 13.37 (SD=±3.28; SE=0.45) and after the intervention the mean level of practice in the experimental was 16.37 (SD=±1.54; SE= 0.32). In the pre-intervention phase of the control, the mean level of practice was 15.06 (SD= ±1.96; SE=0.28), and post intervention the mean was 18.38 (SD=±1.01; SE= 0.15). Therefore, the level of practice of food hygiene good in the post experimental group, pre-control and post control groups and fair in the experimental group before the intervention as seen in table 2.

The level of personal hygiene was computed on a 12-point scale at two levels. A score of between 0-6 was considered poor personal hygiene and a score of 6.5-12 was considered high level of personal hygiene. A mean score of 7.46 (SD=±1.09; SE= 0.15) was obtained for the experimental group, while a mean of 8.36 (SD=±1.31; SE=0.193) was obtained for the control group. The level of personal hygiene was computed on an 18-point scale at two levels. A score of between 0-9 was considered poor environmental hygiene and a score of 9.5-18 was considered good level of environmental hygiene. A mean score of 11.92 (SD=±1.44; SE= 0.20) was obtained for the experimental group, while a mean of 12.53 (SD=±1.32; SE=0.20) was obtained for the control group.

Table 2: Summaries of Descriptive statistics of mean and standard deviation for variables in the study as measured from participants

Variables	Maximum point on Scale of Measure	Respondents in the study N= 99	
		X (SE)	±SD
Knowledge about food hygiene	22		
Experimental(pre-intervention)		8.33(0.36)	2.59
Experimental (Post-intervention)		9.12 (0.21)	1.54
Control (Pre-intervention)		4.71 (0.26)	1.81
Control (Post-intervention)		6.15(0.27)	1.85
Attitude about food hygiene	55		
Experimental(pre-intervention)		17.73(0.62)	4.49
Experimental(Post-intervention)		18.44(0.62)	4.81
18.44(0.62)	4.49		
Control (Pre-intervention)		18.65(0.37)	2.55
Control (Post-intervention)		14.87(0.22)	1.51
Practice (food hygiene practice)	**21**		
Experimental(pre-intervention)		13.37(0.45)	3.28
Experimental (Post-intervention)		16.37(0.32)	2.30
Control (Pre-intervention)		15.06(0.28)	1.96
Control (Post-intervention)		18.38(0.15)	1.01

Test of Hypotheses

A one-way ANOVA was used to determine if a difference exists between the variables at a significant level of ≤ 0.05.

Ho1: There is no significant difference in knowledge about food hygiene between the experimental and control groups following the intervention.

The results in table 4 show that there is a significant difference in knowledge about food hygiene between groups at the $p<0.05$ level [$F(3, 195) = 50.86$, $p = 0.000$]. Therefore, the null hypothesis, which states that there is no significant difference in knowledge about food hygiene practices, was rejected.

$H_0$2: There is no significant difference in attitudinal disposition towards food hygiene between the experimental and control groups following the intervention.

The results in table 4 show that there is a significant difference in attitude towards food hygiene between the groups at $p<0.05$ level [$F(3,195 = 10.833$, $p = 0.000$]. Therefore, the null hypothesis, which states that there is no significant difference in attitude towards food hygiene practices, was rejected.

$H_0$3: There is no significant difference in practice of food hygiene between the experimental and control groups following the intervention.

The results in table 4 show that there is a significant difference in practice between the groups at p value <0.05 [F (3, 195) = 41.25, p = 0.000]. Therefore, the null hypothesis, which states that there is no significant difference in level of practice of food hygiene, was rejected.

Table 3: ANOVA table showing the differences between groups for the knowledge, attitude and practice variables

ANOVA

		Sum of Squares	Df	Mean Square	F	Sig.
Knowledge	Between Groups	606.150	3	202.050	50.863	.000
	Within Groups	774.624	195	3.972		
	Total	1380.774	198			
Attitude	Between Groups	436.196	3	145.399	10.833	.000
	Within Groups	2617.271	195	13.422		
	Total	3053.467	198			
Practice	Between Groups	663.895	3	221.298	41.254	.000
	Within Groups	1046.034	195	5.364		
	Total	1709.930	198			

$H_0$4: There is no significant difference observed in personal hygiene of the food vendors between the experimental and control groups

An independent samples t-test was conducted to compare the personal hygiene in the experimental group and control groups. The results showed there was a significant difference in personal hygiene between the experimental (M=7.46, SD= 1.09) and control (M=8.36, SD= 1.30) groups. The results therefore suggest that the control group had higher mean personal hygiene. The null hypothesis was therefore rejected.

$H_0$5: There is no significant difference observed in the environmental hygiene between the experimental and control groups

An independent samples t-test was conducted to compare the environmental hygiene in the experimental and control groups. The results showed there was a significant difference in environmental hygiene between the experimental (M=11.92, SD= 1.44) and control (M=12.93, SD= 1.32) groups. The results therefore suggest that the control group had higher mean environmental hygiene. The null hypothesis was rejected.

Descriptive statistics of the Key Variables

This section describes the key variables (Knowledge, attitude, practice, personal hygiene and environmental hygiene in terms of frequencies and percentages.

Knowledge about food hygiene

The results in figure 2 below shows that 100% of the participants had poor knowledge before the intervention.

Figure 2.

In the experimental group, before the intervention, 38 (73.1%) participants had poor attitudinal disposition, while after the intervention, 44 (84.6%) 38 (73.1%) had good attitude. Before the intervention 5 (9.6%) had fair attitudinal disposition, while after the intervention, 7(13.5%) participants had fair attitudinal disposition. Before the intervention majority, 46(95.8%) in the control group had poor attitude, while after 46(97.9%) had good attitude. Attitude was thus, improved in the experimental group as less people showed poor attitude following the intervention.

In the experimental group, before the intervention, 27(51.9%) practiced good food hygiene, but after the intervention, 46 (88.5%) practiced good food hygiene at their vending sites. In the control group before the intervention, majority 33(70%) had good practice, while after the intervention all participants (100%) practiced good food hygiene. Practice was improved from 51.9% before the intervention to 88.5% after the intervention. Good Personal hygiene was observed in 40(76.9%) of the experimental group, figure while in the control 39 (86.7%) had good personal hygiene. Following the intervention, up to 48 (88.9%) had good environmental hygiene in the experimental group, while in the control group, 45 (95.7%) had poor environmental hygiene. Thus, personal and environmental hygiene were better in the experimental group as seen in figure 1 and figure 2 below.

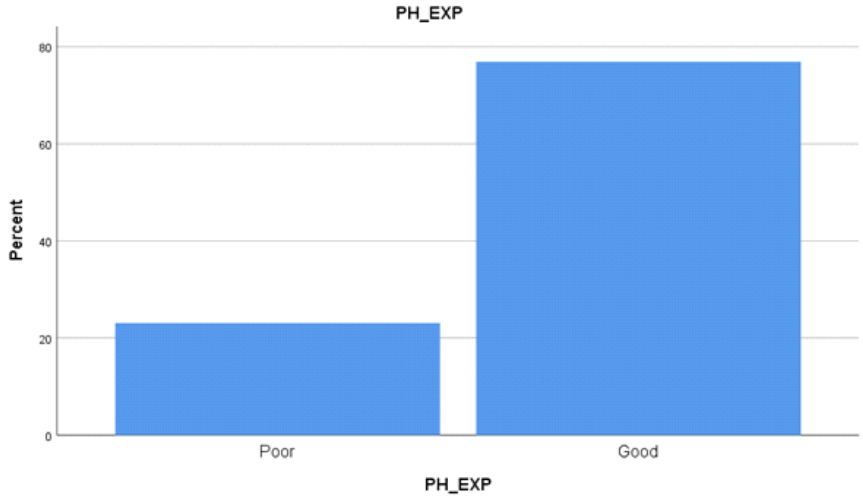


Figure 3: The percentage distribution of participants with poor and good personal hygiene in the experimental group

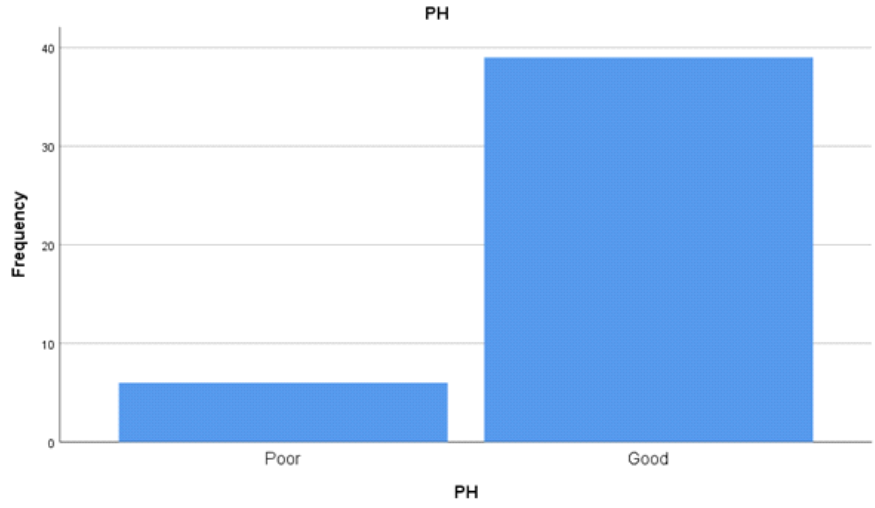


Figure 4: Frequency of participants with poor and good personal hygiene in the control group

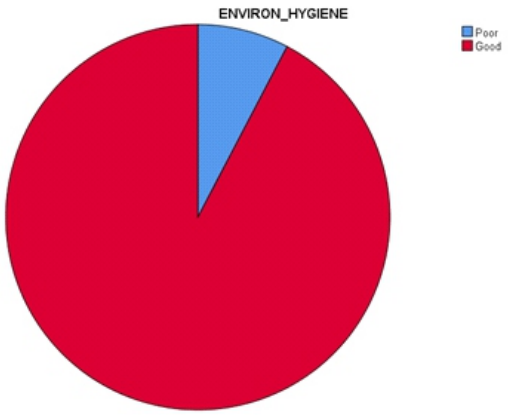


Figure 5: Distribution of participant's level of environmental hygiene

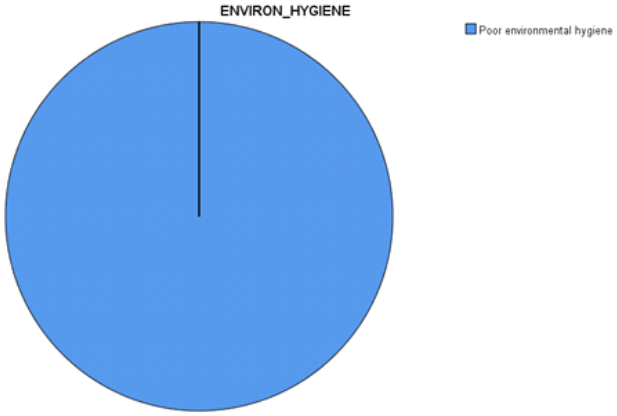


Figure 6.

Discussion

Vended food and food vendors are an integral part of urban life. Mahon *etal.*(1999) reported that in many cities worldwide, food vendors are an important part source of convenient, affordable medium of food supply for the urban poor and working classes in both developed and developing countries. Kalua (2001) opined that knowledge, positively influence attitude formation, and the recipient's comprehension of health facts. Positive attitude formation leads to positive behavior. On the contrary, superficial knowledge leads to misconception and development of negative attitudes. Thereby resulting to increase in harmful practice of food vendors. This study which evaluated the impact of education on knowledge, attitude and practice of food vendors in Abia State Nigeria showed that most of the respondents were female and had secondary level education. Studies by Nurudeen et al, 2014; Adebukola and Omolara, 2015 have traditionally reported these same demographic characteristics of similar groups of respondents. This study, therefore showed that respondents in this study aligned with others.

The attitude of food vendors towards food safety and hygiene is an important element for practicing food safety and hygiene. The results showed general improvement of attitude. Prior to interventions, studies reported poor attitude towards food hygiene. Following the intervention, training sessions improved attitude in intervention sites. In a study by Maung, Soe, Lwin, Myint, et al. (2017) post-intervention food safety knowledge, attitude and practice scores were significantly higher than the pre-intervention scores in study group. Other researchers reported less than appropriate attitude of food vendors towards food hygiene. Authors concluded that food safety training in addition to financial assistance to enable good practice be offered to food vendors. This result is similar to that reported by Umar et al (2015), where although participants demonstrated good knowledge, did not translate that knowledge to good practice.

Nurudeen, Lawal and Ajayi (2014) also reported very poor practice amongst participants, which was against the Codex Alimentarius guideline. These included amongst many others, not covering their hair, undressed skin lesions, exposure of foods to flies and blowing of air into food nylons or bags. The environmental hygiene observed was good in both the experimental and control groups. Other studies are reported similar observations. Training of food vendor's play important in quality assurance of vended foods from production to the final consumer. The food vendors require food safety training on regular intervals to meet the required food safety standards. There is need for more skill acquisition to enable the food vendor to observe all the safety measures in food vending.

Conclusion

Education and training programmes should be implemented to improve food handlers' attitude, knowledge and practices. Additionally, licensing and maintaining supervision should be mandated. Specifically, the study surveyed food handlers' knowledge, attitude and practice and examined the personal and environmental hygiene of food handlers in selected LGAs in Abia State.

Results from hypothesis one show that there was statistical significant difference in knowledge about food hygiene between groups at the $p<0.05$ level. This shows that a simple educational programme can impact on food vendors knowledge of food hygiene and further confirms several authors suggestions on the need to conduct educational programmes. Therefore, we accept the null hypothesis.

Results from hypothesis two showed that attitude was impacted by the programme. This shows that there was a statistically significant difference in attitude about food hygiene between the two groups. Therefore, we accept the null hypothesis. Results from hypothesis three show that there was no statistically significant difference in practice between the groups at the $p<0.000$ level. The null hypothesis was rejected. Practice will also improve after more programme when the government do the needful as the respondents pointed out that lack of facilities to enhance their practice was not provided by the Government. This, again, suggests a positive effect of the intervention programme.

Results from hypothesis four show that there was a statistically significant difference in personal hygiene between the groups $p<0.5$level, although the control group had higher mean level of personal hygiene. This suggests the need for more interventions in the experimental area of study.

In general, knowledge and attitude were improved, however practice were still poor following the intervention. The reason for this was that the Government failed to do the needful while other reasons would need to be ascertained in further studies in the area. There could be extraneous factors beyond what was observed that affected the attitude of the food vendors. As earlier mentioned, no focused interventions have been carried out in the area of this study. More needs to be done.

Recommendations

The following recommendations are thus made:

1. There is need to focus more interventions on improving practice amongst food vendors.
2. There is need to study for a longer time the food vending operation in the state and look into the current structural and administrative elements to design more focused studies.
3. Simple interventions to improve food hygiene knowledge, attitude and practice can be effective as has been found. More interventions need to be carried out based on innate characteristics of the study population.
4. The environmental health officers should promote standard methods of food preparation and selling food through social media and other media houses in other to get to hard to reach areas to improve their knowledge on food vending.
5. The state Environmental protection agencies should provide adequate and accessible refuse collection tanks and points to help the food vendors improve on their environmental sanitation attitude and practice.
6. The government should enact a law that will ensure that all the landlords makes provision for sanitary conveniences in their premises especially were food vendors will rent and operate their businesses.
7. The environmental health officers that issue operational license to this group should ensure that they use the world health organization five keys to safe food to organize more training for the food vendors and supervision maintained.
8. Educational training should be implemented to improve food handler's knowledge, attitude and practice.

References

Adebukola, O. R., & Omolara, S. R. (2015). Teachers' attitude: A great influence on teaching and learning of social studies, *Journal of law, policy and globalization, 42*, 131-137

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior,* Englewood Cliffs, N.J: Prentice Hall

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior, *Journal of Applied Social Psychology, 32*, 665-683. http://dx.doi.org/10.1111/j.1559-1816.2002.tb00236.x

Alfred, I. (2018). Food poison in Nigeria: Causes and treatment. *Federal Ministry of Health Annual Report. https://www.publichealth.com.ng/food-poisoning-in..*

Brug, H. (2004). *Changing consumer behavior from a health promotion perspective: Behavior and triggers in unilever, The healthy choice, an easy choice Vlaardingen*, Netherlands: Unilever Health Institute, 43-46.Retrived https://www.cram.com/essay/The-Sanitation-And-Hygiene-Of-Street/FKVCJDKXJ

Clayton, D. A., Griffith, C. J., Price, P. & Peters, A. C. (2002). Food handlers belief and self-reported practices, *International journal of Environmental Health Research* 12 (1) 25-39.

Food and Agriculture Organization of the United Nations. (1998). The right to food in theory and practice, Publishing Management Group, FAO Information. Food handler's practices as food vendors in poor income community in foods, *International Journal of Environmental Health Research,* 17 (2), 151 *For Food-Handling Personnel. WHO Technical Report Series 785. Geneva,*

Kalua, F. (2001). *The relationship between knowledge: Attitude and practices of care givers and food hygiene in Day Care centers*, M. Tech degree dissertation, Pretoria, technikon Pretoria.

Law Insider Inc. (2020). *China Cap Acquirco Inc*, *https://www.lawinsider.com/company/1396016/2020-chinacap-acquirco-inc*

Mahon, B. E, Sobel, J., Towens, J. M., Mendoza, C. GuiielLemus, M., & Tauxe, R. V. (1999). Surveying vendors of street-Vended Food: A new methodology applied in two Guatemalan cities, *Epidemiological and infection* 122:409-416

Manng, N. S., Soe, H. Z., Lwin, A. M. M., Myint., O. C. C., Thein, M., Than. A., Wai, H. A. & Aung, M. (2017). Raising food safety training program to street- Food vendors in an Urban Area of Yangon, *J Food Nutria Diete* 2 (1)11. Meeting on street foods, 6-9 November, Calcuta India.

Muinde, U.,& Kuira, E. (2005). Street foods, Accra, Ghana how safe are they? *Bulletin of the World Health Organization*, 2002, 80, (7), pp.546-552.

Nurudeen, L. & Ajayi, G. (2014). *Knowledge attitude of food vendors*, Lagos: Nigeria

Satan, S. U. (2007). Environmental health officer's registration council of Nigeria, (2007). *Academic Journal.*doi: 10.5897/11.1992011.

Sharma, S. V., Gernand, A. D., Day, R. S. (2008). 'Nutrition knowledge predicts eating behaviour of all food groups except fruits and vegetables among adults in the Paso del Norte region: Que Sabrosa Vida, *Journal of Nutrition Education and Behaviour* 40 (6), 361-3.

Umar, M. L., ZubairuIliyasu, Sanusi, A.,, Auwal, U. G., & Ahmad, A. (2015). Personal and food hygiene practices of subsistence food vendors operating in Kano metropolis, northwestern Nigeria, *International Journal of Medical Science and Public Health, 4 (2), 214-221. doi:10.5455/ijmsph.2015.1509201441*

Umar, A. A., Mande, A. T., & Umar, J. (2018). The effect of food hygiene training among street food vendors in Sabon Gari Local Government Area of Kaduna State, Nigeria, *Sub-Saharan African Journal of* Medicine, 5,1, 20-28

World Health Organization (1996). *Essential safety requirements for street vended foods*: *Food safety units*, Division of Nutrition, Geneva