Identification of Food Safety Practices among Street Food Vendors in Delta State Nigeria

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Abstract:- **The research looked into how street food sellers handled food. The method used was a multistage selection technique. An aggregate of 155 vendors were chosen at random for the survey, and data were composed with designed questionnaire. The study's analytical instruments were descriptive statistics, likert scales and chi-square. High proportion of merchants were females, with an average age of 38 years. The respondents' educational levels revealed that 67.6% had only primary education with mean vending experience of 6 years. The food vendors had an awareness index of 80.2% with 64% usage index of recommended food practices. Washing food before cooking, covering food, storage in a hotspot, utensil cleanliness, a hot meal, well-cooked food, wash-kits with hygienic water, and reheating food were the frequently utilized methods. There was positive correlation between awareness and utilization of practices. It has become necessary that vendors are cognizant of all procedures necessary to maintain the safety and suitability of food.**

Keywords: **Food safety practices, Street vendors, Awareness, Utilization**

I. INTRODUCTION

Food is an essential requirement for life; its acquisition, preparation, and consumption are all essential for survival. Food is described as any substance that can be eaten to provide nutrients and energy for growth and development. Food has a direct impact on one's wellbeing, so it's important to keep it free of contamination (Daniyan and Nwokwu, 2011). Food sellers play a critical role in ensuring adequate processing and storing of food (Abdalla, et al.,2009). As such, food security necessitates food protection (WHO, 2015). Unsafe food can contain more than 200 diseases ranging from diarrhea to cancer (WHO, 2015).The secret to wholesome life and sustaining good health is having adequate access to healthy food. Without food protection, there is no food security(FAO 2019).A street food merchant is a person who sells ready-to-eat meal and drinks in a municipal place such as a street or a market. In developing nations, street food marketing provides inexpensive food to the customers and also provides profitable economic activity to the sellers due to quick turnover.

The business units of traders are either stationary or mobile and are located in public locations namely bus stations, motor parks, major markets, construction sites, shopping malls, work places, near streets, factories, schools, and hospitals, among others (Cortose et al., 2016, Canini et al., 2013). Even though street food marketing helps with the creation of jobs and income in Nigeria, little is acknowledged about its safety practices (Steyn et al., 2011).The boulevard food enterprise is booming around the globe, and Delta state is no exception. It is widely accepted that food sellers make a significant contribution to the advancement of informal sector and the economy as a whole. This is not astonishing, given the rising demand for high-end consumer goods, owing to the world's population growth, especially in emerging nations (Mwove et al., 2020).

Street food industries are critical for the expansion of cities and towns because they meet the needs of food dwellers while also contributing to the nation's economy. Due to urbanization, street food merchants have become a vital component in the marketing chain. Thus, create a growing demand for ready-to-eat food among working people who do not have time to cook meals at home (Fellows and Hilmi, 2011).The current rise in the extent of road food sellers can be attributed to financial benefits, low capital requirements for operating a street vending enterprise, customer satisfaction, absence of job opportunities, and an increase in rural-to-urban migration (Rane, 2011).This industry was a key livelihood source, providing a way to create self-employment and business skills with low investment in capital (Njaya, 2014; WHO, 2010). Street food is appreciated by consumers for its taste, reasonable price and availability at the proper time (Barro, et al., 2007).

Despite the position of food peddling, food poisoning from street-vendor food is still a concern in many parts of the globe (FAO, 2009). The actions of food peddlers have been stated to pose serious threats to the practitioners' and customers safety (Akinbode et al 2011). The eating of peddlers foods was recounted to cause outbreaks of some diseases (Todd et al., 2007). On account of the seriousness of the incident, there has been an upsurge in global concern vis-à-vis food safety (van Tonder, 2007).

Food vendors' awareness of food cleanliness is critical in ensuring that the diet they provide to buyers is nontoxic to consume (Abdalla et al 2008). Food security is dependent not only on food availability, but also on the capacity of the household to have food accessibility. Food access refers to the capability to obtain a sufficient quantity and quality food,

whether purchased or produced. Every person requires year-round access to healthy, nutritious, and adequate food. This is to ensure that people live healthier lives and foster well-being, all of which are essential for long-term sustainability. Thus, it is indispensable to investigate the actions of vendors on the food traded along the road. This would avoid food-borne disease, which would impact the country's labor force, and thus boost productivity across the board. The study's overall goal is to look into the food safety practices of food vendors in Delta State, Nigeria.

II. MATERIAL AND METHODS

The investigation was piloted in Delta State. Street food merchants selling cooked food made up the study's population. The place was chosen because the area has diverse population and has a lot of road side food retailing activity. For this analysis, a multistage random sampling design was applied. To begin with, two local government areas (LGAs) from each agricultural zone were chosen at random. This gave an aggregate of six LGAs. Secondly, two communities each were carefully chosen from the LGAs totaling 12 communities. The third stage involved random selection of 9 vendors from the communities selected to give 108 vendors. A designed questionnaire was utilized to obtain data. However, 3 questionnaires were discarded due to insufficient information. Hence, 105 respondents were selected for the study. Descriptive statistics such as frequency count, mean, 3-point likert scale, and chi-square were applied to investigate the study's goals.

Model specification

The awareness index method is specified as;

$$\text{Awareness index} = \frac{\text{No of awared food safety practices}}{\text{Total number of food safety practices recommended}} x\ 100\% \quad \text{.....eqn (1)}$$

Chi-square was applied to test if relationship exists between awareness level and utilization of practices

$$\chi^2 = \sum \frac{(O-E)^2}{E} \quad \text{.....eqn (2)}$$

Where,

χ^2 = Chi square

O= observed frequency

E= Expected frequency

III. RESULTS AND DISCUSSION

Demographic attributes of Respondents

The demographic features of food sellers is shown in Table 1. Male vendors accounted for 21 percent of the aggregate, while females accounted for 84 percent, indicating that female food vendors outnumber their masculine counterparts. This is because street food business has a low investment requirement, making it easier for housewives to join. This supports the assertions of (Monney et al 2013; Roever and Skinne 2016), who posited that street food marketing is a popular source of profits for women in evolving nations.The age of vendors with less than 25 years recorded 7(6.7%), 42(40.0%) were between 26-35 years, 36-45 years had 38(36.2%), while 46 years above had 18(17.1%). The average age of respondents is 38 years. This finding is congruent with Gbigbi (2018). This is the frugally active age cluster and their participation in food selling business reflects the high joblessness levels in the nation. However, street food marketing because of the somewhat low financial requirements, has become the only avenue of income generation for the unemployed. A clear indication that the activity provided employment opportunity to the youths. The results are in consonance with a study by Trafialek, et al (2017) where 50.0% of the vendors were aged 25–35 years. The result of educational attainment of vendors showed that 67.6% of them had primary education and below, 17.1% secondary education while 15.2% had tertiary education. Furthermore, highest percentage (67.6%) of vendors had primary education and below. Years of experience of food peddling business showed that many 52(49.5%) had between 6-10 years, followed 1-5 years (45.7%) while the minimum was 11-15 years with 5(4.8%). The mean experience was 6 years.

Table 1: Demographic attributes of food vendors (n=105)

Variable	Frequency	Percentage
Gender		
Male	21	20.0
Female	84	80.0
Age (years)		
25years and below	7	6.7
26-35	42	40.0
36-45	38	36.2
Above 46	18	17.1
Mean=38years		
Educational level		
None	30	28.6
Primary education	41	39.0
Secondary education	18	17.1
Tertiary education	16	15.2
Number of years in vending business		
1-5	48	45.7
6-10	52	49.5
11-15	5	4.8
Mean =6 years		

Food safety practices of Respondents

The result shows that amongst the practices (Table 2), washing of food preceding cooking accounted for 61.9%. About 52.4% of the food sellers do cover oneself with aprons during preparation and selling, 71.4% of the retailers cover their food, 75.2% store food in hotspot, 57.1% treat water. The research shows that 45.7% clean their environment, 72.4% used clean utensils for cooking food while 73.3% warmed the food before serving it to the customers. Only 62.9% of the vendors provide well prepared food, 72.4% of them adhere to personal cleanliness in preparing and selling of food, 58.1% wash their instruments with potable water before using it in cooking food, 61.9% use clean clothes and good apparels while preparing food. Personal hygiene is important because human beings can easily contaminate food at any stage of cooking. Handling food with bare hands may lead to introduction of microbes to safe food. This is congruent with findings of Muinde et al (2005) in Nairobi where they reported that 81.3%of the sellers did not utilize aprons, 60% handled foodstuff with their bare hands and 65% had their hair not covered and only 10% of them wore jewelry. The relationship between food protection and personal cleanliness in prevention of food contamination was high. It is in line with findings of Anan-Prah et al (2011) where 86.7% of the retailers knew that contaminated food transmits diseases.Only 44.8% of vendors utilized available potable water in cooking food. The bulk of the vendors reported no access to running water all the time and fetch water from water tankers for use later. This supports findings of Abdalla et al. (2009).and corroborates research done in India (Reang and Bhattacharjya (2013) as 65% of urban and 39.36% of the rural food vendors used tap water for cooking but they had no access to running water all the time. All these outcomes are in disagreement with requirements for effective hand washing of WHO (Abdalla et al. 2009). The outcome also reveals that 76.2% of the sellers tried available means to protect their foodstuff from microorganisms/dirt and 62.9% reheat their food often, 55.2% check brand when buying foodstuffs.

Table 2: Food safety practices of Respondents

Safety practices	Frequency	Percentage
Washing food preceding cooking	65	61.9
Covering oneself	55	52.4
Covering food	75	71.4
Store food in hotspot	79	75.2
Treating water	60	57.1
Cleaning their environment	48	45.7
Cleanliness of utensils	76	72.4
Hot meal	77	73.3
Well prepared food	66	62.9
Personal hygiene	76	72.4
Wash instruments with hygienic water	61	58.1
Clean clothes	65	61.9
Availability of clean water	47	44.8
Protection of foodstuff from germs/dirt	80	76.2
Re-heating	66	62.9
Checking brand when buying foodstuffs	58	55.2

Multiple responses

Practices awareness index of street food sellers

Table 3 indicates the mean score of practices awareness index. The finding showed that awareness index of safety practices was 80.2%. The result implies a high awareness index among food vendors. These results could be attributed to awareness of food practices information which can be easily acquired through seminars and workshop.

Table 3: Awareness index of street food vendors

Variables	N	Min	Max	Mean index %	Std. Dev
Awareness of food safety practices	105	7	16	12.83	2.49
Number of food safety practices	105	16	16	16	0.00
Awareness index of food safety practices	105	43.75	100	80.18	15.56

Utilization level of food practices by Respondents

Table 4 showed the utilization level of food practices items of vendors. Washing food preceding cooking (mean=2.25), covering of food (mean=2.36), store food in hotspot (2.31), cleanliness of instruments (mean=2.21), hot meal (mean=2.55), well prepared food (mean=2.54), wash instruments with potable water (mean=2.59), reheating food (mean=2.36) were the major food practices utilized by the vendors. The findings further revealed that the vendors did not utilize personal protective clothing/devices (mean=1.46), treating water (mean=1.32), cleaning of environment (1.57), personal hygiene (mean=1.53), wearing of clean clothes (mean=1.41), availability of potable water (mean=1.24), protection of diet from germs/dirt (mean=1.58) and checking of brand when buying foodstuff (mean=1.52).The implication of the result reveals that the total mean of food practices by vendors was 1.93 with a utilization index of 0.64, which implies that only 64% of the practices were utilized since high proportion of the means were below the cut-off mean of 2.00. This is attributable to the absence of training on food safety for the vendors. Gloves are ideal for helping to minimize bare hand interaction with raw, cooked and ready-to-eat-food (Michael, 2005). However, the hand gloves should be replaced after performing each task. Lynch et al (2005) recommended that hand should be washed thoroughly before putting on gloves. However, findings on hand washing when switching between handling raw animal food and already prepared food did not agree with Storhbehnet et al (2011) finding where they observed that food sellers did not perform adequate hand washing in restaurants.

Table 4: Utilization level of Food safety practices

Food safety practices	Mean	SD	Utilization
Washing food preceding cooking	2.25*	0.65	Utilized
Wearing of personal protective clothing/devices	1.46	0.64	Poorly utilized
Covering food	2.36*	0.62	Utilized
Store food in hotspot	2.31*	0.76	Utilized
Treating water	1.32	0.77	Poorly utilized
Cleaning of their environment	1.57	0.62	Poorly utilized
Cleanliness of instruments	2.21*	0.72	Utilized
Hot meal	2.55*	0.59	Utilized
Well prepared food	2.54*	0.62	Utilized
Personal hygiene	1.53	0.73	Poorly utilized
Wash instruments with potable water	2.59*	0.49	Utilized
Clean clothes	1.41	0.57	Poorly utilized
Availability of potable water	1.24	0.65	Poorly utilized
Protection of foodstuff from microorganisms/dirt	1.58	0.54	Poorly utilized
Re-heating	2.36*	0.71	Utilized
Checking brand when buying foodstuffs	1.52	0.71	Poorly utilized

Above 2.00=utilized, below 2.00= poorly utilized, Grand utilization mean= 1.93, Utilization index=0.64

Relationship between awareness and utilization of safety practices

The results of Pearson chi-square analysis between food vendors' awareness level and practices utilization are presented in Table 5. The study noted positive association of food sellers' awareness level and practices utilization.

Table 5: Relationship between awareness and utilization of safety practices

Food safety practices	Chi-square	p-value
Washing food preceding cooking	3.9375***	0.047
Covering food	4.1612***	0.041
Stored food in hotspot	11.8451***	0.000
Cleanliness of instruments	4.7146***	0.030
Hot meal	9.8820***	0.002
Well prepared food	10.4811***	0.001
Washing instruments with potable water	3.9691***	0.046
Re-heating	11.7149***	0.000

IV. CONCLUSION AND RECOMMENDATIONS

There is no doubt that the food vending industry plays an important role in meeting the food needs of consumers in developing nations. According to the outcomes, a large percentage of the vendors were female, indicating that the food peddling trade is primarily a female-dominated occupation. Food safety practices of vendors indicated that a momentous number of vendors followed limited safety practices, evidenced in the findings. About 80.2% of food sellers knew about the practices in food safety. However, only 64% of the recommended practices has been utilized. The most adopted practices were washing food preceding cooking, covering food, storage of food in hotspot, hygienic nature of utensils, hot meal, well-prepared food, washing instruments with potable water and reheating food. This is because greater part of the vendors had food safety awareness. The study's outcomes revealed that there is still a long way to go in terms of food safety ethics adoption. The following recommendations are made:

i. It has become necessary that systems should be put in place to ensure that food vendors remain aware of all procedures necessary to maintain the safety and suitability of food.
ii. Provision of water and management utilities are suggested for adequate utilization
iii. Authorities in charge of environmental hygiene should be made aware of the role they play in ensuring adherence to best practices by food vendors.

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