

Awareness of Food Hygiene Practices and Practices among Street Food Vendors in Nasarawa State, Nigeria

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ABSTRACT

Background: Street vended foods are booming businesses in developed and developing countries as most people opt for street foods. This is mainly due to cost and convenience. Food handling practices have been associated with food safety. Where food safety is compromised, food borne illnesses are likely to occur.

Objective: This study sought to investigate the level of awareness on hygiene and the respective food handling practices among street food vendors in Nasarawa State, Nigeria.

Materials and methods: This study used a cross-sectional descriptive survey with a target population of 410 food vendors in Nasarawa State, Nigeria. Data was collected using questionnaires. Correlation between food vendors' level of awareness and hygiene practices was done using chi-square.

Results: Results show that majority of vendors (42.1%) were in the middle age group between 26 to 35 years. The female vendors were more than their male counterparts. Majority of vendors were married (53.4%) and were secondary graduates (56.7%). Majority (42.4%) had been in business for 1-5 years. About 70% of the vendors engaged in business to earn income. Only 29.7% persons admitted to having had training on food handling and hygiene. Half of the vendors (50.9%) had license for operation.

Conclusion: The study concludes that few vendors are aware of hygienic practices mainly due to lack of training. For they that were aware, few practiced. The level of awareness on hygienic practices correlates with the practices adopted by the vendors. This study recommended that vendors be trained on environmental, food and personal hygiene.

Key Words: Awareness, food hygiene practices, street food vendors

INTRODUCTION

Food is a basic necessity and critical for the physical wellbeing and a source of pleasure. However, its handling, preparation, production and consumption play an essential role in life sustenance. Serving of safe food by street food vendors to consumers is greatly dependent on the food handler's awareness and practices. Globally, street vended food provides a source of convenient and inexpensive food

for. Street food vending has become constitute in the food chain industry. ^[1] Street foods is ready- to- eat foods and beverages prepared which are sold by vendors in streets and other public places for immediate consumption or consumption at a later time without further processing or preparation. ^[2] Street vended foods forms a distinctive part of food industry because they are mostly affordable, easily accessible. They also serve as a source of

income for vendors. [3] Globally, it is estimated that 2.5 billion people consume street foods on daily basis. [4] Despite the street foods benefits, they often pose health risks to consumers if they are not properly handled, prepared or served hygienically.

Food vendor is any person who handles food, by either preparing, selling or both. According to Omemu and Aderoju [5] street food vendors earn more than some countries' minimum wage. Food handlers play an important role in food safety and in transmission of food poisoning, because they can introduce pathogens into foods during production, processing, distribution and serving. [6]

Therefore the understanding of food safety procedures and the potential factors that causes food borne diseases is very essential for all food handlers. A study by Ababio [7] highlighted that hygiene practices among food handlers, food vendors and catering services have been reported to be below the recommended standards and therefore hygiene practices among food handlers is crucial. Health and safety of food is a global issue of concern and thus great need to safeguard consumers' health and safety against the risk of food borne illnesses and food poisoning as a result of unhygienic practices of food preparations especially public eateries. [8] The street vending industry has rapidly grown in the continent due to urbanization and tremendous population increase. Food safety and hygiene standards have been put in place by government to regulate the adherence to these laws.

A street vendor is a person who offers goods for sale to the public without having a permanent constructed structure. Street vendors may be stationary which means that they occupy space on the roadways or other public or private spaces. A mobile vendor is the one that moves from place to place carrying their wares on push carts, wheelbarrows, trucks or even carrying on their heads. [9]

The knowledge of food safety and hygiene by food vendors is essential in

ensuring food provided to customers are safe for consumption. [10] Basic knowledge of safe practices is required throughout the food chain from 'farm to fork'. Any lapse in sourcing, transportation, receiving, storage, preparation, holding and service of the food product renders it unsafe. [11] A study by Nyamagwa [12] acknowledged that food prepared and vended on the streets in Kenya, Uganda, Ghana and Nigeria posed health hazards because most food vendors are not aware of the risk of unhygienic practices and that they do not observe the hygiene control practices.

According to Calloni, [13] food hygiene is a sanitary science which aims at producing food that is safe for consumption; it has a good keeping quality and free from micro-organisms. Food hygiene involves the provision of food for consumption with insignificant risk of contracting food poisoning. This can be achieved by exercising good hygiene practices during production, preparation, storage and service. This also includes sanitary washing of dishes, work surfaces, proper waste disposal methods and maintaining an environment free from pest infestation. A study by Lee [14] also added that food hygiene is also concerned with cleanliness of the premise, automobiles used for transporting food and appropriate separation of raw from cooked foods. Keeping work place clean reduces the chances of some type of foodborne illnesses. According to Lee [14] street food vendors have a habit of purchasing raw materials for cooking of lower quality at lower prices. The raw materials and ingredients should be purchased from a genuine or guaranteed source to assure safety during transportation, storage and handling.

A study by Alimi [15] reported that good personal hygiene is the key to prevention of food borne illness. A food handler should have a moral and legal responsibility to ensure that they do not contaminate food. They need positive attitude towards hygiene and a willingness to maintain high standard at the place of

vending. Other safety issues by food handlers include; nose picking, coughing and sneezing when cooking or serving food, wearing of long nails and jewelry, preparation of food with open cuts and wounds lesions.

The objectives of the study were to assess the level of awareness among street food vendors on hygiene practices and how it influences their food handling practices.

MATERIALS AND METHODS

The study used cross-sectional descriptive survey which investigated the awareness and hygiene food handling practices among street food vendors. The research study was carried out within Lafia Local Government of Area of Nasarawa state, Nigeria. The location was chosen because it is the state capital, the area composition is large with major activities for street food vending within the city center and it's the business hubs of the state. The area is an administrative and metropolitan capital with about 329,922 populations. [16] Nasarawa state is located at the center of middle belt region, the state shares borders with FCT Abuja on the west, Kaduna state on the North, Plateau and Taraba states on the East and Benue and Kogi states on the south. The area is agriculturally productive with varieties of foodstuffs; it has major bus stops, markets, shopping areas, construction sites and commercial areas which favour street food vending.

The target population constituted of all street food vendors in Lafia, Nasarawa State. The study sample size was determined by the use of Yamane's formula, providing a sample of 410 vendors.

Street food vendors were obtained through stratified random sampling from the three districts in the study area. Simple random sampling was applied to select food vendors. The data was collected by use of questionnaires. Data was analyzed using SPSS. Correlation between food vendors' level of awareness and hygiene practices was done using chi-square.

RESULTS

3.1 Socio-economic characteristics

Out of the targeted 410 targeted respondents, only 387 completed the study. The socio-economic characteristics are shown in Table 1

Table 1 Socio-economic characteristics of the vendors

		n (387)	%
Gender	Male	106	27.4
	Female	281	72.6
Age (years)	<25	93	24.0
	26-35	163	42.1
	36-45	104	26.9
	>46	27	7.0
Marital status	Married	187	48.3
	Single	128	33.1
	Divorced/separated	46	11.9
	Widowed	26	6.7
Education level	None	90	23.3
	Primary	57	14.7
	Secondary	96	24.8
	Diploma	94	24.3
	Degree	50	12.9
No of years in vending business	< 1year	86	22.5
	1-5 years	164	42.4
	6-10 years	92	23.8
	11-15 years	40	10.3
	16-20 years	3	0.8
	> 21years	3	0.8
Reason for venturing into business	Earn income	278	71.8
	Personal interest	57	14.7
	Inheritance	52	13.4

There was great variation in the ages of vendors with the predominant age (42.1%) being 26 to 35 years a clear indication that the activity provided employment opportunity to the youths. Results show that female vendors were substantially more (72.6%) than their male counterparts (27.3%). Majority of vendors were married (48.3%). The married people constituted majority this implies the burden of parental hood. For the educational level of food vendors, it was noted that majority of the food vendors (24.8%) were secondary graduates while Diploma was (24.3%). Majority (42.4%) were found to have been in business for 1-5 years while >70% of the vendors engaged in business to earn income.

3.2 Level of awareness on hygiene practices among street food vendors

The level of awareness among street food vendors on hygiene practices were assessed (Table 2). Only 29.7% persons admitted to having had training on food

handling. On asking whether food handlers with cuts on their hands should be allowed to handle foods without gloves, 63.6% of the respondents agreed that they should not. Knowledge on cross contamination between cutting board and knives noted that the majority (85.5%) were aware that the tools could cross contaminate foods.

It was almost common knowledge that raw foods should be separated from cooked foods to prevent contamination as only 4.9% refuted this claim. On assessing their knowledge on proper hand washing and food borne prevention, results indicates

that some vendors (13.2%) had no clue on whether hand washing is linked to diseases. Nevertheless, 86.8% confirmed their understanding on the relationship between proper hand washing and food borne disease control. About 23.8% of the respondents agreed that reheating cooked foods can contribute to food poisoning. The proportion that felt that there is need to carefully select raw materials for safe food preparation was 81.1%. Almost all (96.6%) felt that safe food handling is an important part of selling food.

Table 2: Awareness/knowledge level among street vendors

	Yes		No	
	n	%	n	%
Have you ever had any training on food handling	115	29.7	272	70.3
Do you think washing hands properly can prevent food borne diseases	355	91.7	32	8.3
Food handlers can be a source of food borne outbreaks	267	69.0	120	31.0
Food vendors who has cut on their hands should not touch foods without gloves	246	63.6	141	36.4
Knives cutting board should be well cleaned	331	85.5	56	14.5
Do you think raw and cooked foods should be stored separately	368	95.1	19	4.9
Do you think clean food can prevent diarrhea	360	93.0	27	7.0
Do you think if hands are properly washed they can prevent food-borne diseases	336	86.8	51	13.2
Reheating cooked foods can contribute to food poisoning.	92	23.8	295	76.2
Is there need to carefully select raw materials for safe food preparation?	314	81.1	73	18.9
As a food vendor do you think safe food handling is an important aspect in selling food	374	96.6	13	3.4

3.3 Food handling practices among street food vendors

The various practices adopted by the vendors were assessed (Table 3).

Table 3: Hygiene food handling practices among street food vendors

Those practicing the various recommendations	Yes		No	
	n	%	n	%
Having a license for operation	197	50.9	190	49.1
Do you repeatedly reheat left over foods	142	36.7	245	63.3
Do you wash your hands before cooking	341	88.1	46	11.9
Do you wash your hands after handling raw foods before handling cooked foods	220	56.8	167	43.2
Do you wear apron when preparing food	164	42.4	223	57.6
Do you properly clean the food storage area before storing new products?	310	80.1	77	19.9
When suffering from sickness such as diarrhea, vomiting, sores and cuts do you still cook at the vending sites	214	55.3	173	44.7
Do you buy clean and fresh foods for cooking	296	76.5	91	23.5
Was your health status checked before starting the business?	234	60.5	153	39.5
Do you have food handler's certificate	62	16.0	325	84.0

The result on hygiene food handling practices by food vendors showed that 50.9% had license for operation while the rest were not licensed. Questions on reheating of left over foods indicated that only 36.7% knew the importance and practiced. Hand washing practices being a vital element in food hygiene, was also analyzed. About 11.9% of the vendors admitted to not washing their hands while handling foods.

The proportion that washed hands after handling raw foods and before shifting to handling cooked foods was 56.8%. About 42.4% wore aprons during food preparation and cooking. Further results on food storage and hygiene indicated that majority (80.9%) do clean the storage area before storing new foods and products.

While 44.7% of vendors avoided work when suffering from diarrhea, vomiting, sores and cuts, majority (55.3%)

continued at the vending sites even while sick. Most vendors (76.5%) buy clean and fresh foods for cooking. The proportion that had undergone the health status check before starting the business was 60.5% while only 16.0% had a food handler's certificate.

3.5 Relationship of street food vendor awareness and hygiene practices

The results of correlation analysis between street food vendor's awareness level and hygiene practices are shown in Table 4. The study noted positive association of vendor's awareness level and hygiene practices.

Table 4 Correlation analysis on street food vendor awareness and hygiene practices

		Chi-square	P value
1	Have you ever had any training on food handling	0.324**	<0.001
2	Do you wash your hands with soap and water after handling raw foods before handling cooked foods	0.290**	<0.001
3	Have you ever gone through hygiene training	0.179**	<0.001
5	Do you think washing hands properly can prevent food borne diseases	0.210**	<0.001
6	Food handlers can be a source of food borne outbreaks	0.228**	<0.001
7	Food vendors who has cut on their hands should not touch foods without gloves	0.237**	<0.001
8	Knives cutting board should be well clean to prevent cross contamination	0.293**	<0.001
9	Do you think raw and cooked foods should be stored separately to reduce the risk of food contamination	0.435**	<0.001
10	As a food vendor do you think safe food handling is an important part of your work	0.354**	<0.001

** Correlation is significant at the 0.05 level.

DISCUSSION

Majority of the vendors were between 26 to 35 years. The findings are in agreement with a study by Trafialek, Drosinos and Kolanowski [17] where 50.0% of the food vendors in Nigeria were aged 25–35 years. The presence of more female male vendors compares with the findings by Muyanja et al. [18] in Uganda and Okojie et al. [19] in Nigeria where majority of the street food vendors were made up of women. Women are traditionally responsible for cooking for the family. This implies that since cooking is associated with women, more of them are likely to engage in food vending than men. These results are also supported by Mensah et al. [20] who observed that the street food traders in Accra, Ghana were mainly women who played a major role in food control programs and were involved in wide variety of food processing activities.

On education where majority were secondary graduates, the findings are similar to a study conducted in Owerri, Nigeria where 52.4% of them had secondary education (Chukuezi [21] The level of awareness among street food vendors on hygiene practices was poor. The results are in agreement with a study by Aluh [4] in Nigeria on knowledge, attitudes and practices of food hygiene among mobile

food vendors indicates that only a few were trained on good hygienic practices. The failure to observe hygiene is in line with a study by Monney, Agyei and Owusu [22] that observed poor practices among vendors.

The reported poor hygiene on food handling practices by food vendors in agreement with a study by by Aluh [4] in Nigeria on knowledge, attitudes and practices of food hygiene among mobile food vendors that indicates that only a few practiced good hygienic practices. Poor hand washing practices was also noted among vendors in a study in Dubai by Al Suwaidi et al. [23] and by Eliku [24] in Addis Ababa, Ethiopia. Lack of washing hands after handling raw foods and before shifting to handling cooked foods in agreement with a study by Gowri, Vasantha-Devi and Sivakumar [25] that noted minimal hand washing after handling raw foods and before shifting to handling cooked foods. This is also noted in a study in Iran by Ansari et al. [6] on knowledge, attitudes and practices of workers on food hygienic practices in meat processing plants.

For vendors being in food operation while sick is in line with a study by Mamun and Turin [9] that noted that handling food while sick is a serious omission that can lead to food poisoning. Most vendors (76.5%) buy clean and fresh foods for

cooking. This contrast a study by Omemu and Aderoju [5] where the food bought was not clean. Failure to have a food handler's certificate agrees with a study by Gadi, Bala and Kumar [26] also noted this omission. This study noted positive associations of vendor's awareness level and hygiene practices. The results are in agreement with a study by Nyamagwa [12] and Omemu and Aerogun [5] noted that significant relationship vendor knowledge on food hygiene and practices.

CONCLUSION

Majority of the vendors were female, married and were secondary graduates. About 60% of the food vendors were aware of hygiene practices but over half of them did not practice the recommended hygienic practices. Majority of vendors had never received any training on hygiene practices. Most of the vendors admitted not washing their hands while handling foods. Only a few vendors used aprons during food preparation and cooking. The enforcement on food safety by the council is lacking, leading to most of the food vendors not having a trading license.

Recommendations

This study recommended that vendors be trained on environmental, food and personal hygiene. In addition, food vendors should receive more training on safe food preparation methods. There should be more sensitization to vendors so that they practice what they know. Enforcement by council need to be more intensified especially on having a trading license.

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Conflict Of Interest

The authors declare that they have no conflict of interest

Ethical Statement

The study was approved by the Kenyatta University graduate school while the Ethical

clearance was received from Kenyatta University Ethical Review Committee. The Nasarawa State government ministry of health authorized the study. Individual respondents gave consent to their participation in the study.

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