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Determinants of food safety practices awareness and utilization: a case study of street food hawkers in Asaba metropolis, Nigeria

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ABSTRACT

Aim: The study was aimed to analyze the food safety practices (FSP) awareness and utilization among street food hawkers in Delta State, Nigeria.

Materials and Methods: A multistage sampling procedure was used. One hundred and five vendors were randomly selected through structured questionnaire. The analytical tools applied were descriptive statistics, likert types and regression analysis.

Results: The results revealed mean household size of 5 persons with 73.3% married. About 68.3% of vendors lacks food safety knowledge with only 31.7% in the affirmative of knowledge. The findings showed that 75% of vendors had not attended training with only 25% that undergone food safety training. About 58.3% of the hawkers were stationary vending type with mean income of N120, 411.43k. The majority food welfare practices aware were safeguarding flies from food, cleanliness of environment, covering oneself, clean water availability, checking label, reheating food and storing in hotspot. The awareness index was 80.2% while the utilization index was 63.3%. The regression result revealed that education, awareness and training influence utilization of safety practices. The outcome of the hypothesis showed that age, gender and education of vendors were significantly correlated with their level of awareness.

Conclusion: It was concluded that if adequately measures are taken to check the food safety practices and utilization with more awareness on its importance, it would create an avalanche for the street food vending market in Nigeria.

Keywords: Awareness, Food safety, Practices, Street food hawkers, Utilization.

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Introduction

Food is a fundamental need and a vital source of satisfaction for physical well-being. Its handling, preparation, production and consumption, however, play a vital function in sustaining life. The supply of healthy food to customers by street food hawkers is highly reliant on the awareness and food hawkers practices. In the marketing food chain, street food sales have become known. Street foods are described by WHO (2015) fast foods and prepared beverages that are sold by street vendors. Street vendors can be stationary, meaning they occupy space on roads or in other areas of public or private life. Street food also contributes meaningfully to the foods of several people in emerging nations (Chukuezi, 2010).

As urbanization grew, street food selling activities were developed to meet the daily food demands of consumers (Odundo et al., 2018). Food selling services refer to food preparation, selling and consumption outside the home-based (Okojie and Isah, 2014). Across the world, 2.5 billion individuals are estimated to eat street food everyday (FAO, 2007). Food sales networks are evolving quickly in Africa (Esiawonam, 2010; Marras and Ag Bendech, 2016). Yusuf and Chege (2019) conclude that despite the enormous advantages of street fast food, consumers also have health risks due to poor handling during cooking and service.

Food safety is becoming more important, given the growing awareness of the essential connections between food and health. Enhancing food safety is an important factor in enhancing food security, which is possible when people have access to food that is nutritious and adequate. Food safety and food security are intertwined concepts that have significant

impacts on the quality of life of human beings. Food security is accomplished when all people acquired food that meets their nutritional requirements for active and safe living, both physically and economically. Food security covers a wide array such as food management, preparation and storing to avoid illness and injury. The food security pointers includes, among others, the household's ability to purchase nutritious, high-quality food, with sufficient nutritional value for adults and children. Food safety is a fundamental human right and healthy food leads to economic development and alleviation of poverty. Street food hawking is another significant source of employments and income for millions of folks. Street food enterprise in developing nations solves a host of economic problems by providing handy meals at comparatively cheap prices and by providing employment for urban rural populations in the food value chain (Jores, et al. 2018). The street food hawking industry has grown into a massive and active food market, providing vendors with income and affordable food for millions of people from all walks of life (Muzaffar et al., 2009).

Food hawkers plays a strategic function in food transmission because during cooking, processing, delivery and serving they can introduce pathogens in food (Ansari-Lari et al, 2016).The poorly prepared street foods not only threaten the profits of vendors, but also their consumers. Food hygiene means food supply for consumption with a low chance of toxic substance in diet. This is achievable by exercising good sanitation methods during production, preparation, storage and service. The issue of food safety problem is global and hence there is an urgent need to take precaution during food preparations especially for public eating, to guarantee the consumer's health and safety from food infections (Benny-Ollivierra et al., 2007). Street fast foods are time and again stored at unsafe temperatures and sold on sites that include make-shift accommodation, and push carts as well other temporary structures (Franklyn and Badne, 2015). The poorly controlled operations however pose serious concerns regarding hygiene standards by appropriate agencies (Dipeoluet al., 2007).

There are quite a lot of local eateries in Nigeria, where huge numbers of people eat every day (Wogu et al., 2011). The patronage of food hawkers by the consumers in the metropolis has also increased. Studies have bring into being that street food hawkers enable the informal business sector to thrive and contribute to sustainable life by adding vitality to the life, while other studies claim that these food hawkers damage sustainable lives rather than enhancing because the foods are kept at unsafe temperatures exacerbated by lack of adequate facilities.

Various researches have disclosed that most food hawkers have bad hygiene standards (Yusuf and Chege, 2019.,Odundo et al., 2018., Jores et al., 2018., Tesfaye and Tegene, 2014, Okojie and Isah, 2014., Chukuezi, 2010). Many factors have been established which leads to unhealthy food safety culture, including awareness of food safety practices (FSP), poor attitude and education status (Jores et al., 2018). Street food hawking is still a popular activity to meet the food demand of the growing population especially in Delta State. However, little is known about the nature of hygienic practices put in place by food hawkers as well the factors influencing utilization of safety practices. The general thrust of this examination is to examine awareness and determining factors of food safety practices (FSP) utilization by street food hawkers, Delta State. The specific objectives are to; describe the socioeconomic characteristics of vendors, ascertain degree of awareness by food vendors, estimate the food safety utilization index and investigate the dynamics influencing food safety practices utilization.

Materials and Methods

The investigation was conducted in Asaba Metropolis which is the State capital of Delta State and also a cosmopolitan city with diverse groups of culture and inhabitants. The city has high number of food hawkers hence being chosen for the investigation. The sample frame consists of all street food hawkers selling cooked food in the metropolis. Both stationary and mobile food hawkers were included. The convenience sampling procedure was applied to select a sample of sixty (60) from the population of all food hawkers in the Asaba metropolis using questionnaire. Data were obtained from primary source for this study. Primary data were collated with questionnaires. The questionnaire consisted of sections with respect to the specific objectives. It consists of quantitative and qualitative variables, such as the socio-economic attributes of food hawkers, level of awareness and utilization

index. Collected data were examined with descriptive and inferential statistics. Specifically, frequency count, mean, percentages were applied in describing the socio-economic characteristics of hawkers, level of awareness and utilization index of food safety practices (FSP).

The chi-square was useful to test the relationship between socioeconomic characteristics and awareness. Multiple regression models were applied to realize the factors influencing utilization of safety practices by street food hawkers.

Model Specification

The FSP utilization index formula is given as;

$$\text{Utilization index} = \frac{\text{No of food safety practices used}}{\text{Total number of food safety practices recommended}} \times 100\%$$

Where

FSP = food safety practices

The regression model which was used to realize the hypothesis is stated in the implicit form of econometric models as

$Y = f(X_1+X_2+ X_3 +X_4+ X_5+X_6 +---X_n)$.

The explicit form of the model is stated as $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 +\beta_4X_4 + \beta_5X_5 +\beta_6X_6 + Xn + e$

Where:

Y = utilization level of FSP, (dichotomous; highly utilized =3, moderately utilized=2 and poorly utilized=1). The utilization level of FSP of hawkers were categorized as (<5=poorly utilized, 5-10=moderately utilized and above 10=highly utilized).

X_1 = gender

X_2= age (years)

X_3 = educational level (years)

X_4 = vending experience (years)

X_5 = household size (number)

X_6 = income level (₦)

X_7 = marital status

X_8 = knowledge of FSP (dummy, yes = 1, otherwise = 0)

X_9 = received training on FSP (dummy, yes = 1, otherwise = 0)

B_0 = Intercept

B_1-B_9 = Coefficient of parameter estimates

e = error term

Results and Discussion

Personal characteristics of hawkers

The result reveals that 61.7% of the vendors had household size of 1-5 people. This is followed by household size of 6-10 people that amounted to 33.3%. Result also showed an average household size of 5 persons. A large household size is considered important as it aids family in food hawking thereby eliminating the cost involved in hiring external vendor. This result is congruent with Gbigbi and Chuks-Okonta (2020). A high percentage of street hawkers were married 44(73.3%) and 15.0% were single. The married people constituted majority. The result on marital status implies that married people constituted majority. This implies that street food hawking is a business for the married because it required patience which the unmarried cannot easily cope. This may be because married vendors have a much more household responsibilities and opt for various ways to feed their household. Hence, the married goes into hawking to alleviate family poverty by generating income from the business. The findings indicate that 31.7% of the hawkers had some knowledge on laws vis-à-vis food safety while 68.3% had no knowledge thereof. The street food hawkers were aware of FSP to some extent. Earlier research by Nguyen (2006) found that mammoth street food hawkers are familiar with safety practices, nonetheless concluded that most people do not use the knowledge acquired adequately. According to Buted and Ylagan (2014**)**, those engaged in food operations who come directly or indirectly with food should have the needed knowledge to enable them to handle food hygienically. Majority (75.0%) of hawkers have not attended training on FSP while only 25.0% had attended training workshop. Majority of hawkers have not attended training on FSP. This result supports Okojie and Isah (2014) findings in Nigeria. This scenario will not be favourable to the consumers health due to poor food handling techniques adopted. Training is fundamentally important to hygiene system. This outcome is divergent to report in China in which most food hawkers were trained on food sanitation (Ma et al., 2019). They further postulated that effective and relevant street vendor's FSP training could have some effect on food hawkers' behaviour such that it would ensure that safe working and healthy cooking practices were sustained in the business. About 58.3% of the hawkers operated from stationary stalls along the streets while 41.7% of those investigated were mobile vendors. Many (50.0%) of food hawkers earned income of ₦100,001- ₦150,000 per annum. This is closely followed by 38.3% earning between ₦50,000-₦100,000 as very few (11.7%) earned above ₦150,000. The mean income earned by them was ₦120, 411.43k.The mean income of the hawkers was ₦120,411.43k which implies most of their earnings were from street food hawking showing that the venture is profitable.

Table 1: Socioeconomic attributes of hawkers (N=60 vendors)

Variables	Frequency	Percentage
Household size (number)		
1-5	37	61.7
6-10	20	33.3
11-15	3	5.0
Above 15	0	0
Mean=5 persons		
Marital standing		
Married	44	73.3
Single	9	15.0
Divorced/separated	4	6.7
Widowed	3	5.0
Knowledge of safety practices		
Yes	19	31.7
No	41	68.3
Training on FSP		
Yes	15	25.0
No	45	75.0
Vending type		
Stationary	35	58.3
Mobile	25	41.7
Income level (₦)		
50,000-100,000	23	38.3
100,001-150,000	30	50.0
Above 150,000	7	11.7
Mean = ₦ 120,411.43k		

Source: Field survey (2020)

Awareness level of FSP by street food hawkers

İt depicted the awareness level of food safety methods by the street food hawkers; 29(48.3%) reported they wash food prior to cooking while 31(51.7%) did not (Table 2). From the result, 58(96.7%) reported they were cognizant of covering oneself while those said no were 2(3.3%). About 43(71.7%) street food hawkers agreed on awareness of covering food to prevent transmission of microorganism on food while 17(28.3%) was not aware of the idea. Furthermore, 55(91.7%) reported awareness on storing in hotspot to prevent from easy spoilage due to temperature influence while only 5(8.3%) said no; 34(56.7%) hawkers said they were copiously aware of treating water. similarly, 59(98.3%) are aware of environmental cleanliness as a safety measure. 44(78.3%) was fully aware of cleanliness of utensils by using clean reusable towels for sanitizing the equipment and surfaces. Also, 47(78.3%) said they are aware of warming meal before service to customers because temperature of hot food held at or above 135f protect food from contamination and only 13(21.7%) did not. About 50(83.3%) are fully mindful of the vitality of well cooked food to meet the required safe internal temperature before sale. On the same note, 35(58.3%) reported their full aware of individual hygiene while 25(41.7%) said no. About 42(70.0%) was fully aware of applying clean water in washing utensils before using it to dish food for customers. 41(68.3%) said yes to affirm that vendors do wear clean and proper uniform while cooking food and 19(31.7%) did not. The result also showed that 58(96.7%) are fully aware of hygienic water availability while only 2(3.3%) claimed non awareness. About 59 (98.3%) of hawkers said they are fully aware of protection of food from flies/dust before consumption by the customers. Out of 60 respondents, 56(96.7%) are fully mindful of the necessity to re-heat food before selling to customers while only 4(6.7%) did not. Again, 96.7% of hawkers are fully acquainted of the prerequisite to check label when purchasing food items and products while only 2(3.3%) did not.

Table 2: Level of Awareness of FSP by street hawkers

Food safety practices	Frequency Yes	Frequency No
Washing food prior to cooking	29(48.3)	31(51.7)
Covering oneself	58(96.7)	2(3.3)
Covering food	43(71.7)	17(28.3)
Storing in hotspot	55(91.7)	5(8.3)
Treating water	34(56.7)	26(43.3)
Cleanliness of environment	59(98.3)	1(1.7)
Cleanliness of utensils	44(73.3)	16(26.7)
Hot meal	47(78.3)	13(21.7)
Well cooked food	50(83.3)	10(16.7)
Personal hygiene	35(58.3)	25(41.7)
Washing utensils with clean water	42(70.0)	18(30.0)
Clean clothes	41(68.3)	19(31.7)
Accessibility of hygienic water	58(96.7)	2(3.3)
Protection of food from flies/dust	59(98.3)	1(1.7)
Re-heating	56(93.3)	4(6.7)
Checking label when purchasing food items and products	58(96.7)	2(3.3)

Source: Field survey (2020)

Food safety utilization index of street hawkers

It was showed the mean score and standard deviation of FSP utilization index (Table 3). The result indicated that FSP utilization index was 63.3% with standard deviation of 13.1. The results implies relative utilization index of FSP by street hawkers. This implies that there is still room for improvement by the hawkers to reach the optimum by 36.7%. The reasons for the percentage shortfall could be due to cost implications of safety methods implementation and also the resources at the disposal of the hawkers may be an inhibiting factor to the

relative utilization index (63.3%) which was witnessed in the research.

Factors influencing FSP utilization by street hawkers

The regression result as showed by the coefficient of multiple determination (R^2 =0.6632) reveals that the combined effect of the independent variables explained 66% of the total variation in utilization level for FSP (Table 4). The remaining 24% were caused by other factors not included in the model. Based on linear regression analysis in this research, the factors seen to be correlated with street food hawkers' safety practices utilization were education (t= 2.91, p = 0.004), awareness of FSP (t= 8.41, p = 0.000) and training on FSP (t= 6.70, p = 0.000) (Table 4). These findings were unique to the current research, as reported findings in the literature supported it. The coefficient of education was positive and had a substantial relationship with utilization at 5% level. This implies that the higher the educational attainment of hawkers, food safety practices would be strictly adhered. This is in agreement with Tesfaye and Tegene (2020) findings that food handlers' educational level is concomitant with good FSP. The results showed that awareness has a positive and direct association with utilization of FSP at 1% level. This means that increase in awareness level of the hawkers will lead to a corresponding increase in FSP utilization. Previous studies found an association between awareness and FSP (Nigusse and Kumie, 2012). The study of Yusuf and Chege (2019) in Nigeria found that street food hawkers' awareness has significant relationship with FSP. The outcome shows that training positively related utilization at 1% probability. This suggested that a unit upsurge in training of hawkers will lead to a corresponding increase in conduct of practices utilization. Training was associated with FSP in Nigeria (Yusuf and Chege, 2019) in which training was significant with hygienic practices. All these studies showed that food hawkers who attended FSP training were better off than their non-attended counterparts.

Research hypothesis

Ho: There is no significant relationship between awareness and socio-economic characteristics of hawkers.

Age of vendor

The findings of awareness, age, gender, and education of hawkers indicate that as hawkers' ages increase, so does their maturity, which may increase their desire to learn more about FSP. The result reveals that the 90.0% of food hawkers between 20-29 years were cognizant of FSP (Table 5). This was followed by 66.7% of hawkers who were above 49 years and 48.0% of hawkers were within the age brackets of 30-39 years. The observed chi-square of 11.887 and the p-value ($p<0.05$) obtained showed that age of hawkers is directly related with their level of awareness of FSP. This indicated that the higher age of vendors, the higher the vendors' awareness level of the FSP used. This may be due to the rigors of the trade, which necessitate physical capacity and a great deal of energy, particularly among mobile food hawkers. According to Ashraf et al., (2015), hawkers' age and knowledge have a positive relationship. This implies that as people get older, their ability to learn new things about FSP increases.

Gender of Vendor

It was showed that only 30.0% of the male vendors were aware of FSP compared with 77.5% of the female vendors who had such knowledge (Table 6). The observed chi-square for the test is 12.726 with a p-value of 0.000($p<0.05$). This implies that gender could play an essential role in awareness of safety practices by the street food hawkers. The relationship between gender and awareness is not surprising, particularly among women, since the majority of those involved in street food hawking were women, who are traditionally responsible for the family's upkeep in the kitchen.

Educational level of hawkers

The test of the finding revealed that educational attainment of food hawkers had significant correlation with awareness of safety practices. The observed chi-square of 7.689 and the p-value of 0.053 obtained discovered that the educational level of hawkers contributes to awareness. This implies that the higher the level of education, the more the knowledge level of FSP used. The results revealed a significant correlation between education and awareness. When one's educational level grows, so does their willingness to learn more about FSP. This means that trained hawkers are more likely to take chances in the food hawking industry by experimenting with new techniques. Olumba and Rahji (2014) found a correlation between education and awareness because education allows hawkers to use cost-effective techniques.

Table 3: FSP utilization index of street hawkers

Variables	N	Min	Max	Mean index %	Std. Dev.
FSP	60	6	15	10.12	2.09
Number of FSP	60	16	16	16	0.00
Utilization index	60	37.50	93.75	63.27	13.08

Source: Field survey (2020)

Table 4: Factors influencing FSP utilization by hawkers

Variables	Coefficient	Standard deviation	T	P>/t/
Gender	0.2020	0.1493	1.35	0.179
Age	0.0091	0.0056	1.60	0.112
Education	0.6225**	0.0213	2.91	0.004
Vending experience	0.0159	0.0199	0.80	0.427
Household size	-0.1853	0.0280	-0.66	0.509
Income	-2.06e-06	2.67e-06	-0.77	0.441
Marital status	0.0339	0.0592	0.57	0.568
Awareness	1.0135***	0.1205	8.41	0.000
Training	0.8409***	0.1254	6.70	0.000
Constant	0.3546	0.4140	0.86	0.394
R-square	0.6632			
F-ratio	20.78			

Source: Field survey (2020) *** and ** Significant at 1% and 5% respectively

Table 5: Relationship between FSP awareness and age of vendors

Awareness	20-29 years	30-39 years	40-49 years	Above 49 years	Total
Yes	18(90.0%)	12(48.0%)	3(33.3%)	4(66.7%)	37(61.7%)
No	2(10.0%)	13(52.0%)	6(66.7%)	2(33.3%)	23(38.3%)
Total	20(100%)	25(100%)	9(100%)	6(100%)	60(100%)
X^2 =11.887					
P-value=0.008					

Source: Field survey (2020)

Table 6: Relationship between FSP awareness and gender of vendors

Awareness	Male	Female	Total	X^2	p-value
Yes	6 (30.0%)	31(77.5%)	37(61.7%)	12.726	0.000
No	14(70.0%)	9(22.5%)	23(38.3%)		
Total	20(100%)	40(100%)	60(100%)		

Source: Field survey (2020)

Table 7: Relationship between awareness of FSP and educational level

Awareness	No education	Primary	Secondary	Tertiary	Total
Yes	3(37.5%)	6(66.7%)	14(51.9%)	14(87.5%)	37(61.7%)
No	5(62.5%)	3(33.3%)	13(48.1%)	2(12.5%)	23(38.3%)
Total	8(100%)	9(100%)	27(100%)	16(100%)	60(100%)
X^2 =7.689					
P-value=0.053					

Source: Field survey (2020)

Conclusion

It was concluded that The study specifically intends to examine awareness of FSP of hawkers and utilization index which were influenced by several independent factors. The result indicated that age, gender and education influence awareness of safety practices. The finding also has made it clear that education, awareness and training exercise dominant and positive influence on utilization of safety practices. Based on this outcome, it is imperative for the street food hawkers to consider these factors for improving utilization index from the present level as shown in this research. The estimated utilization index in this investigation could intensify food marketing in the area. The surveyed street food hawkers can review their FSP utilization level upward since the utilization index (63.3%) gives an impression that there is still room for improvement with respect to FSP. The study advocates development of training programs for food hawkers on food safety. Furthermore, Government should enforce washing food prior to cooking, personal hygiene, washing utensils with clean water, clean clothes, treatment of water and regular health checks for workers in these establishments. There should be more

sensitization to vendors so that they practice what they know. Formation of local food vendor groups would also ensure that food hawkers adhere to appropriate codes of practice in street food vending.

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