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KNOWLEDGE AND PRACTICE OF FOOD SAFETY AMONG LOCAL RESTAURANT OPERATORS IN OGBA/EGBEMA/NDONI LOCAL GOVERNMENT AREA OF RIVERS STATE

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ABSTRACT: *Foodborne illness is a public health precedence causing morbility and mortality in general population. Many people die of food poisoning every year in Nigeria from foodborne pathogens from contaminated food and water. Hence this study assessed the knowledge and practice of food safety among local restaurant operators in Ogba/Egbema/Ndoni local government area of Rivers State. A cross-sectional design was used for the study; ninety-three (93) local restaurant operators participated in the study. Data was collected using a three sectioned standardized questionnaire, which was analyzed using statistical package for social sciences (SPSS). The data was analyzed using frequency, percentage, mean, standard deviation, ANOVA and Chi-square. The result showed a good knowledge of food safety with a percentage of 82.53%. There was also a reasonable extent of food safety practice among respondents, where the grand mean was 3.42 which were significantly higher than the criterion means of 2.50. The result also shows insignificant relationship between food safety knowledge and practice and socio-demographic characteristics such as age, level of education, marital status, religion and years of experience ($p>0.05$), hence the null hypothesis was retained. However, there was a significant relationship between gender and food safety practice. Although this study reported good food safety knowledge and a reasonable extent of food safety practice, there is need for institutions like CAO and CPC to create more awareness on food and its implication to the healthcare and economic system when adequate measure is not taken.*

KEYWORDS: Knowledge, Practice, Food Safety, Restaurant Operators, Local Government Area, Nigeria

INTRODUCTION

Food safety is defined as the conditions and measure that are necessary during production, processing, storage, distribution and preparation of food to ensure that it is safe, sound and fit for human consumption (Griffith, 2001). Food is considered safe when it is free from chemical, biological or physical hazards that may result in illness or even death to the consumer. Food safety is a vital issue which relates to the quality of food production, alleviation as well as consumption, so as to avoid the contamination and deterioration of food (Prabhakar, Sano and Srivastava, 2010). Generally, food safety is public health precedence, and this is because millions of people get ill and many die each year as a result of consuming unsafe food (WHO,

2009). Food safety remains critical without outbreaks of food-borne illness being its substantial cost to individuals, food industries, community health systems and to the economy generally (Egan, Raats, Grubb, Eves, Lumbers, Dean, and Adams, 2007). Currently, there are more than 200 diseases caused as a result of unsafe food and beyond, those food-borne illness are on the increases worldwide, therefore making food safety a global concern.

The main aim of food safety is to prevent food poisoning and other foodborne illnesses. Epidemiological and surveillance data suggest that faulty practices in food handling, storage and processing may play an important role in the causal chain of foodborne illnesses. Therefore, if proper food safety and personal hygiene is not well practiced this might put patients at the risk of foodborne illnesses, particularly those at greater risk, which includes children, pregnant women, the elderly and those with chronic diseases (WHO, 2000).

Knowledge is a compex process of remembering, relating or judging an idea or abstract phenomenon (cognitive abilities). The knowledge of food safety is important to prevent foodborne illness. Prevention of foodborne illness is one of the primary responsibilities of the food service establishments such as restaurants (Cushman, Shanklin and Niehoff, 2001). It is the managers' responsibility to ensure the safety of food prepared and served to customers. Retain food service operations such as restaurants often produce large quantities of different types of food in the same area, which creates a risky environment for outbreaks of foodborne disease. The majority of foodnorne disease have been linked to foods prepared in retail food service operations and caused by human error at some point in the food chain.

Food safety knowledge is largely obtained through training in food safety. This includes attending certified training coruses where participants are exposed to the importance of time temperature control, personal hygiene, safe food handling and causes of foodborne illnesses. Other sources of food safety knowledge are from printed education materials and the use of new media where information on food safety can be found at the finger tip. In order to have good food handling practices, the food handlers must be trained and have knowledge in food safety. Some studies have shown that increased knowledge on food safety will result in positive food safety practices (Abdul-Mutalib, Abdul-Rashid, Mustafa, Amin-Nordin, Hamat and Osman, 2012; Toh and Birchenough, 2000). However, there are also studies that show that having good level of knowledge did not always result in positive behaviour towards food safety practices (Akabanda, Hlortsi, and Owusu-Kwarteng, 2017; Clayton, Griffith, Price, and Peters, 2002). This suggests that transfer of knowledge to practices is not predictable.

Practice means to do something over and over, out of habit, because it has become an accepted custom, or on purpose to try to get better at the task. Adhering to safe food handling practice is essential as poor food safety practice can introduce hazards into the food through cross contamination such as storing raw and cooked foods together. Rane (2011) reports that in a study conducted in Spain some food handlers self-reported that they had mixed containers loaded with raw materials and those with cooked food. This could introduce hazards through cross contamination between the raw material and prepared food, therefore WHO (2006) advises that raw materials should be separated from other foods in order to reduce the risk of cross contamination. For the same reason, they further advise that equipment and utensils used for handling raw foods and prepared foods should be separated, and that food should be kept in separate containers to avoid contact between cooked and raw food. WHO (2006) ascertained that poor food safety practice such as those related to inadequate preparation and improper

cooking of food, insufficient processing, poor hygiene and the re-use of leftovers are responsible for causing 14% of foodborne diseases.

Socio-demographic refers to a group defined by its sociological and demographic characteristics. It refers to combination of social and demographic factors such as age, gender, religion, education, marital status, income and so on. Food safety knowledge and practice has been associated with age as studies (Siow and Norrakiah, 2011) have shown that older people have better knwoeldge on food safety compared to young people, and this was attributed to the fact that older people have more years of experience on handling food compared to younger people. another study showed that practice of food safety was poor among elderly people due to lack of knowledge and superstitious beliefs, as some elderly people believe that certain foods taste better when they are sour or fermented, and some also believe that dirt do not cause any harm to the human life and as a result they do not always take precautions when handling or preparing food. The knowledge and practice of food safety has also been linked with gender, as studies (Patil, Cates and Morales, 2005) have shown that females have better knowledge on food safety and they also practice safe food handling compared to the males. Thiswas associated with the fact that females are known for helping out their mothers and as a result of that they are more groomed in the kitchen and this further exposes them on some knowledge as well as practice of food safety, while the males pay less attention to the meals they prepare. They also lack knowledge on the adequate method of washing hands, effect of contact between raw products and cooked food inside the refrigerator and the use of same tool for different tasks without properly washing them. Some studies (GUl, 2012) have also shown insignificant difference between males and females in the aspect of knowledge and practice of food safety.

Religion has also been associated with food safety practice, were certain religions forbid foods (meat and pork) not slaughtered in Judaism and Islam. However, some of these producers may not practice these religions, which may cause problem in the implementation of religious laws, there is also lack of regulations and differing protocols and as a result may lead to poor handling practice by the producers. Other socio-demographic characteristics associated with food safety knowledge and practice includes marital status, education, and income as well. Although a study by George and Ekua (2011) have shown insignificant difference between education and food safety knowledge and practice, Klontz, Desenclos, Wolfe, Hoecherl, Roberts and Gunn (1991) in their study have reported poor practice of food safety when they carried out a research on consumption of raw oysters by well educated people of higher wealth category. They found out that these people consume this meal because of how expensive it is and they considered it a delicacy reserved only for consumers from a higher wealth category (i.e. the rich). And most of these rich folks do not adhere to proper food safety practices while handling this particular meal, hence the reason for the report.

Identifying food service establishment (such as restaurants) knowledge and practice of food safety is essential to ensure safety of food and prevention of foodborne illness occurrence, which is a public health problem. Even though there might be some cultural differences, identifying food safety practices in Nigeria will provide information about food safety training needs in Nigeria and other developing countries. Hence, this study was designed to assess the knowledge and practice of food safety among local restaurants in Ogba/Egbema/Ndoni local government area of Rivers State.

Statement of the problem

Food safety is a basic public health problem which affects all countries. Approximately two million children die yearly as a result of diarrheal diseases, while millions also suffer from frequent or habitual episodes of diarrheal and its debilitating or weakening consequences, mostly caused by food or water-borne pathogens. Food-borne illness is a burden to human life as it incapacitates people, causing discomfort, pain, grief, suffering, disruption to industry and commerce, constrain on the healthcare system as well as death. According to WHO (2002), the problem of food-borne illness is expanding and poses a great threat to good health in both developed and developing countries. In Nigeria, it was stated that over 20,000 persons die yearly as a result of exposure of food to pesticides wrongly used by farmers. However, poor knowledge and practice is a major threat to food safety, especially in Nigeria were most foodborne disease outbreaks are not recorded.

It has been noticed that some local restaurants operators buy food stuffs such as vegetables and some other perishable goods from an open market were flies and other insects are seeing flying round and perching on these food stuffs and some of these operators do not wash these food stuffs properly before use, "that is some of them wash them just once and they sometimes use watr that has previously been used for another purpose (rinsing of plate) to wash these food stuffs. Some of these operators also use latrine for convenience and most times after using the toilet they wash their hands with just water and no soap and they end up cleaning their hands on their clothes or wrappers, and move straight to the kitchen to prepare or serve food. Some of these operators also do not war covers such as apron, gloves or even cover their hair while preparing or handling food. All these unsafe practices can cause food hazard thereby leading to food poisoning which can be detrimental to human health.

Several studies have been conducted in many countries investigating the knowledge, attitude and practice of food safety in various categories of food services establishments. However, there is lack of scientific evidence on whether local restaurant operators have the basic knowledge of food safety, as well as if they practice food safety. This study therefore seeks to assess the knowledge and practice of food safety among local restaurant operators in Ogba/Egbema/Ndoni local government area of Rivers State.

Research questions

The following research questions were drawn to guide the study

1. What is the knowledge of food safety among local restaurant operators in Ogba/Egbema/Ndoni local government area of Rivers State?
2. What is the level of food safety practice of local restaurant operators in Ogba/Egbema/Ndoni local government area of Rivers State?
3. What is the relationship between socio-demographic characteristics and food safety knowledge of local restaurant operators in Ogba/Egbema/Ndoni local government area of Rivers State?
4. What is the relationship between socio-demographic characteristics and food safety practice of local restaurant operators in Ogba/Egbema/Ndoni local government area of Rivers State?

MATERIALS AND METHODS

Research design

This study employed the cross-sectional design with a quantitative method of data collection to assess the knowledge and practice of food safety among local restaurants. According to Lawrence and Keith (2005) cited in Quansah, 2009), a cross-sectional design has stronger likelihood of participation as it is for a single time.

Population for the study

The population of the study comprises of all local restaurant operators in Ogba/Egbema/Ndoni local government area of Rivers State. there are 476 registered local restaurants in ONELGA according to CDC (2008).

Sample size and sampling techniques

Sample size

The sample size was determined using Krejcie & Morgan (1970) formula for determining sample size for a finite population. Thus;

$$S = \frac{X^2NP(1-P)}{d^2(N-1) + X^2P(1-P)}$$

Where X = Z value (1.75 for 92% confidence level)

N = Population size (476)

P = Population proportion (expressed as decimal) (assumed to be 0.5 (50%)

d = Degree of accuracy (8%), expressed as a proportion (0.08); the margin of error

Thus a sample size of 93 was determined.

Sampling technique

Simple random sampling technique was used to select the participants of the study; names of all the restaurants in each ward was written and put in a basket, after which five (5) local restaurant operators will be selected at random from the basket. This was so that every local restaurant operator has an equal chance and likelihood of being selected in the sample.

Instrument for data collection

A standardized questionnaire was used to collect data from local restaurant operators in ONELGA. The questionnaire consists of three sections which includes, Section A: Sought information on socio-demographic characteristics, Section B: the knowledge of food safety and Section C: the practice of food safety.

Validity of instrument

A standardized questionnaire retrieved from food safety knowledge and hygiene practices among veterinary medicine students at Trakia University, Bulgaria in (Stratev et al, 2017) was adopted for the collection of data.

Reliability of the instrument

A standardized questionnaire with a reliability coefficient of 0.72 was used. According to Elendu (2010) an instrument with a reliability index of 0.70 and above can be considered reliable. Therefore, the standardized questionnaire is considered reliable for the study.

Method of data analysis

The data collected from the field survey was entered and analyzed using the statistical package for social science (SPSS) software programme. The pre-coding of the questionnaire facilitated and eased the data coding process using the SPSS. The study employed both descriptive and inferential statistical tools in the software (SPSS). The descriptive tool categorized local restaurant operators' knowledge into frequencies and percentages where above 50% was considered good knowledge. The practice of food safety was categorized into mean and standard deviation where 2.50 is the mean criterion and mean rating above 2.50 was considered good practice. The inferential statistics, employing the use of ANOVA, Chi-square and T-test set at 0.05 Alpha levels.

RESULTS

Research question 1: What is the knowledge of food safety among local restaurant operators in Ogba/Egbema/Ndoni local government area of Rivers State?

Table 1: Summary of frequency and percentage on the knowledge of food safety among local restaurant operators in Ogba/Egbema/Ndoni local government area of Rivers State.

IDK – I don't know; ICR – I cant remember.

S/N	Items	ICR	%	NO	%	IDK	%	Yes	%
1	Are you aware of food poisoning?	1	1.08	0	0.00	1	1.08	91	97.85
2	Have you experienced food poisoning?	4	4.30	6	6.45	26	27.96	57	61.29
3	Are you aware of how to prevent food poisoning?	1	1.08	2	2.15	18	19.35	72	77.42
4	Use of gloves while handling food reduces the risk of food contamination?	2	2.15	18	19.35	29	31.18	44	47.31
5	Food poisoning can have health and economic effects on the society	2	2.15	3	3.23	2	2.15	86	92.47

6	Children, pregnant women and older individuals are moreat risk of food poisoning?	3	3.23	9	9.68	2	2.15	79	84.95
7	Hand washing before handling food reduces the risk of food contamination?	2	2.15	6	6.45	3	3.23	82	88.17
8	Washing of hands after handling raw food prevents food borne diseases?	0	0.00	11	11.83	4	4.30	78	83.87
9	Diarrhea can be transmitted through contaminated food?	0	0.00	6	6.45	6	6.45	81	87.10
10	Micro-organisms can be found on the surface of human skin, nose and mouth of a healthy handler?	0	0.00	5	5.38	9	9.68	79	84.95
11	Personal hygiene can prevent food contamination	0	0.00	4	4.30	3	3.23	86	92.47
12	Contaminated water can be a vehicle for transmission of food borne diseases?	0	0.00	11	11.83	4	4.30	78	83.87
13	Storing raw and cooked food together can cause contamination of food?	2	2.15	10	10.75	3	3.23	78	83.87
14	Food handler having diarrhea, flu and sore throat can also risk of food contamination?	3	3.23	10	10.75	6	6.45	74	79.57
15	Leftover food smelling food is still safe to eat?	1	1.08	6	6.45	16	17.20	70	75.27
16	Dishing, serving and tasting food with unprotected hands can cross contaminate food	1	1.08	4	4.30	16	17.20	72	77.42
17	Unkept and dirty nails can easily spread bacteria?	2	2.15	2	2.15	3	3.23	86	92.47
18	Uncovered abrasion or cuts on fingers and hands can cross contaminate food?	0	0.00	7	7.53	5	5.38	81	87.10
19	Food borne illness can be acquired from consumption of contaminated food?	0	0.00	7	7.53	7	7.53	79	84.95
20	Inadequate cooking of raw food like meat, chicken and vegetable can cause outbreak of food borne illness?	0	0.00	10	10.75	1	1.08	82	88.17
	Average percentage		**1.29**		**7.37**		**8.80**		**82.53**

IDK – I don't know; ICR – I can't remember

The result form table 1 shows a summary on the percentage of the responses of restaurant operators in Ogba/Egbema/Ndoni local government area of Rivers State. It further reveals the average percentage of each category of the responses. It shows that respondents with the I c ant remember response was of 1.29% which was the least in the average percentage rating followed by the respondents who affirmed to have knowledge on food safety with an average percentage rating of 82.53%. However, respondents who don't know had a percentage rating of 8.80% and No having a percentage rating of 7.37%.

Research question 2: What is the level of food safety practice among local restaurant operators in Ogba/Egbema/Ndoni local government area of Rivers State?

Table 2: Mean and standard deviation on the level of food safety practice of local restaurant operators in Ogba/Egbema/Ndoni local government area of Rivers State

S/N	Items	Frequently %	Some times %	Rarely %	Never %	Mean	SD
1	Do you wash your hands before and after cooking?	78.49	13.97	3.22	4.30	3.67	0.74
2	Do you consume food left at room temperature for long?	24.73	38.70	10.75	25.80	2.62	1.12
3	Do you use your hand to cover your mouth while coughing or sneezing?	72.04	19.35	6.45	2.15	3.61	1.12
4	Do you taste and dish out food with unprotected hands?	50.53	19.35	4.30	25.80	2.95	1.26
5	Do you wash fruits and vegetables before eating?	83.87	10.75		5.38	3.73	0.72
6	Do you read conditions of use and storage of packaged food?	69.87	23.67	5.38	1.08	3.62	0.64
7	Do you read labels with the use and/or expiry date of packaged food before purchasing?	73.12	16.13	7.53	3.23	3.59	0.77
8	Do you wash eggs before cooking or frying them?	70.97	21.51	6.45	1.08	3.62	0.66
9	Do you wash and rinse cutting boards, knives and plates used for raw meat before using them for other food?	86.02	11.83	1.08	1.08	3.83	0.48
10	Do you defrost frozen food outside the refrigerator?	55.91	30.11	2.15	11.83	3.30	0.99
11	Do you wear accessories like rings, bracelets when cooking food?	38.71	16.13	12.00		2.61	1.29

12	Do you use an apron when cooking?	60.22	15.05	13.98	32.26	3.25	1.06
13	Do you store raw meat or chicken separately from food?	61.29	13.98	21.51	10.75	3.33	0.92
14	Do you wash dishes with detergent and water or in a dish washer, while preparing food?	64.52	21.51	2.15	3.23	3.39	1.00
15	Do you wash your hands before handling raw food?	81.72	13.98	2.15	11.83	3.75	0.60
16	Do you wash dishes with detrgnt and water or in a dish washer, while preparing food?	75.27	13.98	7.53	2.15	3.61	0.77
17	do you cover your cut with bandage and use gloves?	54.84	26.88	15	3.23	3.33	0.85
18	Do you keep food unrefrigerated for more than 2 hours?	47.31	30.10	5.38	17.20	3.08	1.11
19	Do you protect raw food from insects and rodents?	84.95	9.68	4.30	1.08	3.78	0.57
20	Do you protect cooked food from insects and rodents?	81.72	8.60	4.30	5.38	3.67	0.80
	Grand mean					**3.42**	**0.85**

Table 2 reveals a mean rating on the level of food safety practice of local restaurant operators in Ogba/Egbema/Ndoni local government area of Rivers State. it reveals a grand mean rating of 3.42, SD = 0.85. This implies that averagely, the local restaurant operators of Ogba/Egbema/Ndoni local government area of Rivers State to a reasonable extent practice food safety, being that the average mean is above the criterion mean of 2.50.

DISCUSSION

Knowledge of food safety

A high level of food safety knowledge was observed among the participants of this s tudy with an average percentage of 82.53% having a good knowledge of food safety, whereas 8.8% average agreed to not knowing about food safety. Similar results were reported by Ferk et al (2016) who conducted a s tudy on assessing the food safety knowledge of university of Maine students and conducted a study on assessing thefood safety knowledge of university of Maine students and reported a good knowledge of food safety with an average percentage of 60%. A good knowledge of food safety of over 80% and 90% respectively was also reported with regards to personal hygiene and cross contamination by Santos et al (2008) in their survey on knowledge levels of food handlers in Portuguese school canteen and the self-reported

behaviour towards food safety. Adeline et al (2013) in their study of food handling practices and knowledge among families with young children in the United States affirmed a high level of food safety knowledge (over 80%). Akanbanda, Hlortsi and Owusu-Kwarteng (2017) in their study on food safety knowledge attitude and practices of institutional food handlers in Ghana, reported that food handlers were knowledgeable about hygiene practices, cleaning and sanitation procedure with an average percentage of over 75%. Henok et al (2019) study on food safety practice and its associated factors among mothers in Debara town, Northwest Ethiopia, also reported good food safety knowledge of about 75%.

However, this study contradicts results from Faremi, Olatubi and Nnabuife (2018) who reported only 31.9% of food safety knowledge in their study on food safety and hygiene practices among vendors in a tertiary educational institution in the South western Nigeria. Zain and Nang (2002) conducted a study on socio-demographic characteristics of food handlers and their knowledge, attitude and practice towards food sanitation in Malaysia. They reported poor food safety knowledge with only 13.0% of food vendors having food knowledge. Pirsaheb, Almasi and Rezaee (2010) reported less than 15% food safety knowledge in their survey on special educational course effects on knowledge, attitude and practice of preparation, distribution and sale centers food staff in Kermanshah Iran. The reason for the difference can be attributed to the sample size, as this study has a smaller sample size. The population of study was also differing with othr studies. The time of the study might also be a dispute since some of these studies were carried out about a decade ago. As a result, the strength of this finding could be attributed to several educations on food safety awareness through mass media and other recognized bodies.

Food safety practice

This study revealed that local restaurant operators in Ogba/Egbema/Ndoni local government area of Rivers State practice food safety to a reasonable extent with a grand mean rating of giving that the grand mean is significantly higher than the criterion mean of 2.50, it can therefore be concluded that local restaurant operators in ONELGA practice good food safety. However, practice was not consistent in wearing of accessories like ring while handling food, as some of the respondent agreed to wearing rings while handling food. The result of this study was similar to that from Faremi, Olatubi and Nnabuife (2018) who in their study on food safety and hygiene practices among food vendors in a tertiary educational institution in South Western Nigeria, reported good level of food safety practice with 78.2%. Kumie, Mezene, Amsalu, Tizazu and Bikila (2006) reported good food safety practices with an average percentage of 81.74% in their study on the sanitary condition of food and drink establishment in Awash-sebat kilo town, afar region, Ethiopia. Legesse, TIlahun, Agedew and Haftu (2017) reported 67.4% of food safety practice, in their study on food handling practices and associated factors among food handlers in Arba Minch town public food establishments in Gamo, Gofa, sone, southern ethopia. Dereso, Tariku, Ambaw, ALemenhew, Biks and Nega (2017) in their s tudy of socio-demographic factors and availability of piped fountains affect food hygiene practice of food handlers in Bahr Dar town, Northwest, Ethiopia, also reported a reasonable extent of food safety practice with a percentage average of 67.7%.

However, the result of this study was in contrast with studies from Bas, Ersun and Kiavnc (2006) who in their study of evaluation of food hygiene knowledge, attitudes and practices of food handlers' in food businesses in Turkey, reported poor food handling practices by food handlers in food businesses with an average of only 48.4% food safety practice. GIzaw,

Gbrehiwot and Teka (2014) study on food safety practice and associated factors of food handlers working in substandard food establishments in Gondar town, Northwest Ethipia reported a poor food safety practice with an average percentage of 22.1%. Muinde and Kuria (2005) also reported that 85% of the food handlers prepared food in unhygienic conditions. The variation between these studies and the present one might be due to the sample size, population of study, the place in which the research was carried out and the design of study.

Relationship between socio-demographic characteristics and food safety knowledge

The result of this study showed that there are no significant relationship between gender and food safety knowledge given that the p-value = 0.559. this result is similar to study Carbas, Cardoso and Coelho (2013) who investigated the knowledge association with food borne diseases in consumers in North Eastern Portugal and reported a p-value greater than ($p>0.05$). stratev et al (2017) who studied on food safety knowledge and hygiene practices among veterinary medicine students in Trakia University, Bulgaria, reported an insignificant relationship between gender and food safey knowledge ($p>0.05$). however, this study contradicts Tabrizi, Nikruaz, Sadeghi-Bazargani, Farahbakhsh and Nikniaz (2017) study on determinants of the food safety knowledge and practice among Iranian consumers, who reported significant relationship between gender and food safety knowledge with a p-value less than 0.05 ($p>0.05$). in a s tudy on the association between socio-demographic factors and knowledge of food safety and hygiene among hospital food service staff by Mohammad (2018), female respondents had a significantly higher knowledge than males. This therefore shows a significant relationship between gender and knowledge of food safety ($p>0.05$).

This study reported no significant relationship between age and food safety knowledge ($p=0.290$) which is significantly greater than the 0.05. This result is similar to study conducted by Annor and Baiden (2011) who evaluated food hygiene knowledge, attitudes and practices of food handlers in food businesses in Accra, Ghana. They opined that age does not a role in food safety knowledge ($p>0.05$). Mendagudali, Akka, Swati, Shedole, and Bendigeri (2015) reported insignificant difference between knowledge and age, in their study on knowledge, attitude and practices of food safety among women of Khaza bazaar, the urban field practice area of KBN institute of Medical sciences, Kalabuagi, Karnataka ($p>0.05$) in their study on food safety self-reported behaviours and cognitions of young adult revealed a significant relationship between knowledge of food safety and age ($p>0.05$). Rahman, Arif, bakar and Tambi (2012) also reported a significant relationship between food safety knowledge and age of the respondents ($p>0.05$) in their study on food safty knowledge, attitude and hygiene practices among the street food vendors in Northern Kuching City, Sarawak.

No significant relationship was found between level of education and food safety knowledge ($p>0.065$), which is significantly higher than 0.05. this result is in line with study by Annor and Baiden (2011) who evaluated food hygiene knowledge, attitudes and practices of food handlers in food businesses in Accra, Ghana. They argued that educational level has no relationship with food safety knowledge ($p>0.05$). Mendagudali et al (2015) in their study on knowledge, attitude and practices of food safety among women of Khaza bazaar, the urban field practice area of KBN institute of medical sciences, kalaburagi, Karmataka, also reported a similar result ($p>0.05$). however, on the contrary Roseman and Kurzynske (2006) in their study on food safety perceptions and behaviours of Kentucky consumers' revealed that respondents with higher academic qualification showed a higher level of food safety knowledge than those with lower academic qualifications. They further concluded that there is a significant relationship

between knowledge of food safety and level of education (p>0.05). soares et al (2012) in their study on knowledge, attitudes and practices in food safety and the presence of coagulase-positive staphylococci on hands of food handlers in the schools of Camacari, Brazil reported general knowledge about food safety to be significantly higher with a p-value less than 0.05 (p>0.05).

This survey reported insignificant relationship between food safety knowledge and marital status with a p-value of 0.239 which is significantly higher than 0.05. this result disagrees with Mendagudali et al (2015) study on knowledge, attitude and practices of food safety among women of Khaza bazaar, the urban field practice area of KBN institute of medical sciences, Kalaburagi, Karnataka, which reported insignificant relationship between marital status and food safety knowledge. Notwithstanding, Byrd-Bredbenner et al (2007) in their study on food safety self-reported behaviours and cognitions of young adult revealed a significant relationship between knowledge of food safety and marital status (p>0.05). Rahman et al (2012) also reported a significant relationship between food safety knowledge and marital status of the respondents (p>0.05) in their study on food safety knowledge, attitude and hygiene practices among the street food vendors in Northern Kuching City, Sarawak. Nevertheless, this study correlates with study by Who, Thong, Behnke, Lewis, and Zain (2016) in their study on evaluation of basic knowledge of food safety and food handling practices amongst migrant food handlers in Peninsular Malaysia, reported an insignificant relationship between marital status and knowledge of food safety with a p = 0.352.

The result also showed insignificant relationship between religion and food safety knowledge with a p-value of 0.626. This result is however similar to result from Mendagudali et al (2015) study on knowledge, attitude and practices of food safety among women of Khaza bazaar, the urban field practice area of KBN institute of medical sciences, Kalaburagi, Karnataka, which reported insignificant relationship between religion and food safety knowledge (p>0.05). However, this report disagrees with results from Illesanmi (2017) who investigated the knowledge and practice of food safety among senior secondary s chool students of international s chool, Obafemi Awolowo University, Ile-Ife, who found significant relationship between religion and food safety knowledge (p>0.05). This study also revealed insignificant relationship between eyars of experience and food safety knowledge (p=0.07). This result was however similar to study from Nada, Anushree and Amit (2019) who reported an insignificant relationship (p>0.05) between years of experience and food safety knowledge. But this is in contrast with reports by Nee and Sani (2011) who found a significant association between food safety knowledge and years of experience (p>0.05).

Relationship between socio-demographic characteristics and food safety practices

This study revealed no significant relationship between level of education and food safety practice with a significant value of 0.925. The report of this study concurs with that of Stratev et al (2017) who studied on food safety knowledge and hygiene practices among veterinary medicine students in Trakia University, Bulgaria, reported an insignificant relationship between educational level and food safety practice (df = 0.754, p>0.05). similarly, Mendagudali et al (2015) study on knowledge, attitude and practices of food safety among women of Khaza bazaar, the urban field practice area of KBN institute of Medical sciences, Kalaburagi, Karnataka, also reported insignificant relationship between level of education and food safety practice (p>0.05). Subbulakshmi, Kumar and Parvathy (2012) among others studied awareness and attitudes of food safety knowledge and practices in India and also found

no significant relationship between level of education and food safety practices (p>0.05). Notwithstanding, this result disagrees with study on food hygiene training by Seaman (2011) who reported that higher educational status is frequently associated with increase food safety practice. He further concluded that there is a significant relationship between educational level and food safety practice (p>0.05).

This report also revealed insignificant relationship between years of experience and food safety practice with a significant value of 0.388 which is greater than 0.05. This study agrees with Buccheri, Casuccio, Giammanco, Giammanco, La Guardia and Mammina (2007), Italy. They concluded that there is no significant relationship between food safety practice and years of experience (p>0.05). Nevertheless, another study conducted in Calabria Italy by Angelillo, Viggiani, Greco and Rito (2001) who evaluated food hygiene among good handlers showed a significant relationship between food safety practice and years of experience (p>0.05). they concluded that the younger the food service staff the more aware they were of good food handling practices.

The report on food safety and marital status shows no significant relationship between both variables, were a significant value of 0.768 was given. This result correlates with study by Mendaguadali et al (2015) study on knowledge, attitude and practices of food safety among women of Khaza bazaar, the urban field practice area of KBN institute of medical sciences, kalaburagi, Karnataka, also reported insignificant relationship between marital status and food safety practice (p>0.05). this however varies with result from Mahon, Sobel, Townes, Mendoza and Tauxe (1999) whose survey on vendors of street-vended food in two Guatemalan cities revealed a significant relationship between marital status and food safety practice. Insignificant relationship was also found between religion and food safety practice with a p-value of 0.52 which is significantly higher than 0.05. This result agrees with reports from Mendaguadali et al (2015) as well as results from Ilesanmi (2017) who investigated the knowledge and practice of food safety among senior secondary school students of international school, Obafemi Awolowo University, Ile-Ife and also found insignificant difference between religion and food safety practice (p>0.05).

In this s tudy a significant relationship was found between gender and food safety practice, given that the p-value of 0.03 is significantly lower than 0.05. This nevertheless is somewhat similar to study by Patil, Cates and Morales (2005) who conducted a meta-analysis on consumer awareness on food safety in Middle East countries. They further revealed that gender greatly influences food safety practice. They noticed that majority of males did not observe hygiene practices compared to the females. They therefore concluded that there is a significant relationship between food safety practice and gender (p>0.05). Fein, lando, Levy, Teisl and Noblet (2011) also reported a significant relationship between gender and food safety practices (p>0.05), in their study on consumers' safe handling and consumption of food and their risk perceptions from 1988 through 2010. This study however contradicts Aygen (2012) study on safe food handling: knowledge, perception and self-reported practices of Turkish consumers, hwere no significant relationship was recorded between gender and food safety practices (p>0.05). Stratev et al who studied on food safety knowledge and hygiene practices among veterinary medicine students in Trakia University, Bulgaria, reported an insignificant relationship between gender and food safety practice (p>0.05).

CONCLUSION

Based on the data and findings, it was concluded that there is good knowledge of food safety and a reasonable extent of food safety practice among local restaurant operators in Ogba/Egbema/Ndoni local government area. Socio-demographic characteristics such as age, religion, marital status, level of education and years of experience were not predictors of food safety knowledge and practice among local restaurant operators. However, there was a significant relationship between gender and food safety practice.

RECOMMENDATIONS

Based on the findings of this study the following recommendations were made:

1. Institutions like consumer protection council (CPC) and consumer awareness organization (CAO) should create more awareness through media, radio stations and newspapers to further improve food safety knowledge.

2. Government should throw more emphasis, as well as encourage food safety practice by making food safety training readily available and accessible to all food business operators.

3. Religious leaders should also organize food safety education and training programs for all categories of members i.e. male, female, young, old, married and single, so as to further improve food safety knowledge and practice.

4. Educational institutions should also incorporate food safety trainings and education into their curriculum, among students of all level to further sustain and improve practice of food safety.

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