

Original Article

Evaluation of Food Handling Practices Before, During and After Preparation Among Food Vendors in Ilorin Kwara State

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ABSTRACT

Food is an important basic necessity that provides nutrient and energy for growth and development of humans. Food handlers play a crucial role in ensuring food hygiene as well as the transmission of food poisoning. This study was aimed at assessing knowledge, practices of food handling and identify the associated factors for safe food handling among selected food handlers in GRA Ilorin. A cross sectional descriptive study was carried out on 191 food handlers that met the inclusion criteria. Data was collected using a pre tested questionnaires with the aid of research assistants and analyzed using SPSS version 28.0. The majority of food handlers were aged 25 to 35 years. 85% of food handlers had acceptable knowledge about food hygiene but good practice was practiced by very few handlers. 50.3% did not keep the work surface clean and disinfected, 25.7% dried dishes with their aprons, 47.1% cooked meat for 45 minutes, 39.8% did not wash vegetables before cooking, 48.7% had long nails and 40.3% continue to work even though they had an infectious disease like flue. The knowledge and attitude about food hygiene was good amongst food handlers but the practice of food hygiene was only fair. Direct observation of hygiene practices observation amongst these handlers revealed that most of them dried their hands with their aprons after washing them. The responsible authority should therefore continuously inspect these restaurants and set up safety precautions to protect the public.

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Introduction

Food hygiene refers to the settings and practices that preserve the quality of food to prevent contamination and foodborne illnesses; it incorporates activities aimed at certifying that all food is as harmless as possible. Food contamination takes place due to

eating food which is poisoned with microbes or their poisons, the poisoning raising from not enough ways of preserving, unsanitary handling practice, or from individuals bearing the microbes in their skin and on the nares. Food safety strategies and actions need to

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cover the entire food chain, from production to consumption. (WHO 2017).

Globally according to the World Health Organization (2017), up to 30% of the populations of developed countries are affected by foodborne illness each year; more than 75 million people get sick from food related ailments in the USA resulting in 325,000 hospitalizations and 5,000 deaths yearly. In these countries, errors made in food preparation in the home, in restaurants, and other public places emerge as important causes of foodborne disease.

Water is a key factor in assessing the quality and safety of food, and can reveal the hygiene level adopted by food handlers in the course of preparation of such foods (Nkere *et al.* 2015). Food handlers play an imperative role in ensuring food hygiene as well as the transmission of food poisoning because they may introduce pathogens into foods throughout the chain of production, processing, storage, distribution and even presentation (Angelilo *et al.*, 2015).

Statement of Problem

Food businesses have become widespread in recent times, in response to the changing lifestyle and food consumption of people. Good personal hygiene and sanitary handling practices during food handling are an essential part of any prevention program for food preparation.

The WHO (2017) recorded that up to 30% of individuals in developed countries suffered illnesses related to consumption of food and water hence pointing out that food safety was a major global catastrophe. Food poisoning is on the increase as a result of consumption of unwholesome food. Food handling personnel are assumed to be responsible for most illnesses as a result of poor handling behaviour. The restaurants around GRA tend to have many employees to serve a large number of people. Food therefore passes through many hands, thereby increasing the chances of food contamination due to

improper handling. This might endanger the health of consumers and in case of any outbreak of food borne disease; the country could meet high expenses in treating those affected.

Despite the existence of regulations to food handlers by the Health Surveillance Committee of Kwara State Environmental Protection Agency to ensure high quality meals for consumers catering services, the level of hygiene practiced during food preparations are still inadequate, as most restaurants do not take into consideration the specific sanitary requirements needed for various steps in food preparation. Hence, this study assessed the knowledge and practices of food handlers before, during and after preparation in selected restaurants in GRA Ilorin, Kwara State.

Methodology

A cross-sectional study design was used for this study. Quantitative data was collected using a researcher administered questionnaire. The target population comprised of all food handlers who work in restaurants in GRA within Ilorin south Local Government area of Kwara State. Using Kish and Leisley Formula, 191 participants made up of Managers of restaurants, cooks and waiters of those restaurants were chosen through a multi stage sampling technique

The restaurants include Charcoal Restaurants, Chicken Republic and Royals all located at the GRA Ilorin. Simple random sampling technique was used when selecting participants.

Data was analysed using Statistical Product and Service Solution (SPSS) version 28 and results were presented using descriptive and inferential statistics at the level of statistical significant set at 0.05. All related ethical issues were addressed during the conduct of this study. Ethical clearance was obtained prior to the commencement of data collection, informed consent was obtained from each participant.

Results**Table 1: Socio-demographics on the Respondents**

Variables	Categories	Frequency	Percentages
Age	18-25	76	76
	25-35	77	77
	Above 35	38	38
Gender	Male	61	31.9
	Female	130	68.1
Marital status	Single	59	30.9
	Married	66	34.6A
	Divorced	37	19.4
	Widowed	29	15.2
Level of education	None	27	14.1
	Primary	77	40.3
	Secondary	73	38.2
	Tertiary	14	7.3
Duration of work	< 6 months	19	9.9
	1-2 Years	98	51.3
	>2 years	74	38.7

Source: Primary Field Data

Table 1 above shows the socio-demographic characteristics of food handlers. Majority of the respondents were aged 25 to 35 years (40.3%), of female gender (68.1%), married (34.6%), had

attained at least primary level of education (40.3%) and had worked for a duration of 1 to 2 years (51.3%)

Table 2: Knowledge of Food Handlers on Hygiene

Variables	Categories	Frequency	Percentage
Handwashing reduces food borne diseases	Yes	102	53.4
	No	89	46.6
Cracked knives transmit food borne diseases	Yes	98	51.3
	No	93	48.7
Uncooked meat is risk of food borne diseases	Yes	128	67
	No	63	33
Unwashed vegetables is a risk for food borne diseases	Yes	146	76.4
	No	45	23.6
Unhygienic practices of food handlers can be a source of food borne disease	Yes	130	68.1
	No	61	31.9
Correct refrigerator temperature is key in preventing food poisoning	Yes	125	65.4
	No	66	34.6
Food poisoning can cause serious illness	Yes	106	55.5
	No	85	44.5

Source: Primary Field Data

Table 2 above revealed that 47.1% reported that the causes of food contamination reported included micro-organisms, hair (29.3), rats (6.8%) and other sources (16.8%). Most respondents also reported that washing hands reduces the incidence of food borne disease outbreaks (53.45) however more than a third reported that washing hands doesn't reduce food borne diseases (46.6%). More than a half of the respondents reported that cracked

knives can transmit micro-organisms while 48.6% reported that they can't be a source of micro-organisms. Majority of the respondents reported that correct refrigerator temperature is key to preventing food poisoning (55.5%) while 44.5% reported that correct refrigeration temperature doesn't prevent food poisoning. Most respondents reported that food poisoning can cause serious illness, bacteria can multiply quickly at room

temperature and left overs should always be well cooked before consumption.

Level of knowledge on food handling

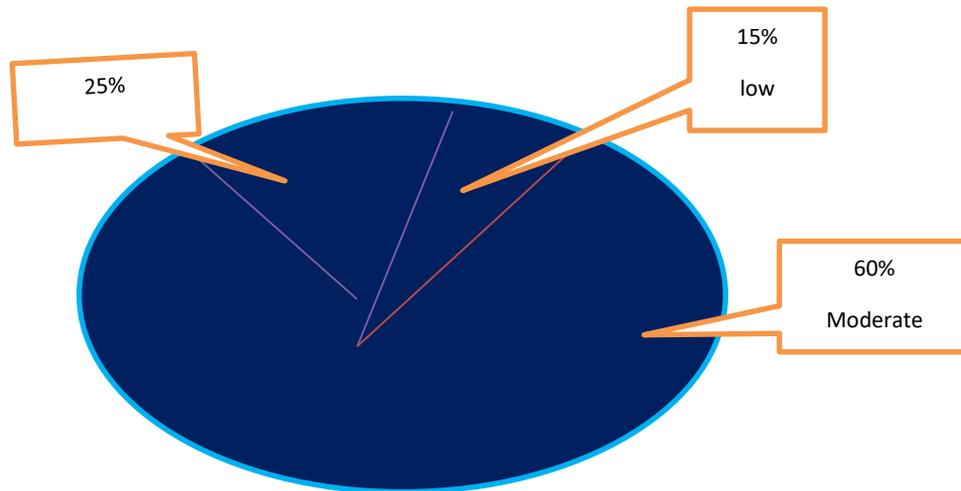


Figure 1: above shows the overall level of knowledge of the respondents. Most respondents had moderate level of knowledge followed by those with good knowledge and the least were those with low knowledge on food handling as shown in the above

Table 3: Hygiene Practices among Food Handlers

Practice	Categories	Frequency	Percentages
Use clean protective gears like aprons	< 50%	141	73.8
	>50%	50	26.2
Keep work surfaces clean and disinfected	Yes	95	49.7
	No	96	50.3
Methods of drying dishes	Reusable towel	71	37.2
	Air dried	71	37.2
	With apron	49	25.7
Refrigeration of prepared foods	Above raw food	107	56.1
	Below raw food	64	44.5
	Doesn't matter	20	10.5
Checking of cooked meat	Use a fork	64	33.5
	Cooking for 45 minutes	90	47.1
	Boiling at high temperature over 2 hours	37	19.4
Ways through which food is contaminated	Touching raw food	82	42.9
	Refrigeration Temperature	82	42.9
Ways of preserving ready Food	Kept on the floor	27	14.1
	Left on fire	108	56.5
		83	43.5

Source: Primary Field Data

Table 3 above revealed that most respondents (73.8%) use clean protective gears like aprons, majority reported that they cook meat for 45 minutes (47.1%), 33.5% use a fork to taste meat and 19.4% cook meat at high temperature to ensure

its ready for consumption. Other practices reported to cause contamination of food included touching raw food while preparing ready food, inappropriate refrigerator temperature and keeping food uncovered.

Table Relationship between gender of respondents and their food handling practices

Variable responses	Food handling practices		Total	Chi-square (χ^2) $\chi^2 = \sum (O_i - E_i)^2 / E_i$	df	p-value	Remark
	Negative N=87	Positive n=104					
Gender							Significant
Male	27	34	61	2.736	1	0.027	H0 rejected
Female	60	70	130				
Total	87	104	191				

Table 4 above shows a significant association between gender of respondents and their food handling practices with critical value = 0.027 > 0.05. since critical value is less than the significant value (0.05), the null hypothesis was rejected.

Table 5: Relationship between religion of respondents and their perception of tattoo and body piercing

Variable responses	Food handling practices		total	Chi-square (χ^2) $\chi^2 = \sum (O_i - E_i)^2 / E_i$	df	p-value	Remark
	Negative n=52	Positive N=139					
Religion.				45.652a	2	0.043	Significant
Christianity	32	65	97				H0 rejected
Islam	20	73	93				
Traditional	0	1	1				
Total	52	139	191				

Table 5 shows a significant association between religion of respondents and their food handling practices with critical value 0.043 is less than 0.05. Since the critical value is less than significant value, the null hypothesis was rejected. There is no significant relationship between religion and food handling practices among food vendors in GRA Ilorin

Discussion

Food handlers within the age group of 25-35 years had the highest number of food handlers which implies that food handling business is mainly run by the youth. This was in line with a studies done by Cuprasitrut *et al.*, 2010, Sharif *et al.*, 2013 and Baluka *et al.*, 2014. However, this was the same with a study done by Zain and Naing, 2002 in which majority of food handlers were above 40 years of age. There were more females (68.1%) than males practicing food handling from this study which confirms a claimed general trend that cooking is mainly a female business. However, a study by Aygen, 2012 revealed that there was no association between age and food handling. This was compared with a study by Baluka *et al.*, 2014 which found out that 64.8% of the food handlers were female. On the other hand, this contradicts with a study in India by IJSR, 2012 whereby 78.66% of the food handlers were males. However, Mizanur *et al.* (2012) found out that found out that there was no significant association between food handling and gender.

The largest proportion of the food handlers were those who had primary education as their highest

education attained (40.3%). It is obvious that low education made them not to be aware of food hygiene guidelines and they also have little understanding of the risk of microbial or chemical contamination of food and how to avoid them. This was corroborated by Baluka *et al.* (2014) where most of the study participants had studied up to secondary level. Most of the respondents 51.3% had an experience of 1-2 years in food handling. Working experience improve knowledge of food handlers. However, Bas *et al.*, 2012 also revealed revealed that the experience of an individual would not be useful unless a handler had a good knowledge and training in food handling. Furthermore, a study by Baluka *et al.* (2014) showed that there was no relationship between working experience and food hygiene.

The majority of the respondents indicated that they understood the importance of safe food handling and their personal responsibility for food hygiene. The highest percentage of respondents acknowledged that it was important to separate raw and cooked food; using personal protective equipment like masks, aprons, covering hair reduces food contamination and improper food heating and

storage indicated in other studies by Baluka *et al.* (2014), Sharif *et al.* (2013), Cuprasitrut *et al.* (2015) and Bas *et al.* (2016). However, 34.6% of the study participants indicated that refrigerator temperature is not important in preventing food poisoning which was also indicated in a study by Onyeneho and Hedberg (2013), 72.3% of the respondents reported that food handling affects food hygiene but only 40.3% of the respondents understood that a food handlers is not supposed to work when having an infectious disease like Flu and that food handlers should not wear jewellery during food preparation and 48.3% of the respondents did not acknowledge that food handlers should keep their finger nails short. This study was in line with a study done by Baluka *et al.* (2014), where by high number of food handlers lacked the same information. 57.1% of the food handlers acknowledged that medical examination should be done to all food handlers regularly so as individuals found with infectious diseases can be treated so as they do not transmit infection to other members of the public. However; none of the respondents had undergone any medical examination before commencing work. This contradicts with a study done by Musa and Akande (2003) which showed that 76.2% of the respondents had undergone a medical examination before starting to work.

The majority of food handlers washed their hands properly and frequently under running water, appeared in good condition, kept finger nails clean, washed vegetables before cooking. This was compared to a study by Nkere *et al.* 2013 which indicated that food that had been properly prepared can become contaminated by serving utensils. Although the most respondents indicated that they understood the importance of safe food handling, they performed poorly in important food hygienic practices which has also been reported in other studies (Cuprasitrut *et al.*, 2010; Onyeneho and Hedberg, 2013; Sharif *et al.*, 2013).

Conclusion

The study discovered that there was a gap in food hygiene knowledge and practices by food handlers which was also reflected in their unhygienic practices during preparation, storage and serving of food. Globalization, rapid urbanization, increase in population and change of eating habits has led to a significant increase in the growth of the food service outlets in Nigeria. Despite the economic benefits of these sectors, they are viewed as potential hazards especially when food is not hygienically prepared. Since good personal hygiene and sanitary handling practices during food handling are an essential part of any prevention program for food preparation,

there is therefore a critical need to provide adequate training for food handling personnel, to ensure that food borne diseases caused by improper food handling practices are eradicated.

The Implications of the Studies for Healthcare Providers

Health care providers are expected to be trained in all aspects of food hygiene ranging from during storage, processing and serving of foods.

A global approach for food hygiene, handling, processing and serving and ease of business should be inculcated in the training such that providing leadership and direction for food handlers will not be difficult and void of unnecessary bottlenecks for the overall health care of the populace.

Approved Checklists to ensure standard drawn by the regulatory bodies should be a working tool for health care workers and continuous sensitization and monitoring with appropriate evaluation be done.

Recommendations

Food handlers should be subjected to a thorough medical examination before commencing work. Managers should arrange an efficient training program on food hygiene for all employees so as to ensure employees gain appropriate levels of food hygiene knowledge which will be reflected in their practice. Managers should come-up with check list to ensure that all food safety components are covered during trainings. The Supervising Health Agency should come-up or set official regulations as well as food hygiene standards for all restaurants to prevent risks of cross contamination.

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