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Abstract

African indigenous restaurants have become a preference for most consumers although their patronage varies, attributed to various push factors such as health, curiosity and variety. This study explored food handlers' hygiene practices as determinants of customers' choice of selected African indigenous restaurants' in Nairobi City County, Kenya. The study adopted a cross-sectional descriptive survey targeting 15 selected African indigenous restaurants. Purposive sampling was used in selecting all supervisors in the 15 African indigenous restaurants. Using Yamane formula, a sample size of three hundred and forty (340) food handlers was obtained from a population of 2250. Proportionate sampling was used in selecting food handlers as their population had different numbers in each of the selected restaurant. Data collection instruments were a questionnaire, an interview guide and an observation checklist. Qualitative data was ordered, coded and summarized in compilation sheets for easier analysis in addition to inferential statistics. Quantitative data was analyzed using statistical packages for social sciences with levels of significance established using paired tests with a cut-off point of $P \leq 0.05$, (95%) confidence and significance levels. Chi square Pearson's correlation coefficient tests were calculated to identify the correlation between food handlers' hygiene practices and customers' choice of restaurants. The findings showed that most restaurant supervisors were well aware of HACCP system although not all of them implemented it. Further, the restaurants do not observe adequate precautions in the entire food production and therefore programs related to HACCP training needed to be implemented in a practical and realistic manner. The study further identified that the general hygiene standards of the restaurants were relatively high although during the time of the visits, some were not clean. The study recommended the public health authorities in the urban centers to educate all restaurant stakeholders on food hygiene requirements and regulations in order for them to adhere as required. The study further recommended that similar studies to be done in other localities, in rural restaurants, and to incorporate more restaurants.

Keywords: *Hygiene Requirements, Regulations, Training, Awareness, African Indigenous Restaurants.*

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1.0 Introduction

To ensure that hygiene is observed in catering establishments, all food handlers must understand food hygiene procedures and potential factors that cause foodborne illness. Osagbemi, Abdullahi, and Aderibigbe (2010) discovered in a study of urban restaurants in Nigeria that there is a lack of current food hygiene knowledge among the staff. The study suggested developing a proper food service personnel-training program to eliminate the risk of food-related illness outbreaks. The government's involvement in promoting food hygiene through public announcements and offering incentives to motivate restaurant staff training, particularly in fast-food establishments and itinerant food hawking outlets, was proposed as a positive intervention to prevent food-related illnesses. A group of trainees participating in the Belgian VLIR UOS-funded Intensive Training Program in Food Safety, Quality Assurance, and Risk Assessment at Ghent University's opinion on food safety issues in their country provided additional insights into global concerns about hygiene and food safety training. Bacterial pathogens, pesticide residues, and a healthy diet were mentioned as major concerns in food hygiene and safety training.

Moreover, according to the survey, the overall contextual factors that most influenced food hygiene were perceived to be a lack of food safety training and knowledge, as well as a need for health care (Grace, 2015). Rabbi and Dey (2013) indicated that a strong link between knowledge and positive food handling practices. This emphasized the importance of assessing training needs and assessing the effectiveness of food handler training. Further, the appropriate environment should be created to ensure that food handlers apply the relevant skills and knowledge gained from these trainings (Grace, 2015). According to Leake (2015), inadequate waste disposal and toilet facilities for customers and staff are one barrier to food safety in Africa. The majority of indigenous food restaurants are unsafe and unsanitary, with inadequate drainage and water supply systems, a lack of training, and unsanitary waste disposal, all of which contribute to poor environmental and personal hygiene (Mwangi, 2018). Leake (2015) provided that, the majority of third-world countries, including Kenya, eat food in street vendors Kiosks and indigenous food outlets on a regular basis because it is readily available, reasonably priced, and usually fresh. These outlets pose significant health risks due to a lack of basic services and infrastructure, such as their temporary nature, potable water supplies, and inadequate basic food safety training and knowledge measures (World Health Organization, 2009).

1.1 Statement of the Problem

Indigenous restaurant customers are typically made up of people from various cultural, ethnic, and economic backgrounds, the majority of whom have distinct and conflicting restaurant preferences (Akinyele, 2010). According to the available and current literature, the main factors influencing consumer decision-making and subsequent behaviors are menu price and level of hygiene (Kim & Chung, 2011). While food hygiene is important in catering establishments, employee training and application is minimal (Ungku Fatimah et. al., 2011). Due to the extent of food safety and hygiene outbreaks in various establishments, customer visits to local food establishments have decreased (Chapman, MacLaurin, & Powell, 2011). In addition to this, there has been scanty research into food hygiene training and awareness, current food safety issues, and suggestions for improving food safety practices in indigenous restaurants (Lee, Niode, Simonne, & Bruhn, 2012).

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It is evident that not only the ignorance of food hygiene standards that causes food poisoning but also, the lack of application of the acquired knowledge from training. Ehiri and Morris (2012) observed that the major challenge in the food industry currently was to motivate food handlers, to apply their knowledge regarding food hygiene. Some of the proposed reasons for lack of application of the acquired knowledge especially in small business enterprises include recruitment of staff from lower socio-economic class, low level of training and education especially on food and food hygiene and low motivation due to job status (Bush, Paleo, Baker, Dewey, Toktogonova, & Cornelio, 2009). According to Kisembi, (2010) study in urban food outlets in Kenya, majority of the restaurants serving local dishes had limited training program on food hygiene for their employees. This study therefore sought to bridge this gap by exploring the level of food hygiene training and awareness among food handlers and their contribution to customer's choice of African indigenous restaurants.

1.3 Research Hypotheses

$H0_1$: There is no significant relationship between the level of food hygiene training and awareness and customer satisfaction in African indigenous restaurants in Nairobi City County, Kenya.

Ha_1: There is a significant relationship between the level of food hygiene training and awareness and customer satisfaction in African indigenous restaurants in Nairobi City County, Kenya.

2.1 Theoretical framework

The section presents the constructs of the theory of planned behavior.

2.1.1 Theory of Planned Behavior Constructs (TPB)

The theory has three main constructs; Attitude, defined as the degree to which a person appraises or evaluates the behavior in question to favorable or unfavorable in a dimension of pleasant or not pleasant, good or bad, harmful or beneficial, like or dislike (Ajzen, 2001) and (Bas, Ersun, & Kivanc, 2016). Behavior stem from attitude but not part of it as attitude may suggest and be the primary determinant of intentions. Subjective Norms (SN), the second construct, explained as different social references that exert influence or social pressure to perform a behavior. The theory suggested that one form a belief based on what other people expect them to do based on the observation of their actions. People usually possess favorable attitude towards certain object, but, if the other people pressures them not to do it, they will then have negative attitude towards the behavior (Ajzen, 2010). This chapter reviewed literature on level of training and awareness regarding food hygiene requirements among employees in African indigenous restaurants. The research further evaluated the constructs of the theory of planned behavior as applied in this study.

2.2 Empirical review

According to Lee, (2012) the cleanliness of the kitchen, the storage temperature of food and the quality of food are the most influential conditions for food safety. Food handlers' awareness and knowledge of hygiene matter is essential in ensuring that food provided by the establishments is fit for consumption. Food hygiene procedures and practices in various food outlets are different and are viewed differently by various customers. To harmonize the differences, the study suggested application of HACCP, a management system used in addressing food hygiene through the analysis and control of chemical, physical and biological hazards from procurement, raw food

material production, processing, handling and consumption in an effort to produce safe food (World Health Organization, 2012). In a study by Kwak *et a*l. (2010) restaurants that incorporated a food safety and hygiene training program were patronized more frequently than those that did not have one. Food training programs that focused on employees' knowledge and proper food handling behavior was observed to have improved the hygiene standard of the food outlets. Ratnapradipa *et al*. (2011) noted that success of a food safety education program is impacted by methods used to instruct and deliver the information to the trainees. The study also concluded that where food handlers were properly trained, minimal customers' complaints on food hygiene were recorded and the establishments enjoyed more patronage by customers.

Kwak *et a*l. (2010) developed the food hygiene training model based on result of successful theories and models in the health field. The model comprised of three components of evaluation, management and measurement of performance of the trainees. The study showed that knowledge retention on new food safety practices was high in establishments where structured training program existed. These establishments further enjoyed high customer patronage throughout the year due to positive word of mouth and improved decor and ambience. Food safety is responsibility of every person who is involved in food service operation. General food handling mistakes besides serving contaminated raw food also includes inadequate cooking, heating, or reheating of food consumption of food from unsafe sources, cooling food inappropriately and allowing too much of a time lapse. Various studies have identified the need for training and education of food handlers in hygiene measures on microbiological food hazards, temperature ranges of refrigerators, cross contamination and personal hygiene (Worsfold & Griffith, 2010). This was attributed to the fact that many food handlers especially working in indigenous food outlets are untrained in the operations. However, some preceding studies have shown no differences between staff who attended educational course with those who did not (Almanza,

This statement is supported by several studies (Thobaben, 2010) and it shows that training may increase a person will have favorable or unfavorable evaluation towards behavior. Such as person who thinks that preparation and handling food in hygiene way is important and necessary, they are likely to engage the behavior. Vladimirov, (2011) point outs the correlation of positive behavior, attitudes and continued education of food handlers towards the maintenance of safe food handling practices. From the study, training is limited to fast food and full-service restaurants, with concentration on the service process and factors such as efficiency, timeliness and value for price paid, with little consideration of hygiene as factors. The reviewed literature indicated that no study has been carried-out locally on the level of training and awareness regarding food hygiene requirements among employees in African indigenous restaurants in Kenya. According to Roberts *et al*. (2011) indigenous restaurants phenomenon is on upward growth and food hygiene concerns are on the rise. It was therefore imperative to conduct this study in order to seal the existing gaps in knowledge.

2.3 The Conceptual Framework

The conceptual framework shows the relationship between independent variables; Food hygiene training and awareness and the dependent variable is customer choice of an African indigenous restaurant. Intervening variables were the customer beliefs and confidence in the safety of the food offered in indigenous restaurant and their readiness to patronize them.

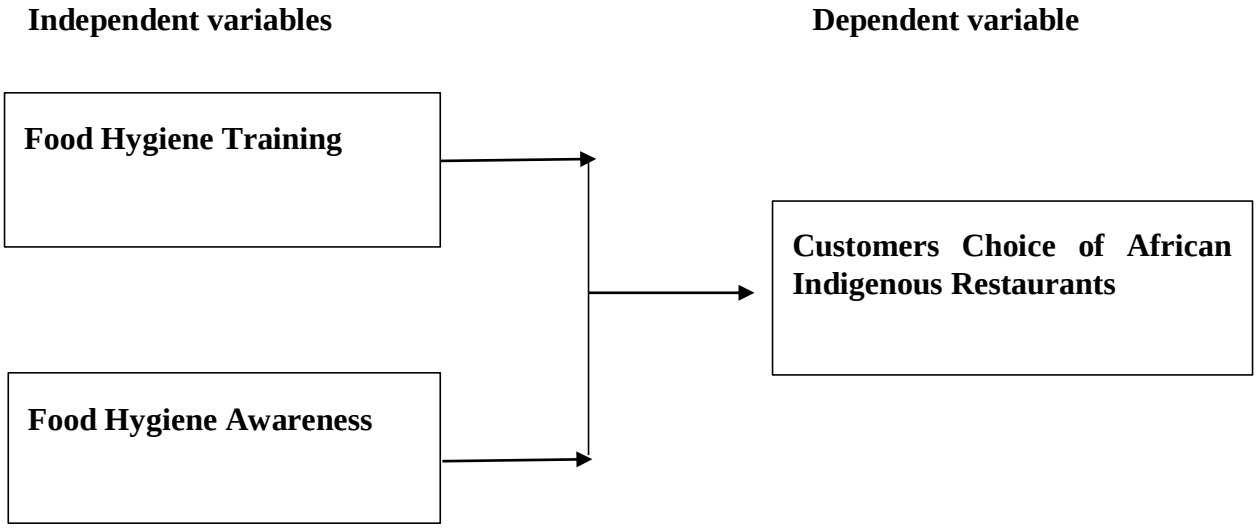

Figure 1: Conceptual framework

3.0 Methodology

The research study employed a cross-sectional descriptive survey to assess the level of training and awareness regarding food hygiene requirements among employees in African indigenous restaurant. The target population of the study was150 selected African indigenous restaurants, their supervisors (150) and food handlers (2250). The sample size of the study was 355 individuals. The study used both primary and secondary data collection methods to collect the data. Primary data source utilized a structured questionnaire for food handlers and an interview guide for supervisors. Secondary sources of data involved retrieving information from research journals, books and other relevant literature. The study used both quantitative and qualitative data analysis techniques since the data collected was both numerical and narrative. All the three instruments for data collection were pretested in three non- participating restaurants within the area of the study to eliminate errors and check on their suitability as research tools. Quantitative Data analysis was done using SPSS.

4.0 Findings and Discussions

This section gives detailed findings of the data collected using questionnaires and interview guide as well as an observation checklist. As mentioned before, the study sought to assess the level of training and awareness regarding food hygiene requirements among employees in African indigenous restaurants in Nairobi County, Kenya. This section therefore presents the study findings outlined according to objectives the study. The study targeted a total of 355 participants constituting of 340 food handlers and 15 supervisors. The response rate obtained measured how well the targeted sample size was arrived at. A high response rate obtained minimized the chances of obtaining biased statistics and therefore the study findings valid and reliable as shown in Table 1.

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Table 1: Response Rate

Category	Expected Response	Actual Response	Percentage Response
Food handlers (questionnaire)	340	287	84%
Supervisors (Interview Schedule/Observation Checklist)	15	15	100%
Total Response rate	355	302	85%

Food handlers (84%) and the supervisor (100 %) response rates were significantly adequate for analysis and conclusions as they were above 50% (Babbie, 2002). The average response rates (85%) and response of 50% and above is adequate for analysis. A non-response rate of 16% of Food handlers' questionnaires was due to incompletely filled and hence, left out during data cleaning, attributed to limited time for customers who were in a hurry especially during lunch-time. An acceptable response rate in this study, therefore, implied that the study used instrument and procedures that were clear, precise and within the acceptable number.

4.1 Food Handlers' Awareness of Food Hygiene Requirements

The purpose of this research objective was to ascertain if the food handlers and the supervisors are cognizant of the food hygiene requirements guiding their operations. This was achieved by determining the food handlers and supervisors' knowledge on various hygiene aspects. The enquiry considered the following: importance of food hygiene training, cross contamination, prevention of food related illnesses and availability of hygiene information sheet posted within the establishments. The findings were tabulated in Table 2.

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Table 2: Awareness of Food Handlers on Food Hygiene Practices

	Frequency	Percentage
Food hygiene information sheet		
Posting of food hygiene information sheet	169	58.96%
No Posting of food hygiene information sheet	118	41.04%
Total	**287**	**100%**
Importance of food Hygiene Training		
Very Important	102	35.30%
Important	125	43.60%
Don't know	39	13.60%
Not Important	21	7.50%
Total	**287**	**100%**
Poor hygiene can cause cross Contamination		
Strongly agree	57	20%
Agree	153	53%
Neutral	29	10%
Disagree	34	12%
Strongly disagree	14	5%
Total	**287**	**100%**
Good hygiene practices Prevent diarrhea		
Strongly agree	63	22.25%
Agree	149	52.02%
Neutral	26	8.96%
Disagree	37	12.72%
Strongly disagree	12	4.05%
Total	**287**	**100%**

The findings indicate that, with regard to the hygiene information sheet, majority (58.96 %) of the restaurants had posted it within the establishment while a sizeable proportion of the restaurants

(41.04%) had not posted it. This implied that most of the food handlers might not have had access to vital information related to their work. With regard to the importance of food hygiene training, the majority of the participants (43.6%) reported that food hygiene training is important, about (35.3%) said that hygiene training is very important, (13.6%) said that they don't know whether it is important while a small proportion of the participants (7.5%) reported that food hygiene training is not important. This implied that a sizeable number of food handlers have no idea of food hygiene regulations and training requirements.

With regard to food contamination, majority of the participants (53%) agreed that poor hygiene can cause cross contamination, (20%) strongly agreed, (12%) disagreed, (10%) were neutral, while a small proportion of the participants (5%) strongly disagreed that poor hygiene can cause cross contamination. The findings further revealed that the majority (52.02%) of the participants agreed that good hygiene practices prevent diarrhea. About (22.25%) strongly agreed, (12.72%) disagreed, (8.96%) were neutral, while a small proportion (4.05%) of the participants strongly disagreed that good hygiene practices prevents diarrhea. The above findings are higher than and in line with Lee, Niode, Simonne, and Bruhn, (2012) study results where 44% of poor food handlers' hygiene causes food contamination that often results into illnesses such as diarrhea, nausea, vomiting and sometime death. This implied that food hygiene practices and prevention of food related illness were no longer a new phenomenon in the restaurant operations.

4.2 Sources of Food Hygiene Information

The study further determined the various sources of information for food handlers. The study first determined the possible sources of food safety and hygiene information. The findings were presented in the Table 3**.**

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Table 3: Sources of Food Hygiene Information

Sources	Frequency	Percentage
Public Health Office Staff	135	47%
Staff Councils	103	36%
Supervisors	40	14%
Media	9	3%
Total	**287**	**100%**

Majority of the participants (47%) get food safety and hygiene information from the public health office staff, (3%) from media, (14%) from supervisors while (36%) reported staff council. This shows that there is need for the restaurants' staff management to emphasize on staff training in order to acquaint the food handlers well with food safety and hygiene information. This implies that some supervisors had the knowledge on food hygiene practices but the knowledge was not shared adequately. As emphasized by Wang (2008), staff training is essential as it increases productivity, motivates and inspires the workers by providing them with all needed information in work as well as helped them to recognize how important their jobs are. This contradict Kisembi (2010) findings on urban restaurants where (92%) of food handlers said they get food safety and hygiene information from the public health office staff and only (8%) reported to have obtained the information from staff council.

4.3 Training on Food Hygiene Requirements

The study further sought whether the food handlers had undertaken training on food and hygiene requirements apart from the catering and hospitality courses. The findings were presented in form of a Table 4.

Table 4: Training on Food Hygiene Regulations

	Food Handlers Frequency	Percentage	Supervisors Frequency	Percentage
YES	167	58.20%	15	100%
NO	120	41.80%	0	0.0-%
Total	**287**	**100%**	**15**	**100%**

The findings reveal that majority (58.20%) of the food handlers who work in these restaurants do not have basic formal training relevant to food and hygiene and therefore they have relative experience in the industry while 41.80% are trained in food and hygiene requirements. The low levels of training can contribute to the slow understanding and implementation of scientific and hygiene standards in the restaurants. If staffs are properly trained and experienced, they are flexible to change and will easily adapt to changes in food handling requirements. This is in line with Kisembi (2010) findings where 60% of restaurants staff were found lacking basic formal training relevant to food production aspects and while 40% were well trained in catering. The study further

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determined the level of understanding of HACCP system among the food handlers. The findings were presented in the figure below.

4.4 Awareness of HACCP System among Food Handlers and Supervisors

The study set out to investigate the awareness of a HACCP system and principles among the staff of African indigenous restaurants. This was backed by the fact that a HACCP system must be developed by each sector, especially urban food establishments and tailored to their operations as a means of ensuring maximum food hygiene. The study evaluated the level of awareness of this food hygiene mechanism as presented in Table 5.

Table 5: Awareness of HACCP System

Level of Awareness	Food Handlers	Percentage %	Supervisors	Percentage %
Very Low	30	10.30%	0	0
Low	124	43.36%	0	0.00%
Medium	28	9.80%	2	13.30%
High	60	21.00%	12	80%
Very High	45	15.54%	1	6.70%

From the average analysis, only (46.34%) of food handlers who filled the questionnaires who knew and could define HACCP as a quality control strategy while 53.66% had no idea of what HACCP pertains. The food handlers who noted very high awareness could define HACCP and its principles fully as well as its applicability in African indigenous restaurants. Food handlers who scored Low and Very low had difficulty in defining HACCP and its principles as shown in the table 4.11 above. This is an indication that there is little awareness among food handlers hence there is need for the staff training on its application. Kisembi (2010) study confirm these findings, where staff interviewed (37%) knew of some quality control strategy but with no specification of any application while 63% had no understanding of any quality control methods in urban restaurants.

4.5 Testing Hypothesis: Food Handlers' Hygiene Practices and Customers' Choice of African Indigenous Restaurants

The study determined the relationship between food hygiene Training and awareness and customers' choice of African indigenous restaurants. The study tested the following hypothesis stated in null and alternative forms;

$H0_1$: There is no significant relationship between the level of food hygiene training and awareness and customer satisfaction in African indigenous restaurants in Nairobi City County, Kenya.

Ha_1: There is a significant relationship between the level of food hygiene training and awareness and customer satisfaction in African indigenous restaurants in Nairobi City County, Kenya.

To test these hypotheses, the hygiene compliance scores of the hotels were analyzed against the average number of customers in the restaurants using the Chi-square analysis. In this research study, chi-square test was done to establish whether there was a significant relationship between the food handlers' hygiene practices and customers' choice of African indigenous restaurants in

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Nairobi County, Kenya. A p-value (level of significance) of less than (0.05) was considered as significant. The chi-square analysis of the results was stated in Table 6.

Table 6: Chi Square

The Chi-Square Tests	The Valu	d. f	Asymp. Sig. (2-sided tail)
Pearson Chi-Square	4.244	1	0.133
Likelihood Ratio	4.634	1	0.104
Association	3.760	1	0.039
N of Valid Cases	**238**		

The findings presented a χ 2 = 4.244, df* = 2 and p = 0.133 which is > 0.05. With a significance level > 0.05 (0.133), the alternative hypothesis (Ha_1) was rejected. The results showed that there was no significant relationship between the food handlers' hygiene practices and customers' choice of African indigenous restaurants in Nairobi County, Kenya. The implication of this χ 2 test result is that customers' choice of African indigenous restaurants cannot be attributed to the food handlers' hygiene practices in Nairobi County. `Even though customers look at hygiene elements, there are other pull factors to these restaurants. As such, they customers have different characteristics; hence, they tend to use different criteria in selecting restaurants (Chung & Kim, 2011).

5.0 Conclusion

The possible sources of food hygiene information for the food handlers was public health office staff (47%), staff councils (36%), media (3%) and supervisors (14%). This revealed that there was need for staff training in order to acquaint them well with food hygiene information. This was informed by (58.2%) of the food handlers who were found as lacking basic formal training relevant to food hygiene requirements and experience. The lack of staff training and enforcement contributed to the levels of awareness and knowledge of HACCP system application among the food handlers. The study found out that only a small proportion of the restaurants offer training pertaining to food safety and hygienic measures. Although all the supervisors (100%) agreed that training on food hygiene measures is important, there appear to be challenges in implementing these systems and efforts need to be put to overcome them.

6.0 Recommendations

A key focus would be on motivating food handlers to follow standard operating specifications and food hygiene procedures. In urban areas, public health authorities and county governments should inform and enforce food hygiene guidelines for all food handlers, restaurant owners and managers, and other stakeholders. Restaurant management should train their employees and ensure that they follow all relevant regulations and laws, such as the Public Health Act.

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