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Food Hygiene and Safety Practices among Street Food Handlers in Juja Sub-County, Kiambu County, Kenya

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Abstract:

Street food production in Kenya is an alarming situation that is as old as the Jua Kali sector. It emerged from open vending and hawking food at gatherings such as community functions, graduation ceremonies and national celebration days. The current extension of street food production from major cities to small towns requires public health intervention. The aim of this study was to determine the level of food safety and hygiene practices among street food handlers in Juja sub County, Kiambu County. An exploratory descriptive study was adopted. Data was collected using structured questionnaires from a convenience sample of 248 food handlers operating within the sub county. Descriptive results showed that food handlers were not observing personal and food premises hygiene, although food hygiene measures were mainly observed. The study recommended the County government to provide street food handlers with designated zones and permanent structures suitable for food preparation and selling alongside proper training in food safety and hygiene practices.

Keywords: Food safety, food hygiene, premises hygiene, personal hygiene, street food handlers

1. Introduction

According to Campbell (2011), millions of people depend on street food and many of them are not aware of hygiene and safety of the food they buy in the streets. Street food production is common globally and it can be found in places of work, schools, hospitals, universities, railway stations, bus terminals, residential estates, among others in urban areas (Steyn, et al., 2011). In Kenya, street food production is an alarming situation and it is quite evident even within residential estates. Open food vending has encouraged people to construct temporary structures or have open places to produce and sell their food (Ndirangu, 2013). This is contrary to Public Health Act that emphasizes on three dimensions of hygiene including food, personal and premises hygiene (GoK, 1990).

There is a rapid growth in street food production business, with increasing demand of cheap food. This is a great threat to food consumer's health and a challenge to local authorities because there is no proper control in this alarming informal food sector. According the Public Health Act (GoK, 1990) all food handlers should practice personal, food and premises hygiene in order to produce safe food, failure to which there may be a risk towards subsequent food borne diseases like Cholera, as was reported in the study area (GoK, 2015).

2. Literature Review

Food hygiene and safety practices are crucial to street food quality and low standard of hygiene can be a potential source of food borne diseases (Jannie & Marrie, 2010). Hygiene has been defined as the science and practice of preserving health (David, et al, 2003) and it is one of the most important aspects of all people working in catering industry. There are different categories of hygiene with key hygienic practices as indicated in the "three dimensions hygiene" theory (Jill, 2008), which are food, personal and premises hygiene.

2.1. Food Hygiene

Food hygiene is defined as a sanitary science that aims to produce food that is safe for the consumer (Campbell, 2011). It is further indicated that food risk is influenced by food type, pH level, water, degree of temperature and holding time. Raw materials should be washed properly and peeled to prevent the risk of contamination by microorganisms (Jannie & Marrie, 2010). Cooking and reheating temperature should be 70 °C so as to kill harmful microorganisms and to ensure that food is safe for consumption (WHO, 2010). As indicated in temperature control regulations food should be kept in adequate facilities and there should be other equipment for reheating, cooling, refrigerating and monitoring temperature to ensure safety and suitability (Muhoya & Kimathi, 2014).

2.2. Personal Hygiene

Personal hygiene focuses on the food handler who must ensure food safety at all stages of food production. According to the Kenya food and chemical substance Act, food handlers should wear clean uniform while on duty (GOK, 1992). The public health Act on the other hand prohibits food handlers from handling food if they have or are carriers of communicable diseases. (GOK,1986).Food handlers may harbour micro-organisms on their skin, throat and other parts of the body, and these can be transferred to food through dirty hands and utensils during food preparation, cooking and serving (Jill, 2008; Muhoya& Kimathi, 2014). Proper training of food handlers on personal hygiene and food safety is critical in protecting food in all aspects(Stern, et al.,2010).The World Health Organization (WHO) recommends that food handlers should cover cuts and wounds, and should also cover their heads and avoid wearing jewelries when handling food in order to prevent contamination (WHO, 2010).

2.3. Food Premises

Food premises are potential source of food contamination if they are not well maintained and if they have harmful substances and objects (Jannie&Marrie, 2010). Harmful micro-organisms that are found in soil, water, animals and people can be transferred to food through chopping boards, wiping cloths, equipment and utensils (WHO, 2010).Cleanliness of food surfaces has therefore been identified to be critical to food safety especially ready to eat food (Lucas & Peterson, 2015). Food premises should have easy to clean floors, walls with suitable finish, good ventilation and lighting, and should be free from rodents and pests. In addition, there should be enough water, adequate drainage and proper working surfaces his (David et al., 2003).

3. Problem Statement and Justification

There is a rapid growth in street food production business, with increasing demand of cheap food. This is a great threat to food consumer's health and a challenge to local authorities because there is no proper control in this alarming informal food sector. According the Public Health Act (GoK, 1990) all food handlers should practice personal, food and premises hygiene in order to produce safe food, failure to which there may be a risk towards subsequent food borne diseases like Cholera, as was reported in the study area (GoK, 2015).

4. Objective of the Study

The current extension of street food production from major cities to small towns requires public health intervention. The aim of this study was therefore to determine the level of food safety and hygiene practices among street food handlers in Juja sub County, Kiambu County.

5. Research Methodology

This section focuses on design of the study, target population, sampling procedure and size, data collection procedures, validity and reliability of measures and data analysis.

5.1. Design of the Study

This was an exploratory descriptive study that sought to determine the level of food safety and hygiene practices among street food handlers in Juja sub County, Kiambu County.

5.2. Target Population

The study targeted street food handlers who are clustered along residential estates' streets in five different wards in Juja Sub-County which are Witeithie, Kalimoni, Theta, Murera, and Juja. The survey was conducted on 248 street food handlers of all ages.

5.3. Sampling Procedure and Size

A convenience random sample of 248 street food handlers was drawn from the five wards of Juja Sub County.

5.4. Data Collection Procedures

A structured questionnaire that was self- administered was used to collect the data from the street food handlers. The questionnaire consisted of 5-point likert scale in which the respondents were asked to rate the extent to which they observed food safety and hygiene practices. A pre-compiled observation check list that was adapted from Kenya Food Drugs and Chemical substance Act (GoK, 1992) and modified to suit the context of the current study, was used to record observations on the hygiene and safety standards among the street food handlers.

5.5. Validity and Reliability of Measures

An extensive review of literature on food safety and hygiene practices produced the measures adopted for the study thus providing content validity. A further refinement of the measures was conducted through a pre-test of the research instrument with a set of food handlers in the same sub county who were not included in the final study. The reliability of the study measures was ensured though a test-retest reliability whereby the research instrument was administered twice to respondents at intervals of one month under nearly equivalent conditions as possible.

5.6. Data Analysis

The descriptive data was analyzed mainly using standard deviations with mean rankingsto obtain a representation over the 5 point response levels of food safety and hygiene practices among street food handlers. Inferential statistics were also used to test the relationship between variables.

6. Results and Discussion

6.1. Introduction

A descriptive analysis of the findings on food safety and hygiene practices among street food handlers in Juja sub County, Kiambu County is discussed as follows.

6.2. Food Production and Hygiene Practices

Descriptive results of food production hygiene practices are presented in Table 1. According to these results, respondents indicated that they purchased food raw materials from reliable suppliers ($M = 4.25$, $SD = 0.89$) and that they often changed oil used to deep fry foods ($M = 4.20$, $SD = 1.02$). In addition, respondents showed that they covered cooked food ready for service ($M = 4.12$, $SD = 0.85$). However, majority disapproved tasting cooked food with a spoon and plate ($M = 2.85$, $SD = 1.09$). The findings are consistent with Muhoya and Kimathi (2014) who argued that food should be kept in adequate facilities and there should be other equipment for reheating, cooling, refrigerating and monitoring temperature to ensure safety and suitability.

Statements	M	SD	Rank
Purchasing from reliable suppliers	4.25	0.89	1
Separating cooked from raw food	3.86	1.23	4
Covering cooked food	4.12	0.85	3
Maintaining appropriate temperatures for cooked food	3.10	0.98	5
I often change oil used to cook deep fried food	4.20	1.02	2
I taste cooked food using a teaspoon and a plate	2.85	1.09	6

Table 1: Food Hygiene Practices

Notes: $N = 235$. $M = \text{Mean}$, $SD = \text{Standard Deviation}$

6.3. Personal Hygiene Practices

Descriptive results of the study participants' personal hygiene practices are demonstrated in Table 2 and show that participants in this study highly indicated that they wear clean clothes when handling foods ($M = 4.23$, $SD = 1.02$). In addition, they indicated that they wash their hands repeatedly when handling foods ($M = 4.10$, $SD = 0.85$). However, participants in this study revealed that they rarely undertake medical check-ups twice in a year ($M = 2.75$, $SD = 1.23$). These findings confirmed Jill (2008) argument that food handlers may harbour micro-organisms on their skin, throat and other parts of the body, and these can be transferred to food through dirty hands and utensils during food preparation, cooking and serving.

Statements	M	SD	Rank
I wash my hands repeatedly when handling food	4.10	0.85	2
I wear clean clothes when handling food	4.23	1.02	1
I undertake medical check-ups twice a year	2.75	1.23	3

Table 2: Personal Hygiene Practices

Notes: $N = 235$. $M = \text{Mean}$, $SD = \text{Standard Deviation}$

6.4. Food Premises Hygiene Practices

Descriptive results of food premises hygiene practices are demonstrated in Table 3. Participants appeared to take cognizance of the importance of maintaining food premises hygiene practices. Study results show that participants agreed with all items of this aspect. In particular, participants highly rated that their street food businesses had clean water supplies ($M = 4.36$, $SD = 0.89$) and that they were well ventilated ($M = 4.25$, $SD = 1.03$). In addition, participants indicated that their street food businesses were not near a toilet ($M = 4.13$, $SD = 1.02$). These findings supported Jannie and Marrie (2010) point that food premises are potential source of food contamination if they are not well maintained and if they have harmful substances and objects. Therefore, cleanliness of food surfaces has been identified to be critical to food safety (Lucas & Peterson, 2015).

Statements	M	SD	Rank
My business has clean water supply	4.36	0.89	1
My business is not near a toilet	4.13	1.02	4
The environment is favorable for food production	4.19	0.96	3
The business has good lighting and aeration/ventilation	4.25	1.03	2

Table 3: Food Premises Hygiene and Safety
Notes: N = 235. M = Mean, SD = Standard Deviation

6.5. Correlation between Food Production Practices, Hygiene and Safety

A Pearson correlation analysis was conducted to see if food production practices, hygiene and safety were correlated. Results are presented in Table 4. The correlation coefficient between food production practices, food hygiene and safety was found to be statistically significant, $r(235) = +.74$, $p < .001$, two tailed. The two variables were found to have a strong positive significant correlation, meaning that, availability of recommended food production practices by street food handlers would lead to food hygiene and safety.

		Food Production Practices	Hygiene and Safety
Food Production Practices	Pearson Correlation	1	.741**
	Sig. (2-tailed)		.000
	N	235	235
Hygiene and Safety	Pearson Correlation	.741**	1
	Sig. (2-tailed)	.000	
	N	235	235

Table 4: Correlation between Food Production Practices, Hygiene and Safety
Note: ** Correlation Is Significant at the 0.01 Level (2 – Tailed)

7. Conclusion

Food production practices forms a key component of the overall food hygiene and safety. Observation of recommended food hygiene and safety practices would therefore lead to improved food hygiene and safety standards hence safe food for human consumption.

7.1. Recommendations for Policy

- The government, through Public Health sector should ensure that the licensed street food handlers are trained on existing food hygiene regulations in relation to food production practices.
- The county government should provide street food production designated areas or zones with permanent structures suitable for food production and selling for licensed street food handlers.

7.2. Recommendations for Further Research

- Assessment of major risks related to street food production practices in Juja Sub County
- Assessing the attitude of street food handlers towards food safety and hygiene in Juja Sub County

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