

## **FOOD HYGIENE PRACTICES AMONG FOOD VENDORS IN UNIVERSITY OF NIGERIA NSUKKA CAMPUS: IMPLICATION FOR CONSUMER PROTECTION**

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### **Abstract**

*This study investigated food hygiene practices among food vendors in University of Nigeria, Nsukka campus: Implication for consumer protection. The descriptive survey research design was adopted for the study. Three specific objectives with three corresponding research questions guided the study. The instrument used for data collection was a valid and reliable self-developed questionnaire. The population for the study consisted of 180 food vendors, and the entire population served as the sample for the study. The research questions were answered using percentages. The results of the study indicate that a high proportion of food vendors practised washing hands before and during cooking, during serving food; covering hair and wearing protective clothing during food preparations among other food hygiene practices. A high proportion of food vendors sourced water from water tanker, while a low proportion sourced water from underground well, stream and pipe borne. A moderate proportion of food vendors store food in warmers, basin covered with water proof, refrigerators, pot used for cooking, food stores, kitchen, and at a corner of the restaurant. The implication is that food vendors contaminate the environment with runny nose, catarrh, diarrhoea, water borne and other respiratory tract infections. Food related illnesses spread among the consumers that patronize them and endanger the health of the consumers. Based on the findings, the study recommended among others that environmental and consumer health protection agencies in the Universities should create awareness of the dangers of poor hygiene practices among food vendors and set a standard for good hygiene practices.*

**Keywords:** Food, Practices, Food Hygiene, Food Vendors, Consumer Protection.

### **Introduction**

Good food hygiene is essential for food vendors to prepare or sell food that is safe to eat. Food is basic to survival and most people recognize that balanced nutrition is necessary for good health. Food can transmit disease from person to person as well as serve as a growth medium for bacteria that can cause poisoning. Food is an organic substance and grows bacteria easily, thus a very high standard of hygiene is necessary to avoid food contamination and poisoning. World Health Organization-WHO (2010) reported that each year throughout the world, millions of people suffer from food-borne diseases.

Despite advances in technology, providing food that is safe is still a worldwide public health problem. Hardgrave (2012) posited that good food hygiene helps food vendors to obey the law, reduce the risk of food poisoning among customers. The author added that the four main things to remember about food hygiene are cross-contamination which causes food poisoning; cleaning and chopping boards and equipment thoroughly before preparing food and after using them to prepare raw food; chilling to cool cooked food as quickly as possible; keeping raw and ready –to-eat food apart at all times, including packaging material for ready-to-eat food; and cooking which helps to prevent the most common food safety problems by killing harmful bacteria in food.

Proper food hygiene practices suggest providing separate storage facilities including clothing and staff for the handling of ready-to-eat food. Separating raw, cooked and ready-to-eat foods while purchasing, storing and preparing food; keeping stored foods covered; storing raw meats below other foods in the refrigerator to prevent dripping onto other foods; keeping the refrigerator clean always; and not consuming products beyond their use-by date are proper food storage practices (Kendall & Medeiros, 2009). World Health Organization (2010) stated that separating cleaning materials, including cloths, sponges and mops should be used in areas where ready-to-eat foods are stored, handled and prepared. Hardgrave (2012) stated that food hygiene practices involve check that food is piping hot

throughout before eating; cooking food at the right temperature will ensure that any harmful bacteria are killed; washing fruit and vegetables can also remove these germs.

Food borne diseases often result from unsafe handling of food at home and that the risk is worsened by more of the food being prepared in centralized kitchens outside the home (Wardlaw, 2003). Obiomi (2000) stated that food hygiene covers proper handling and storage of food stuffs and drinks as well as all the utensils and equipment used in food preparation, service and consumption. High standards of hygiene minimize food spoilage and help to ensure that when food is eaten, it is as wholesome and free from pathogenic bacteria as much as possible (Obinezi, 2002). World Health Organization-WHO (2000) emphasized that food borne diseases include cholera and diarrhoea as well as a number of parasitic diseases. The five key principles of food hygiene include prevention of contaminating food with pathogens spreading from people, pets and pest; separating raw and cooked foods to prevent contaminating the cooked foods; cooking foods for the appropriate length of time and at the appropriate temperature to kill pathogens; storing food at the proper temperature; and not using safe water and cooked materials (WHO, 2010).

Preparation of food more than half a day in advance of needs, storage at ambient temperature, inadequate cooking, inadequate reheating under cooking and cross-contamination from raw to cooked food were identified as factors that contribute to outbreaks of food poisoning (Hobbs & Roberts, 1998). Bupa (2014) asserted that people get ill every day from the food they eat because of poor hygienic conditions observed in handling food which often leads to a whole host of unpleasant symptoms in the body. In addition, the condition of storage and hygiene and care of those handling food during production and service were implicated in the etiology of food borne diseases (Bruch, 1999). Hobbs and Roberts (1998) observed that in the tropics, high temperature, high humidity, lack of refrigerator in addition to local habits, impure water, poor sanitary facilities and parasites combine to increase prevalence of diarrhoea cases. It follows from the foregoing that food poisoning is caused by eating contaminated food and drinking water contaminated by toxins produced by growth of bacteria (Achal, 1998). Thus, the food handler has an important role to play in prevention and control of food poisoning and other food borne diseases. Shiklomanoy (2000) opined that washing fruit and vegetables under cold running water before preparing and serving food for consumption is essential in catering for customers who are particularly at risk of food-borne illness as well as those with allergies or intolerance.

Good food hygiene practices reduce the risk of food contamination with bacteria, viruses, parasites and other toxins. Food that is not properly cooked, stored, and handled correctly can cause ill health, food poisoning, cold, flu, and other health conditions. Catering services in University of Nigeria are undertaken by private food contractors, who bring in food from various sources and of questionable quality in terms of hygienic preparation and handling. Food handled under poor hygienic condition can cause food poisoning leading to a whole host of unpleasant symptoms such as stomach pains, diarrhea and vomiting. Proper handwashing with soap especially after using the toilet, before handling food and after handling raw meat is essential in practicing food safety. Food preparation and serving should not be done when the vendors have stomach problems, sneezing or coughing regularly (Okoli, 2003).

Food handlers are expected to report cases of ill health, and prevent their bodies or any thing near from coming into contact with food or food surfaces. Wearing clean outer clothing can help to improve good food hygiene practices. Food handlers or vendors are not expected to sneeze, spit, smoke, blow or cough over unprotected food or surfaces likely to come in contact with food. The students, members of staff and visitors of the university patronize these food vendors for their meals and snacks. This is worrisome as it has been established that unsafe handling of food at home and especially in centralized kitchens outside the home cause food borne diseases (Food Standards, 2014). Hygienic preparation, handling and serving of this ready-to-eat food are essential to avoid food related diseases among such a large population who eat from the public eating places.

Regarding what could be responsible for such poor food hygiene practices, it became necessary against the back drop that reducing and preventing food contamination will help to promote the health status of the people that patronize these food handlers and vendors. The problem of this study therefore is to examine food hygiene practices of these food vendors, find out the sources of water used for preparation and serving of meals and as well their ways of storing cooked and raw food at the University of Nigeria, Nsukka.

The purpose of the study was to examine food hygiene practices among food vendors in University of Nigeria, Nsukka. Specifically, the study sought to investigate the:

1. proportion of food vendors who adopted some hygiene practices;
2. sources of water used for preparations and serving meals by food vendors; and
3. ways of storing cooked and raw foods by food vendors.

Three research questions were posed to guide this study namely.

1. What is the proportion of food vendors who adopted some hygiene practices?
2. What are the sources of water used for preparations and serving meals by food vendors?
3. In what ways are cooked and raw foods stored by food vendors?

## Methods

The study adopted the descriptive survey research design. The population for the study comprised all food vendors in all the eating cafeteria found inside the University of Nigeria, Nsukka campus. There are about one hundred and eighty (180) of food vendors (University of Nigeria Student Affairs Department, 2014). The sample size was one hundred and eighty (180) food vendors, which was the entire population of food vendors. A researcher's-designed questionnaire served as the instrument for data collection. The instrument was face validated by three experts from the Department of Health and Physical Education in University of Nigeria Nsukka. Split-half method and Spearman's brown correlation formula was used for the reliability test. A reliability index of .70 was obtained which was adjusted high enough for use in the study.

Data were analysed using frequencies and percentages. Out of the 180 copies of the questionnaire administered, 174 copies were returned which gave a return rate of 96.7%, and were used for data analysis for the study. A proportion of 0-19% was interpreted as very low, 20-39% as low, 40-59% as moderate, 60-79% as high, and 80% or above as very high proportion. These were used to answer the research questions.

## Results

**Table 1. Proportion of Food Vendors who Adopted Some Hygiene Practices (n=174)**

S/N	Food hygiene practices	f	%	Decision
1	Washing hands before and during cooking	174	100	Very High
2	Washing hands before serving meals	174	100	Very High
3	Covering food to prevent perching of flies	26	15	Very Low
4	Avoiding sneezing or coughing directly over food	162	93	Very High
5	Washing utensils as soon as they are used while cooking and serving meals.	42	25	Low
6	Washing plates and cleaning tables as soon as customers finish eating.	54	31	Low
7	Preparing food with water from well, stream and water tanker.	174	100	Very High
8	Covering hair and wearing aprons during preparation.	161	92.6	Very High
9	Covering refuse bins and cleaning the surrounding of the business area.	12	7	Very Low
10	Staying away from food preparation during illnesses such as catarrh, cough and diarrhoea.	69	40	Moderate

Table 1 shows that very high proportion of food vendors practised washing hands before and during cooking (100%), washing hands before serving food (100%), preparing food with water from wells, tankers and streams (100%), avoid sneezing or coughing directly over food (93%), covering hair and wearing aprons during preparation (92.6%); while moderate proportion stay away from food preparation during illnesses such as catarrh, cough and diarrhoea (40%). The table further shows that low proportion of food vendors practised washing plates and cleaning tables as soon as customers finish eating (31%), and Washing utensils as soon as they are used while cooking and serving meals (25%) . The table also shows that very low proportion of food vendors practised covering food to prevent

perching of flies (15%), and covering refuse bins and cleaning the surrounding of the business area (7%).

**Table 2. Sources of Water Used for Preparing and Serving Meals by Food Vendors(n=174)**

Sources of water used	f	%
Pipe borne water	10	5.8
Stream	16	9.2
Underground well	20	17.3
Water tanker	116	66.7

Table 2 shows that a high proportion of food vendors used water from tanker for preparing and serving meals (66.7%), while 17.33 per cent used water from underground well. The table further shows that very low proportion of food vendors reported sourcing water from stream (9.2%) and pipe borne water (5.8%) for preparing and serving meals.

**Table 3. Ways of Storing Cooked and Raw Foods by Food Vendors (n=174)**

Ways of storage of cooked and raw food	f	%
Cooked food is stored in food warmers	103	59
Cooked food is stored in basin covered with water proof	54	31
Cooked food is stored in the refrigerators and retreated during service	13	7.5
Cooked food is stored in pots used for cooking	4	2.4
Raw food is kept in the store.	40	23
Raw food is kept at a corner of the restaurant	122	70
Raw food is kept in the kitchen	12	7

Table 3 shows that high proportion of food vendors store raw food at a corner of the restaurant (70%); moderate proportion of food vendors store cooked food in warmers (59%), while low proportion store food in basins covered with water proof (31%) and kept in the store (23%). The table further shows that a very low proportion of food vendors store cooked food in refrigerators (7.5%), raw food in the kitchen (7%), and store cooked food in pots used for cooking (2.4%).

## Discussion

The finding of the study in Table 1 shows that very high proportion of food vendors practised washing hands before and during cooking (100%), washing hands before serving food (100%), preparing food with water from wells, tankers and streams (100%), avoid sneezing or coughing directly over food (93%), covering hair and wearing aprons during preparation (92.6%); while moderate proportion stay away from food preparation during illnesses such as catarrh, cough and diarrhea (40%); low proportion of food vendors practised washing plates and cleaning tables as soon as customers finish eating (31%), and Washing utensils as soon as they are used while cooking and serving meals (25%); and a very low proportion of food vendors practised covering food to prevent perching of flies (15%), and covering refuse bins and cleaning the surrounding of the business area (7%). The finding was expected and therefore not surprising because most food vendors adhere to the principles of food hygiene recommended by World Health Organization. The finding agrees with the assertion of Bruch (1999) who asserted that the hygiene and care of those handling food were implicated in the etiology of food borne illness.

However, the hygiene practices of the food vendors were poor in the area of not staying away from work during illness like upper respiratory tract infection or diarrhea as of the subjects continue to

work as long as the illness allowed them. This finding is in contact with the assertion by Park (2009) that those suffering from diarrhoea, dysentery or throat infections should be excluded from food handling. The findings agrees with the report of Abidoye and Otilili (1999) that food handlers do not report to doctors when suffering from diarrhea and even few stopped work. This may have contributed to the occurrence of food poisoning among those who patronize these food vendors.

The finding also shows that poor hygiene practices in covering refuse bins, covering hair and wearing aprons, removing used plates and cleaning tables immediately after use, cleanliness of business area, clearing refuse bin and surrounding, and using impure water for serving of meals. More than 50% of the respondents were deficient in the areas observed. The premises where food is prepared must be clean and the domestic waste should be disposed properly in order to keep flies away from food. The finding shows a poor refuse disposal which according to Hobbs and Roberts (1998) produces strange odour which attracts rodents and flies which in turn can contaminate food. It seems environmental health officers do not visit food premises, though few indicate that student union officials sometimes come to inspect their premises. Serving of water without purification is a health hazard.

The finding of the study in Table 2 shows that a high proportion of food vendors used water from tanker for preparing and serving meals (66.7%), while 17.33 per cent used water from underground well. The table further shows that very low proportion of food vendors reported sourcing water from stream (9.2%) and pipe borne water (5.8%) for preparing and serving meals. The finding was expected and therefore not surprising because food vendors are expected to source water from safe sources especially pipe borne water and underground well, more than from water tanker and stream. The finding was in line with Hobbs and Roberts (1998) who noted that water is a major source of infection both by direct consumption and by contamination of food and the environment of food preparation. The finding contradicts the opinion of Shiklomanoy (2000) who opined that washing fruit and vegetables under cold running water before preparing and serving food for consumption is essential in catering for customers who are particularly at risk of food-borne illness as well as those with allergies or intolerance. However, the purity of sachet and bottled water are not assured unless they are approved by NAFDAC.

The finding in Table 3 shows that high proportion of food vendors store raw food at a corner of the restaurant (70%); moderate proportion of food vendors store cooked food in warmers (59%), while low proportion store food in basins covered with water proof (31%) and kept in the store (23%). The table further shows that a very low proportion of food vendors store cooked food in refrigerators (7.5%), raw food in the kitchen (7%), and store cooked food in pots used for cooking (2.4%). The finding was expected and therefore not surprising because food vendors are often seen serving and storing cooked food alongside raw foods in the same dish and storage facility. Almost all the food handlers stored their cooked food improperly.

The finding disagrees with the assertions of Hobbs and Roberts (1998) that powdered and granular food should be stored in metal bins with close fitting lids and raised above the floor; and Abidoye and Otilili (1999) who asserted that storage at ambient temperature and keeping food insufficiently hot, and favour growth of pathogenic organisms. The finding contradicts the assertion of Kendall and Medeiros (2009) who asserted that Separating raw, cooked and ready-to-eat foods while purchasing, storing and preparing food; keeping stored foods covered; storing raw meats below other foods in the refrigerator to prevent dripping onto other foods; keeping the refrigerator clean always; and not consuming products beyond their use-by date are proper food storage practices.

### **Implication for Consumer Protection**

The result of this study is an indication that food hygiene practices of the food vendors in University of Nigeria Nsukka is unsatisfactory. This implication is that the health of the consumers that patronize them is highly endangered by the poor hygiene practices as they can easily catch diseases. Since a lot of them go to work even when they are sick, they contaminate the environment with running nose, catarrh, diarrhoea and other respiratory tract infection thereby making the environment unhealthy. This call for intensified efforts by health personnel to embark on mass health education of food vendors at public eating places to ensure that food served to the public is safe and will not endanger the health of the consumers.

This implies that the Health and Physical Education Department in tertiary institutions must live up its responsibility in ensuring that the health of the university community are protected and promoted by educating the food vendors and the general public on the dangers associated with poor

hygiene practices. The food handlers must be made to understand that they have important role to play to safeguard food to prevent related illness. The health educators should advise the food managers in the café and canteens on the need for employment of qualified personnel to ensure that food served to the public are safe and does not constitute health hazard. The health educators should be able to recognize symptoms of food poisoning, initiate immediate care, and institute referral to the hospital for proper treatment.

The findings of the study generally revealed poor hygiene practices among food vendors in food handling, preparation, storage and the nature of water used in serving food. Poor hygiene is a perennial problem in most developing countries of the world. This problem has multifactorial etiology of which poverty, ignorance, lack of pipe borne water and infrequent electric power supply are involved. Majority of the food vendors never received education on food handling and food safety neither did they attend any seminar relating to food hygiene. Even in the industrialized world, food hygiene is still a public health problem.

### **Conclusion**

Based on the findings and discussion, the following conclusions were reached. A high proportion of food vendors practised washing hands before and during cooking, and during serving food; covering hair and wearing protective clothing during food preparations among other food hygiene practices. A high proportion of food vendors sourced water from water tanker, while low proportion sourced water from underground well, stream and pipe borne. A moderate proportion of food vendors store food in warmers, in basin covered with water proof, in refrigerator, in pot used for cooking, in food stores, in the kitchen, and at a corner of the restaurant. Food vendors' responses were however, at a manageable pace due to their exposure in the higher institution environment. Health educators have to intensify their teaching on the aspect of proper and adequate practices in preparation, serving and storage of food to prevent food borne illness to the public. In addition to this, the environmental health workers should try to visit these sites where food are cooked and served to the public so that these eating areas will not be sources of food poison to the public. Thus, there is need for food vendors and handlers to be made to understand that they have important role to play to safeguard food in order to prevent related illnesses.

### **Recommendations**

Based on the findings, discussion and conclusions drawn, the following recommendations were made.

1. Intensive health education and training programmes for food vendors must be embarked on by appropriate organs of the university such as food canteens, student affairs department and environmental protection units with the view to educating all concerned on the dangers of unsanitary food handling. Also, Environmental and consumer health protection agencies in the Universities should create awareness of the dangers of poor hygiene practices among food vendors and set a standard for good hygiene practices.
2. The environmental health officers, health educators and community health workers must ensure that food service centres are inspected and food handlers are properly educated on key principles of food hygiene and safety.
3. Regular supply of pipe borne water should be ensured to avoid the use of impure water for preparation and serving of food.
4. University authority has to set a standard that will guide these food vendors, organize workshops and seminars for the food vendors so that appropriate hygiene practices will be expected from them. Also, the university should set out guidelines stating the qualifications and conditions that must be met by those intending to establish food service centres.

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