
**ASSESSMENT OF KNOWLEDGE AND PRACTICES OF FOOD HYGIENE AMONG
FOOD VENDORS IN NORTH CENTRAL GEO-POLITICAL ZONE OF NIGERIA**

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ABSTRACT: *The study was carried out to assess the Knowledge and Practice of food hygiene among food vendors in North East Zone, Nigeria. The researchers used descriptive survey design and the population of the study was some selected food vendors in North East Zone, with population of three hundred and sixty (360) where sixty (60) of them were sampled for the study through simple random sampling technique, the instrument used for the collection of data for the study was self-structured questionnaire and the data collected were analyzed using frequency counts and percentage. Findings of the study reveals that about 45.1% of the respondents have good personal hygiene practice while 54.9% of them have poor personal hygiene practices and in view of their food handling practices, 63.7% of them have good food hygiene practice while 36.3% have unhygienic food handling practices. Such improper personal hygiene and unhygienic food handling practices may lead to ill health and subsequent contamination of the food they handle. It is therefore recommended that food handlers should put more effort towards practicing good personal hygiene especially hand washing and the use protective devices while rendering food services.*

KEY WORDS: food, food hygiene practice, personal hygiene

INTRODUCTION

Food has been defined as any substance that when ingested will supply the body with the nutrients and fiber for releasing energy to fuel the body activities, to provide materials for building and maintenance of the body tissue and organs, to supply substances that help in temperature regulation (Alhaji, 2013). Food plays an important role in health throughout the life cycle, starting in the fetus where nutrients are required in specific amount to ensure the correct development of all organs and linear growth; throughout childhood where maximum growth is achieved; and into adulthood where weight maintenance is important along with a balanced diet to prevent/prolong the initiation of diseases. The right to food is a human right derived from the International Convention on Economic, Social and Cultural Rights (ICESCR), recognizing the "right to an adequate standard of living, including adequate food", as well as "fundamental right to be free from hunger" (codex Alimentarius, 2003).

The improper food handling is unnecessary use of hands during preparation and serving; thawing of frozen food at room temperature in warm water. It is the use of placing food on counters without cutting boards, touching food with dirty hands, sneezing, etc and not cleaning again, not cooking food for all the way (Begum, 2008). Food sold by the road side, hawkers, vendors, schools etc are at the risk of contamination, often at all stages of handling. They are sometimes stored at improper temperature. Furthermore, the conditions at which food vendors prepare meals and vend them are worsened by weak implementation of relevant environmental and public regulations. Food born diseases continues to be an important health issue in the developing countries (World Health Organization, 2010).

Premises food are ready-to-eat foods and beverages prepared and/or sold by vendors, especially in the schools and other public places (Lal, 2007). There is a noticeable increase of food vendors in Azare as a result of dwindling economy and unemployment. Also there have been rapidly growing and changing food demands by residents of Azare needing cheaper food in the face of the harsh economy. The types of vending sites encompass stalls, a variety of push carts, open canteens and hawkers depending upon the ingenuity of the individual, resources available, types of food sold and availability of other resources (Surver by the researcher, 2016). Multiple lines of evidence reveals that food exposed for sale at various public places may become contaminated either by spoilage or pathogenic micro-organisms (Abdalla, 2008). The rise of food vending at various locations has created health problems as a result of improper and unhygienic handling of food.

This study was designed to assess the knowledge and practice of food hygiene among food vendors in North Central Zone, Nigeria. Food is one of the cardinal mechanisms for human survival in the sense that life cannot offer vitality without taking adequate, well balanced and proper handled food (Alhaji, 2013). In the same vein, people are supposed to bath at least twice a day, morning and evening, keep their finger nails short, barb their heads in males and braids regularly in female, brush their teeth in the morning and before going to bed, wash their hands before and after eating and after coming out from the toilet, wear clean clothes and keep their body clean.

However it was observed that some food vendors in North Central Zone, Nigeria do not care to observe proper personal hygiene practices such as hand washing after visiting toilet, before and during food handling. Such poor personal hygiene practices may lead to ill health and subsequent contamination of the food they handle. Therefore, the study was designed to assess the food hygiene practice among food vendors in North Central Zone, Nigeria.

Objective of the Study

The purpose of this study is to assess the food hygiene practice among food vendors in North Central Zone, Nigeria with the view to find out their actual practice.

Research Questions: What are the personal hygiene practices of the food vendors in North Central Zone, Nigeria? What are the food handling practices of food vendors in North Central Zone, Nigeria?

Significance of the Study

The study was aimed at assessing the food hygiene practice among some selected food vendors in North Central Zone, Nigeria. The expected result for this work would be of utmost importance to:

- Food vendors in rendering their services towards the promotion and maintenance of health through health education, and
- Environmental health officers and health education policy makers to know the level of food hygiene practice among food vendors in North Central Zone, Nigeria and to enable them to develop and implement sound policies concerning food handling

LITERATURE

Lal(2007) stated that food is a mixture of chemicals, some of which are essential for normal body functions. These chemicals are called nutrients. Nutrients are required for various processes in the body. They serve as a source of energy for muscle contraction and cellular functions. Some of them are also important to the structure of bones, muscles, and cells. Some of the nutrients also help in regulating bodily processes such as blood pressure, energy production, and temperature regulation. In a true sense, a nutrient may be defined as a chemical whose absence from the diet (for a long time) results in specific changes in health, i.e lead to deficiency symptoms. Moreover, its supplementation (before a permanent damage occurs) can reverse such a change. Hence nutrients are essential chemicals in food that the body needs for normal functioning and good health. These must come from the diet because they either cannot be made in the body or cannot be made in sufficient quantities. There are six classes of nutrient in food designated as carbohydrates, lipids, protein, vitamins, minerals, and water (Alhaji, 2013).

Food makes our body because we are what we eat. The weight and composition of the body entirely depends on the food we eat. The primary aim of consuming food is for nourishment. Food is essential for human existence just like the air we breathe or the water we drink. The food that we eat is utilized in the body and the assimilated substances are used for the growth and maintenance of tissues. A living organism is a product of nutrition. A human being requires more than 50 different nutrients for its well-being. Food materials ingested by the body are digested, absorbed and metabolized. Useful chemicals substances derived from food by the body are called nutrients. A number of foodstuffs have to be selected to get all the nutrients. The health of a person depends on the type, quality and quantity of the food stuff he chooses in his diet. Food is frequently subjected to chemical and biological contamination in a number of ways and this has a direct extensive and important bearing on public health. There is a clear evidence now that a vast amount of human disease and sufferings is directly due to the consumption of infected and contaminated food, food of inferior quality and false advertising (NAFDAC, 2005). Therefore, a knowledge of the variety of toxicants in food is due to lack of food sanitation and hygiene, faulty methods of cultivation, harvesting, transport, storage, processing, distribution and cooking, is therefore necessary for every consumer (Begum, 2008).

Food hygiene is concerned with the practices that prevent food poisoning. The five principles of food hygiene according to WHO (2012) are:

- Prevent contaminating food with mixing chemicals spreading from people and pests.
- Separate raw and cooked foods to prevent contaminating the cooked foods.
- Cook foods for the appropriate length of time and at the appropriate temperature to kill pathogens.
- Store foods at the proper temperature.

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- Use safe water and raw materials.

Diseases Associated with Food

Food infection is caused when pathogenic micro-organism are allowed to grow, inhibited on food and later consumed by unsuspected person or consumer.

Most infections especially cold and gastroenteritis, are caught when we put our unwashed hands, which have germs on them to our mouth. Some infections are caught when other people's dirty hands touch the food we eat (Musa & Akande, 2002). Articles of food when exposed to the open air becomes subjected to all sort of contamination, hence it is absolutely necessary that food stuff whether in the shop or in house should never be kept in suitable receptacle/containers in such a manner as to prevent contamination.

In addition, there are other micro-organisms such as pellagra which is known as deficiency disease, Marasmus and Kwashiorkor. Some worm infections such as tapeworm, trichuriasis are spread through eating of uncooked food (Jem, 1991). According to the term bacteria food poisoning or simply food poisoning according to Jem (1991) means acute-gastro entities due to the swallowed up of food containing certain bacteria or either performed toxins, insufficient amount to make them irritate the mucosa of the stomach and small intestine. It should be distinguished from bacterial infection which is caused by ingestion of contaminated food and leading to diseases such as classes of typhoid fever. Food poisoning is also called food borne illness, it is the illness caused by eating contaminated food. Infectious organisms include bacteria, virus and parasites or their toxins are the most common cause of food poisoning (Jem, 1991).

Personal Hygiene

Wikipedia (2014) stated that hygiene is an old concept related to medicine, as well as to personal and professional care practices related to most aspects of living. In medicine and in home (domestic) and everyday life settings, hygiene practices are employed as preventative measures to reduce the incidence and spreading of disease. In the manufacture of food, pharmaceutical, cosmetic and other products, good hygiene is a good part of quality assurance i.e. ensuring that the product complies with microbial specifications appropriate to its use. The terms cleanliness and hygiene are often used interchangeably, which can cause confusion. In general hygiene means practices that prevent the spread of disease causing organisms. Since cleaning processes (e.g. handwashing) remove infectious microbes as well as dirt and soil, they are often the means to achieve hygiene.. The most effective way of preventing spread of viruses is through hand washing. Hands should be lathered with soap then washed for a minimum of 20 minutes with running water. Everyone should always wash his or her hands especially before handling food, after using the toilet or after being in contact with faecal matter (after changing of diapers, cleaning toilets) or after being in contact with vomit. The use of disposable hand towels should be encouraged. Gloves, if used in the handling of food products, should be maintained in a sound, clean and sanitary condition. The wearing of gloves does not exempt the operator from having thoroughly washed hands (Codex Alimentarius Commission, 2010).

Home Hygiene

Bloomfield, Exner, Fara, Nath, Scott & Vender (2009) stated that Home hygiene pertains to the hygiene practices that prevent or minimize disease and the spreading of disease in home (domestic)

and in everyday life settings such as social gatherings, public transport, the work place, public places etc. Hygiene in home and everyday life settings plays an important part in preventing spread of infectious diseases, it includes procedures used in a variety of domestic situations such as hand hygiene, respiratory hygiene, food and water hygiene, general home hygiene (hygiene of environmental sites and surfaces), care of domestic animals, and home healthcare (the care of those who are at greater risk of infection). At present, these components of hygiene tend to be regarded as separate issues, although all are based on the same underlying microbiological principles. Preventing the spread of infectious diseases means breaking the chain of transmission. The simple principle is that, if the chain of transmission is broken, infection cannot spread. In response to the need for effective codes of hygiene in home and everyday life settings the International Scientific Forum on Home Hygiene has developed a risk-based approach (based on Hazard Analysis Critical Control Point (HACCP), which has come to be known as "targeted hygiene". Targeted hygiene is based on identifying the routes of spread of pathogens in the home, and applying hygiene procedures at critical points at appropriate times to break the chain of infection.

Hand Hygiene

Hand hygiene is defined as hand washing or washing hands and nails with, soap and water or using a waterless hand sanitizer. Hand hygiene is central to preventing spread of infectious diseases in home and everyday life settings. In situations where hand washing with soap is not an option (e.g. when in a public place with no access to wash facilities), a waterless hand sanitizer such as an alcohol hand gel can be used. They can also be used in addition to hand washing, to minimize risks when caring for "at risk" groups. To be effective, alcohol hand gels should contain not less than 60% v/v alcohol. Hand sanitizers are not an option in most developing countries. In situations with limited water supply, there are water-conserving solutions, such as tippy-taps. (A tippy-tap is a simple technology using a jug suspended by a rope, and a foot-operated lever to pour a small amount of water over the hands and a bar of soap) (Bloomfield, Aiello, Cookson, Boyle & Larson, 2007).

Feet Hygiene

We are a bit reluctant to wash regularly our feet that to our hands. Is that because they are located further away or because they are less useful part of our body? Because less attention is paid in cleaning our toes we suffer from a number of health problems. Between the toes, sweating of the skin makes a good breeding site for spores of fungus infection called athlete's foot. In most of our communities people used to walk in a bare foot. The people in these communities need to wash their feet frequently that the people who are wearing shoes, because the foot is exposed to the soil and surrounding environments. If individuals fail to have frequent wash, hookworm and jinger flea can easily enter the feet and cause infections. In order to avoid foot disease; regular washing of feet with soap should be encouraged, wearing of clean sock to absorb the sweat if possible and wearing of shoes if possible (Legesse & Ambelu, 2004).

Skin Hygiene

Legesse & Ambelu (2004) stated that Sweat and oily secretion from the skin cause dust to stick on its surface. This clogs the skin pores and interferes with the natural function of the skin. Moreover, bacteria can readily breed on the surface of the skin to cause various disease and undesirable odour. Certain species of flies can deposit their eggs on clothes when left outside from drying and the larva will grow under human skin causing irritation. germs of parasite that settle on the skin as a

result of poor personal hygiene produce a lesion, the barrier to protect delicate internal organs of the body is lost and systematic infections are likely to occur. In order to take care of the skin wash your body with warm water and soap preferably everyday to remove dust and dirt. Wear the right size and type of clothes to suit local weather conditions. Regular exposure of the skin to air and sunlight is beneficial.

Hygiene of the Clothes

Clothes help to protect our body from cold and other conditions and to maintain warmth. Clothes that are not clean contribute to the multiplication of pest and the spread of pest borne disease. Dressing clean clothes day and night is a mandatory for better health. The sweat that comes from our body as dirt during activities accumulates on the body and gives bad smell. Therefore, keeping our clothes clean as we keep our body is very important. In order to prevent health problems associated with poor hygiene of clothes

The Nose Hygiene

Legesse & Ambelu (2004) stated that the nose which is part of the respiratory system contains hairs in the nostrils that filter dirt and germs from the air. This, the nose serves as protecting device against the entrance of harmful substances into our lungs and circulatory system. For this reason the nostrils should at all times keep clean by using hand ketchup or blowing at intervals to remove the accumulated dust and spore. This way, the incidence of infection that usually start at the throat can reduced or controlled.

The Eye Hygiene

Legesse & Ambelu (2004) further stated that Dirty eye is the place for common housefly. Regular washing keep the eyes clean. Germs carried on the flies legs can be deposited in or near the eyes and may cause disease, which eventually lead to blindness. The best example in our setting is trachoma which has affected many rural communities in Ethiopia. Trachoma can be prevented by regular eye hygiene. We shall wash our eye in the morning together with our face, after exposure to dust or other contagious matter, after it has been touched with a dirty hand and after exposure to smoke and soot using safe and clean water.

Food Handling and Processing Procedures

Codex Alimentarius Commission (2003) stated that food handlers should maintain a high degree of personal cleanliness and, where appropriate, wear suitable protective clothing, head covering, and footwear. Cuts and wounds, where personnel are permitted to continue working, should be covered by suitable Waterproof dressings. Personnel should always wash their hands when personal cleanliness may affect food safety, for example: at the start of food handling activities; immediately after using the toilet; and after handling raw food or any contaminated material, where this could result in contamination of other food items; they should avoid handling ready-to-eat food, where appropriate. People engaged in food handling activities should refrain from behavior which could result in contamination of food, for example: smoking; spitting; chewing or eating; Sneezing or coughing over unprotected food. Personal effects such as jewellery

Food Processing

Food processing refers to the practices used by food and beverage industries to transform raw plant and animal materials, such as grains, produce, meat and f dairy, into products for consumers

(Heldman & Hartel, 1997). Nearly all of our (food has been processed in some way (Monteiro, 2009). Although some forms of food processing use the latest technology, others have been practiced for centuries. Such as Early Egyptians brewed beer and discovered how to bake leavened bread (Truswell & Brand, 1985). And Ancient Greeks made salted pork, a precursor to ham and bacon. While modern food processing is defined as taking place at a plant or factory. This is distinct from food preparation, which usually takes place in kitchens. Many activities-washing and cooking, for example-are common to both Processing and preparation. The companies that process foods are sometimes called food manufacturers (Truswell & Brand, 1985).

Degrees of Processing

Monteiro (2010) Stated that not all foods undergo the same degree of processing, some nutritionists classify processed foods into three categories: minimally processed food, processed food ingredients and highly processed food. Even though there is no universally accepted method of categorizing processed foods, it is helpful to make the distinction between foods like toaster pastries, which are highly processed; flour, which is a processed food ingredient; and milk, which is generally considered minimally processed. These distinctions allow for a more nuanced discussion of processed food.(Monteiro, 2009).

Effect of Processing on Nutritional Properties

Many processing procedures especially those that do not involve heat such as mixing, cleaning, sorting, freeze drying and persurization have little or 0 effect on nutritional quality of foods. Heat processing is a major cause of changes to nutritional properties of foods. For example gelatinization of starches' and coagulation of proteins improve their digestibility and anti-nutritional compounds (for example, a trypsin inhibitor in legumes) are destroyed. However, heat also destroys some types of heat-liable vitamin, reduce the biological value of proteins (owing to destruction of amino acids or maillard browning reactions) and promotes lipid oxidation (Fellows, 2000).

Begum (2008) sated that on the effect of cooking methods on nutrients the starch is the form of carbohydrates which is present in cereals. On heating the intermolecular hydrogen bonding is broken and it absorbs water and swells and later on thickens. The selling gets complete at the temperature of 88oC to 92oC. Dry heat also brings changes in starch granules.

Food Handling

Fellows (2000) stated that in the factory correct handling of foods, ingredients and packaging materials from suppliers, through the production process, and during distribution to the consumer is essential to optimize product quality and to minimize cost. Improvements in materials handling have led to substantial increases in production efficiencies, and are used at all stage in a manufacturing process,

Food Regulations

Potter & Hotchkiss (2001) stated that government worldwide regulates foods with two general objectives: the first is to ensure the safety and wholesomeness of food Simply, The second is to prevent economic fraud or deception. These Wires encompass such concepts as safety, purity, wholesomeness and value. Recently, a third objective, to inform consumers about the nutritional contents of foods, has been added. Because in a highly complex society individual consumers are no in a position and usually do not have the Specialized knowledge to protect themselves, the

responsibility rest on the food industry and on governments Industry and government must cooperate in the role of providing protection. Furthermore, the food industry looks to government to set high standards and to enforce these standards in order to protect itself against unethical competition. Economic regulations are intended to prevent consumers from being defrauded.

METHODOLOGY

The design adopted for this study was descriptive survey design. The survey research according to Njodi & Bwala (2010) is a systematic way of action which provides necessary information to a specific population on current status of that population on one or more variables. The population for the study consist the entire food vendors of North Earth with the population of 360 (Survey by the researcher, 2016). The sample for the study consists of sixty (60) food vendors which are selected from the total population by using simple random sampling technique. The researcher analyzed the data collected for the study by using frequency counts and percentage. The results were tabulated and used to answer the stated research questions.

RESULTS

Table 1: Demographic Information of the Respondents

	Item	Frequency	Percentage (%)
Sex	Male	6	12
	Female	54	88
Age	10-19 years	45	75
	20 years and above	15	25
Marital Status	Married	6	12
	Single/Widowed	54	88
Educational Level	Pri., Sec., +	15	25
	Others	45	75

Table 1 shows demographic information of the respondents. Out of the sixty (60) food vendors studied, only 6 (12%) of them were males and 54 (88%) were all females by gender, in view of their ages, 45 (75%) of them were girls of ranges between 10-19 years while only 15 (25%) of them were above 20 years of age. Only 6 (12%) of them were married women while the remaining 54 (88%) were either single who either have never married, widowed, divorced or separated. Also, the study reveals that most of the respondents were either attended Islamiyya or other Qur'anic school which account for about 45 (75%) and the remaining 15 (25%) were those who have either attended primary School or have gone up to post primary education.

Table 2: Personal Hygiene Practices of Food Vendors

Item	Response	Frequency	Percentage (%)
Do you wash your hands when starting food preparation?	a. Yes	24	40
	b. No	36	60
Do you wash your hands with soap or ash and water after toilets?	a. Yes	21	28
	b. No	39	72
Do you cut our finger nail weekly?	a. Yes	15	25
	b. No	45	75
Do you take bath daily?	a. Yes	54	88
	b. No	6	12
Do you wash/clean our clothes regularly?	a. Yes	45	75
	b. No	15	25
Do you brush your teeth with toothpaste daily?	a. Yes	33	55
	b. No	27	45
Do you braid/barb your hair regularly?	a. Yes	24	40
	b. No	36	60

Table 2 shows the personal hygiene practices of the respondents where 24 (40%) of them used to washed) their hands when starting food preparation while 36(60%) do not care to wash it. The table also shows that only 21 (28%) among the respondents washed their hands with soap or ash and water after every toilets and 39 (72%) do not wash their hands using soap or ash and water after toilets. Only 15 (25%) of the respondents cuts their finger nail weekly but the remaining 45 (75%) cuts either monthly or when they wish. Also, table 4.2.2 shows that 54 (88%) of the respondents took bath daily and only 6 (12%) do not care to take bath daily, 45 (75%) of them washed/ironed their clothes on a regular basis before wearing and the remaining 15 (25%) do not care to wash/clean their clothes regularly. 33 (55%) of them brushes their teeth with toothpaste daily and the rest 27 (45%) do not used tooth brush, but chewing stick or charcoal. Finally, 24 (40%) of the respondents braid/barb their hair regularly while 36 (60%) do not braid/barb their hair on a regular basis.

Table 3: Food Handling Practices of Food Vendors

S/N	Item	Response	Frequency	Percentage (%)
12.	Do you cook your food properly?	Yes	54	88
		No	6	12
13.	Do you keep your food at proper temperature?	a. Yes	36	60
		b. No	24	40
14.	Do you cover your food during transportation from home to sales point?	a. Yes	57	94
		b. No	3	6
15.	Do you cover your food properly during sales?	a. Yes	51	82
		b. No	9	18
16.	Do you wash your dishes after every usage?	a. Yes	54	88
		b. No	6	12
17.	Do you use protective devices during food	a. Yes	6	

Table 3 shows that most of the respondents which accounts for 54 (88%) cooked their food properly while the remaining 6 (12%) of them do not care to cook their foods properly. 36 (60%) of them keeps their food at proper temperature either for their own personal reason or to attract customers, while 24 (40%) do not maintain to keep their food at required temperature. The study also reveals that 57 (94%) of the food vendors covers their food during transportation from home to school and the remaining 3 (6%) of them do not maintain to cover it, and 51 (82%) of the respondents covers their food properly during sales at the school food premises while 9 (18%) of them do not cover it properly. Also, the study shows that 54 (88%) out of the respondents studied wash their dishes after every usage while 6 (12%) of them do not wash it on a regular basis. Only 6 (12%) of the respondents used protective devices during food preparation and services while 54 (88%) do not use any form of protective devices. Moreover, out of those who uses the protective devices, 3 (6%) of them use apron and the remaining 3 (6%) used hand gloves while interacting with foods.

DISCUSSION

The study shows that 40% of the respondents wash their hands when starting food preparation and this in line with the statement made by Codex Alimentarius Commission (2010) that “hands should be washed before handling of food”. Also, the result of the study conducted by Ifeadike, Ironkwe, Adogu, & Nnebue (2014) on Assessment of food hygiene practices of food handlers in the Federal Capital Territory of Nigeria shows that “89.3 percent of the respondents usually washed their hands before starting the preparation of food”. And the remaining 36 (60%) of them do not wash their hands when starting food preparation which is in line with the findings of Musa & Akande, (2002) that “most infectious especially colds and gastroenteritis are caught when we put our un-washed hands, which have germs on them or to mouth. Some infections are caught when other people’s dirty hands touch the food we eat”. The study reveals that most of the respondents do not wash their hands with soap or ash and water after toilets and this is contrary to the findings of Lal (2007) that “food handlers at all levels should be trained to implement key strategies to eliminate or control food borne illness such as proper hand washing of food handlers”. In a research conducted by Ifeadike, et al. (2014) on Assessment of food hygiene practices of food handlers in the Federal Capital Territory of Nigeria, the study shows that “One hundred and fifty (89.3%) of the subjects engaged in hand wash after toilets and fifty-one (30.4%) of the respondents observe proper hand washing with soap and water”. Hand hygiene is central to prevent the spread of infectious diseases in home and everyday life settings (Bloomfield, Aliello, Cookson, Boyle & Larson, 2007).

CONCLUSION

Based on the findings of the study, it was concluded that about 45.1% of the respondents have proper personal hygiene practice while 54.9% of them have improper personal hygiene practices. In view of their food handling practices, 63.7% of them have proper food hygiene practice and 36.3% have unhygienic practice of food handling.

Recommendations

Based on the findings of the study, it was therefore recommended that:

1. Introduction of health education as a compulsory subject in public schools in Azare Education zone.

2. Formal training and certification of street food vendors in to qualify them to handle food consumed by the public.
3. The general public be educated in other to be vigilant in assessing what they consume for their own safety.

References

- Abdalla, M.A., (2008).Food safety. Knowledge and practices of street food vendors in Khartoum city. Sudanese Journal. 34(6)-345-356
- Alhaji, A.A., (2013). Food and Nutrition in Health I. Unpublished lecture note for Undergraduate studies, Department of Physical and Health Education, College of Education, Azare.
- Bloomfield S.F., Exner M., Fara G.M., Nath K.J., Scott EA. & Vender V. (2009).The Global Burden of Hygiene-Related Diseases in Relation to the Home and Community. International science forum on home hygiene. <http://www.ithhomehygiene.org/integratedCRD.nsf>.
- Chigozie O. 1., Okechukwu C.I., Prosper O.U., Adogu & Chinomnso ON. (2014). Assessment of Food Hygiene Practices of Food Handlers in the Federal Capital Territory of Nigeria. Nnamdi Azikiwe University Teaching Hospital, Anambra Nigeria.
- Codex Alimentarius Commission (2003). Food Inspection and Safety. The 35th session of the CAC. Published 13th July, 2003, Accessed 6th May, 2015.
- Codex Alimentarius Commission (2010). Official Report on Food Safety. 28 session, FAO Headquarters, Rome Italy.
- Gbefwi, N.B. (2004).Health Education and Communication Strategies. A martial approach, published by west African books Lagos, Nigeria.
- Harbans Lal (2007).Food and Nutrition for Medical, Nursing and allied Science. BS Publishers and Distributers, New Delhi, India.
- Jill Jem (1991).Food Borne Infection and Poultry. JRSJ 1635-37.
- Legesse, W., & Ambelu, A. (2004).Personal Hygiene Lecture Note for Health Extension Trainees in Ethiopia. Jimma University, Ethiopia.
- Lucas, A.O. & Gilles, H.M. (2003).Short Text Book of Public Health Medicine for the Tropics. Published by Georgina bentliff, London.
- Madubi, S.R & Raj gopal M.V. (1989).Fundamentals of Food and Nutrition. (reprint) wily eastern letter, New Delhi India.
- National Agency for Food, Drugs Administration and Control (NAFDAC) Decree. No. 151993.
- Njodi, A.I. & Bwala W.D. (2003).Skills and Techniques of Reporting Research Outcomes in Health Education. Published by Awemark Publishers Makol, Ibadan, Nigeria.
- Norman, N. Potter & Joseph H.H. (2007).Food Science. Fifth edition.CBS Publishers and Distributers. New Delhi, India.
- Okojie O.H., Wagbatsoma V.A. & Ighoroge (2005).An Assessment of Food Hygiene among Food Handlers in Nigerian University Campus. Niger Postgrad. MedJ 12293-6.
- Omemu, A.M., & Aderoju S.T. (2008).Food Safety. Knowledge and practices of food vendors in the city of Abeokuta, Nigeria. Foodcontrol 19:3 96-402.
- Fellows P.J., (2000).Food Processing Technology. Principles and practice. 2nded. Woodhead publishing ltd. Published in North America by CRC Press.
- Raheena Begum (2008).A Textbook of Food, Nutrition and Dietetics. Sterling Publishers ltd. New Delhi, India.
- Simon & Schuster (2004).The Science and Lore of the Kitchen on Food and Cooking. MC Gee Publishers Harold, New York.

United Kingdom Office of Public Sector Information. Food safety act 1990.

World Health Organization (2002).Global Strategy for Food Safety. Geneva.

WHO (2010).Prevention of Food-borne Diseases. Five keys to safer food. Retrieved 2010-12-10.

WHO & Center for Disease Control and Prevention (2003). Report 0" food Poisoning outbreak in private homes.

WHO (1987) Prevention and Control of Intestinal Parasitic Infections, Vol. 749 P 7-18. Geneva.

Yates, Daniel, S., David S., Moore & Daren S. Stames (2008).The Practice of Statistics. 3mm. Freeman. ISBN 978-0-71670309-2.