

## Patronage of Street Food Vendors and Its Implications on Consumers Health in Nigeria: Study of Ekpo Abasi Community Calabar, Cross River State

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### Abstract

**Problems:** In spite of the perceived poor food safety and hygiene practices among street food vendors and the efforts made by government, health workers and non-governmental organizations through health education, sensitization campaigns and other workshops to create awareness on the dangers associated with patronage of road side foods including exposure to foodborne diseases, it was observed that there is still high patronage of street vended foods in EkpoAbasi Community especially by students of Cross River State University (UNICROSS) who are the major occupants of the study area. Food borne diseases remain a serious public health challenge, especially in rural communities where standard of sanitation and the general level of hygiene is poor. It is the second leading cause of illness and death among vulnerable groups namely infants, young children, the elderly, pregnant women and those with diseases such as Acquired Immunodeficiency Syndrome (AIDS), cancer, and diabetes that weaken their immune systems. Thus, this study examined patronage of street food vendors and how it affects the health of consumers in EkpoAbasi Community Calabar, Cross River State, Nigeria. **Approach:** Descriptive research design was adopted for the study. A sample of 125 consumers of street foods in EkpoAbasi Community was selected for the study using accidental sampling technique. Instrument for data collection was structured questionnaire while simple percentage was used to analyze the data collected from the 125 respondents and presented on frequency tables. **Findings:** Findings of the study shows that lack of knowledge on food hygiene among consumers, cheaper offerings by vendors as well as convenience of consumers significantly influence the patronage of street food vendors and indirectly affect the health of consumers in EkpoAbasi community. The study further revealed that foodborne diseases common among consumers of street food such as diarrhoea, typhoid fever and cholera posed negative impact on the health of consumers. **Conclusion:** Based on these findings, it was recommended amongst others that, street food vendors should be given basic training on food safety and hygiene practices by community health workers. Also, the Local Government Authority should provide vendors with appropriate infrastructures such as access to clean water and sewage systems in order to promote food and personal hygiene practices. Finally, community members should be given intensive health education on the dangers associated with patronage of street food vendors. This will enable them make informed decisions on how to curb the identified challenges associated with patronage of street food vendors in the study area.

**Keywords:** Patronage, Street Food Vendor, Implications, Consumers Health, Nigeria, EkpoAbasi Community, Calabar, Cross River State, Foodborne diseases, UNICROSS.

## **Introduction**

Street foods play an important socioeconomic role in meeting food and nutritional requirements of city consumers at affordable prices to the lower- and middle-income groups and are appreciated for their unique flavours and convenience (Khairuzzaman et al., 2014)<sup>[1]</sup>. Street foods also ensures food security for low income urban population and livelihood for a significant proportion of the population in many developing countries. According to Rane (2021)<sup>[2]</sup> street foods are described as wide range of ready-to-eat foods and beverages or prepared at home and consumed on the streets without further preparation. These food items are usually sold by vendors and hawkers in the streets or other similar public places.

While street vended foods are appreciated for their unique flavors as well as their convenience, they are also important in contributing to the nutritional status of the population. In contrast to these potential benefits, it is also recognized that street food vendors are often poor, uneducated, and lack knowledge in safe food handling, environment, sanitation and hygiene, mode of food display, food service and hand washing, sources of raw materials, and use of potable water. Consequently, street foods are perceived to be a major public health risk (Bhowmik, 2020)<sup>[3]</sup>.

Foodborne illnesses of microbial origin are a major health problem associated with street foods (Tabashumet al., 2013; Mamun et al., 2013)<sup>[4, 5]</sup>. Food borne diseases are defined as illnesses caused by eating of contaminated food or beverages (Gardner, 2016)<sup>[6]</sup>. They are otherwise referred to as food poisoning. Eikgaar (2019)<sup>[7]</sup> posited that when diseases caused by contaminated food occurs in an individual, it affects the health of people. Lack of adequate knowledge of food preparation and preservation exposes people to food-borne diseases hence, raising the infant morbidity and mortality rate globally. According to Roday (2018)<sup>[8]</sup>, food borne diseases are harmful illnesses mainly affecting the gastro-intestinal tract and are transmitted through consumption of contaminated food or drinks.

In addition, resistance of foodborne microorganisms in multi-drug made the food safety situation more vulnerable in public health (Ali et al., 2021)<sup>[9]</sup>. Food borne diseases are an important cause of morbidity and mortality worldwide with significant public health impact.

Streets foods play a very important role in the sociocultural settings of most urban dwellers due to its affordability and ensuring food and nutritional security (FAO, 2018)<sup>[10]</sup>. Thus, they tend to be abounding in several urban communities in Ghana and across Africa. However, one important issue raised about street foods is safety, regarding the environment within which they are prepared and sold (Hiamey&Hiamey, 2018)<sup>[11]</sup>. The consumption of street foods continues to increase in urban areas in many countries. This implies that consumption decisions are not only based on food characteristics but on several other factors such as consumers' social status and cultural background, the quality of foods and other external aspects (Asiegbu et al., 2015)<sup>[12]</sup>. However, there exist no research study on the factors that influence street vended local foods consumption in EkpoAbasi.

In many developing countries, such as Nigeria which Cross River State is one of its components, food borne diseases issue tends to be under-reported in diseases journals, newspapers, radio, and television, among others (Mahtab, 2018)<sup>[13]</sup>. The statistics of those suffering from food borne disease are not adequately kept because of less interest in this aspect, but record have shown that, many people especially in rural communities are suffering from food borne diseases or illness due to ignorance of hygienic practices especially among street food vendors who are massively patronized by residents of Calabar. This problem formed the bedrock for this research on patronage of street food vendors and health of consumers in Nigeria.

The role of the food handlers especially the food vendors in effectively reducing the risk of food borne diseases is critically important as they are in direct contact with the consumers. They are the least challenging in terms of implementing food safety control measures. Food borne diseases remain a serious public health challenge, especially in rural communities where standard of sanitation and the general level of hygiene is poor. It is the second leading cause of illness and death among vulnerable groups namely infants, young children, the elderly, pregnant women and those with diseases such as Acquired Immunodeficiency Syndrome (AIDS), cancer, and diabetes that weaken their immune systems. It is responsible for the death of over 2.4 million children every year (Cooke, 2020)<sup>[14]</sup>.

Despite the efforts made by government, health workers and non-governmental organizations by way of health education, sensitization campaigns and other workshops to create awareness on the dangers associated with patronage of road side foods including exposure to foodborne diseases, it is noticed that people within EkpoAbasi community who are mostly students and business operatives, still patronizes street food vendors. It becomes imperative to research into the underlying reasons behind street food vendors patronage and how it affects the health of consumers in EkpoAbasi Community Calabar, Cross River State Nigeria.

### **Purpose of the Study**

The major purpose of this study is to examine the patronage of street food vendors and how street vended foods affects the health of consumers in EkpoAbasi Community Calabar, Cross River State, Nigeria.

## **Literature Review**

### *General Overview*

Foodborne illnesses are a growing public health concern worldwide and results from food contaminated by pathogenic microorganisms, mycotoxins or chemical hazards (World Health Organization, WHO, 2018)<sup>[15]</sup>. This concern is heightened by the fact that, worldwide, there seems to be a change in life-style and food consumption patterns as frequency of “eating out” is increasing and commitment to food preparation at home is decreasing (WHO, 2018)<sup>[15]</sup>. The number of reported outbreaks of foodborne illnesses has been high, both in developed as well as developing countries (Osaili et al., 2013)<sup>[16]</sup>.

Global occurrence of foodborne illnesses is of public health importance as both developed and developing countries are affected. In a recent report conducted by the World Health Organization (WHO, 2018)<sup>[15]</sup>, it was revealed that 1 in 10 people fall ill globally due to foodborne diseases while more than 91 million people are affected in developing countries despite various research and intervention measures toward food safety (WHO, 2018)<sup>[15]</sup>. Similarly, 2.2 million children die of diarrhea annually in developing countries (WHO, 2018)<sup>[15]</sup>. However, foodborne diseases are more prevalent in developing countries due to poor hygiene, lack of potable drinking water, contaminated inappropriate food storage facilities and lack of food safety education. However, the problem is exacerbated in developing countries due to economic reasons, poverty, the lack of adequate health care facilities, and the dearth of data regarding foodborne diseases. This greatly compromises the achievement of the Millennium Development Goals (particularly MDG 1, 4, 5 and 6) (WHO, 2018)<sup>[15]</sup>. The safety of street vended foods is therefore one of the most pressing health and safety issues facing most developing countries since it leads to both public health and social consequences.

### *Patronage of Street Food Vendors due to Lack of Knowledge on Food Hygiene Affect the Health of People*

Food hygiene refers to the conditions and measures necessary to ensure the safety of food from production to consumption. Food can become contaminated at any point during slaughtering or harvesting, processing, storage, distribution, transportation and preparation. Lack of adequate food hygiene can lead to foodborne diseases and death of the consumer (Rammutla, 2016)<sup>[17]</sup>. All over the world people are seriously affected every day by diseases that are caused by consuming unhygienic and unsafe food. These infections negatively affect the well-being of both male and female residents in our communities (Redmond & Griffith, 2019)<sup>[18]</sup>. Foodborne diseases result from eating foods that contains infectious or toxic substances due to poor hygiene practice by food vendors (World Health Organization - WHO, 2018)<sup>[15]</sup>.

Food hygiene is vital for creating and maintaining hygienic and healthy conditions for the production and consumption of the food that we eat (Rammutla, 2016)<sup>[17]</sup>. Proper food hygiene is very important when it comes to food preparation. Without washing hands and kitchen tools, diseases may easily spread (Schlundt et al., 2014)<sup>[19]</sup>. Knowledge of food hygiene essentially entails the food vendors' awareness of things to be done or things to be put in place, in the course of either acquiring raw food materials, preparing food or serving food to consumers, so that food safety is achieved. This knowledge

encompass knowing that obtaining raw materials (perishable and non-perishable food items) for food preparation from good sources, the correct storage methods for different food items, proper separation of raw food items from ready-to-eat food, the need to wash hands correctly after being exposed to certain contaminants, proper waste management, the importance of cooking food at the right temperature and for the correct duration, the importance of proper dressing & observance of personal hygiene, the importance of proper washing of fruits and vegetable, availability of wholesome portable water for drinking etc., all have critical roles in ensuring the safety of food/drink for the unsuspecting consumers (Otu, 2014)<sup>[20]</sup>.

Food vendors may contaminate food by poor personal hygiene, cross-contaminating raw and processed food, as well as inadequate cooking and improper storage of food (WHO, 2018). Maintaining high food safety levels in school food services is very important because any incidence can affect a high number of residents (Osaili et al., 2013)<sup>[16]</sup>.

More so, Matthew (2001)<sup>[21]</sup> conducted a study to evaluate hygiene standards in food houses in a typical rural environment in Ghana. The results revealed that there is a significant relationship between washing of hands with detergent before and after handling of food and prevention of food contamination, there is a significant relationship between wearing of headgear to cover hair against falling into food and prevention of food contamination and covering of food against flies significantly relate to prevention of food contamination. Based on the findings, it was recommended that hygiene education should be given to food house operators to give them awareness and enlighten them on the importance to maintain hygiene standard in the course of administering food for public consumptions among others (Matthew, 2001)<sup>[21]</sup>.

The way vendors cook foods is as important as the way they prepare and store them. Inadequate cooking is a common cause of food poisoning. Cross contamination from raw to cooked foods, such as from hands or utensils, can also cause food poisoning. Most foods, especially meat, poultry, fish and eggs, should be cooked thoroughly to kill most types of food poisoning bacteria (WHO, 2018)<sup>[15]</sup>. Matthew (2001)<sup>[21]</sup> stated that food should be cooked to a temperature of at least 75 °C or hotter. When food is cooked, it should be eaten promptly, kept hotter than 60 °C, or cooled, covered and stored in the fridge or freezer. Some people are more at risk from food poisoning than others. Vulnerable groups include pregnant women, young children, the elderly and anyone with a suppressed immune system including residents in these categories. Special care should therefore be taken when preparing, cooking, serving and storing food for these groups (WHO, 2018)<sup>[15]</sup>.

Consumers have a reasonable expectation that the foods they purchase have been produced and processed under hygienic condition and that the food has not been adulterated by addition of any biological, chemical, or physical hazard. These expectations are regularly enforced by regulations that govern production, processing, distribution and retailing of foods and drugs in any country. In Nigeria for example, this task is performed by National Agency for Food Drug Administration and Control (NAFDAC). So much emphasis is placed on food safety that necessitated the World Health Organization (WHO, 2018) <sup>[15]</sup> formulating a general principle of food hygiene which basically are: Prevent contaminating food with pathogens spreading from people, pets and pests; separate raw from cooked foods to prevent contaminating the cooked food; Cook food for the appropriate length of time and at the appropriate temperature to kill pathogens; Store food at the proper temperature, and use safe water and raw materials.

A study by Mulugeta and Bayeh (2021)<sup>[22]</sup> captioned “the sanitary conditions of food service establishments and food safety knowledge and practices of food handlers in Bahir Dar town, Ethiopia” sought to investigate the food safety knowledge and practices of food handlers and to assess the sanitary conditions of food service establishments in that town. The study was done in May 2021 among 455 food handlers. In introducing the study, they stated some important facts about food hygiene. These include: (1) Food service establishments could serve as sources of foodborne illnesses and food handlers contribute to foodborne illness outbreaks. (2) According to WHO (2019)<sup>[23]</sup> food handling personnel play important role in ensuring food safety throughout the chain of food production and storage. (3) The hands of food service employees can be vectors in the spread of foodborne diseases because of poor personal hygiene or cross-contamination. Studies point out that most outbreaks result from improper food handling practices. (4) Lack of basic infrastructure, lack of knowledge of hygiene, absence of potable water, lack of proper storage

facility and unsuitable environments for food operations (such as proximity to sewers and garbage dumps) can contribute to poor microbial quality of foods. Inadequate facilities for garbage disposal posed further hazards. (5) Inadequate time and temperature control and cross contamination are responsible for food poisoning outbreaks. (6) A USA based study suggested that improper food handling practices contribute to about 97% of foodborne illnesses in food services establishments and home.

According to Mwamakamba et al. (2021)<sup>[24]</sup> many cases of foodborne disease occur due to basic errors in food preparation or handling either in food service establishments or at home. Educating food handlers, including consumers therefore, can significantly reduce the chances of contracting foodborne illnesses and the effects of outbreaks, as well as improve public health. Food safety education programmes need to target certain segments of the population who, either directly have a role in food preparation and/or have increased vulnerability to foodborne diseases (Mwamakamba et al., 2021)<sup>[24]</sup>. The problem of foodborne diseases are more prominent in developing countries due to prevailing poor food handling and sanitation practices, inadequate food safety laws, lack of financial resources to invest on safer equipment, and lack of education for food handlers. Hand washing is a precautionary measure to protect against the spread of disease and is one of the primary practices to reduce the transfer of bacteria from person to food contact surfaces. In developing countries, up to estimated 70% of cases of diarrheal diseases are associated with consumption of unwholesome food (Annor&Baiden, 2021)<sup>[25]</sup>. According to Mulugeta and Bayeh (2021)<sup>[22]</sup> most food vendors have good knowledge about food hygiene but poor knowledge in practice where they handle raw materials for food without washing their hands, fondled their bodies while preparing food.

#### ***Patronage of Street Food Vendors due to Cheaper Offerings Affect the Health of People***

Price is the attribute that influences the choice of street food vendors or restaurant among the low-income earners. Thus, price was shown to be important in the selection of a food service in the majority of the studies that investigated it. For instance, Baek et al. (2006)<sup>[26]</sup> showed that Korean and Filipino consumers alleged price to be the most relevant factor in the choice of a restaurant. Mill (2017)<sup>[27]</sup> observed that price is another factor restaurant's consumer consider when selecting a restaurant. If they perceive that the value is less than the price paid, they are likely to evaluate the dining experience negatively. In the same vein. Mulles and Woods (2014)<sup>[28]</sup> asserted that restaurant consumers use price as a measure for the quality of the restaurant, assuming that an expensive restaurant serves better food and offers between qualities. Also, Sweeny et al. (2021)<sup>[29]</sup> commented that a low price may increase the probability of choosing a particular restaurant, while a low price may also decrease consumer perceptions of restaurants quality. In addition, Knutson, (2020)<sup>[30]</sup> found that price is the third most important factor in the selection of fast-food restaurants. However, in other studies (Liu & Jang, 2019; Park, 2014)<sup>[31, 32]</sup>, price was considered to be an attribute of major importance when compared to other factors. Furthermore, price is one of the attributes that positively influence the patronage of vendor's sales outlets especially among the low-income earners. Menu price is very important in the selection of a food selling outlets in many studies that investigated it (Atinkut et al., 2018)<sup>[33]</sup>.

Food choice is not only influenced by food quality but also by price, being familiar with the type of food served as well as vendor's physical environment. Street food is very important in Nigeria because of relative low nature of earnings by Nigerian consumers. Undoubtedly, a good food vendor must be conversant with what consumers need and desired when dining out. Undoubtedly, price of food, also, influence, the, choice, of, restaurant, among, the, low, income, earners. Furthermore, price was shown to be important in the selection of a food service in the majority of the studies that investigated it (for instance, Baek et al., 2006)<sup>[26]</sup>.

Recently, Umeanyika et al. (2021)<sup>[34]</sup> investigated the determinants of consumer patronage of food vendors in Nigeria with reference to south eastern part of Nigeria. The specific objectives of the study were to investigate the influence of food familiarity, price and vendor's physical environment on consumer patronage of food vendors. The findings of the study showed that menu familiarity and price had positive significant influences on consumer patronage. These findings have many implications to the stakeholders, policy makers, marketers, consumers, potential vendors and future researchers. Moreover, the study

recommended that street food vendors should continue to provide familiar menu options in order to boost consumer's patronage. It was also recommended that food vendors should continue to provide menu at affordable price in order to increase consumer patronage.

#### ***Patronage of Street Food Vendors due to Convenience of Consumers Affect the Health of People***

With the present geometric growth of Nigerian population, there has been an increase in street food businesses. The tremendous rise is necessitated due to the fact that Nigeria is one of the fastest growing countries in the world; expected to be the fourth by 2050; surpassing countries like Japan, Brazil and Pakistan (Shoyemi, 2014)<sup>[35]</sup>. Thus, the increase in population is a good market opportunity for food business. Furthermore, Shoyemi, (2014)<sup>[35]</sup> maintained that increased urbanization and changing work roles contribute significantly to the growth of restaurants and fast food in Nigeria. As the demand for food outside from home increases, there is opportunity for growth in the eatery and restaurant industry (Olise et al., 2015)<sup>[36]</sup>. Pertinently, south south/ south eastern part of Nigeria, especially Igbo and Ibibio ethnic group formed the economic stronghold of Nigeria since they have tight trade schedule (Orugun&Nafiu, 2014)<sup>[37]</sup>. Some people do businesses outside their house and may not have enough time to eat food from their house. Thus, they represent an admirable target market where street food vendors can proactively take the initiative in a highly competitive dining world.

Due to problem of lateness to work or lack of food in the house, many people have resorted to eating outside the home. It therefore becomes imperative to take a closer view at the activities of some of the food handlers and food vendors found everywhere around the community. Therefore, adequate attention to health education of food handlers is very important, to change their belief towards health and behaviour that can deteriorate personal, community hygiene and improve health status of individuals that consume such food.

Scholars have expressed interest in the role of physical environment, or "atmospherics" on customer patronage (Kotler & Armstrong, 2021)<sup>[38]</sup>. The physical environment itself may produce feelings of excitement, pleasure, or relaxation. Consequently, various aspects of atmospherics may be used by customers as tangible cues to assess the quality of services provided. A range of atmospheric elements within a service setting include visual and auditory cues such as function, space, design, color, and music. The atmosphere of an establishment is shown to be a relevant factor that influences the choice of eatery outlet (Laroche et al., 2015)<sup>[39]</sup>. However, Jang et al. (2021)<sup>[40]</sup> only found moderate importance of atmospheric condition. In a comparative study, Stewart et al. (2015)<sup>[41]</sup> found that the significance of the vendor's physical environment is positively related to fine-dining restaurant, and also significantly related to fast-food restaurants. Also, dining atmospherics has significant effects on customers' positive emotions, negative emotions, and perceived value (Liu & Jang, 2019)<sup>[31]</sup>.

Furthermore, Tan and Yeap (2021)<sup>[42]</sup> observed that this attribute was highly perceived by consumers in selecting family and fine-dining type restaurants, but not in the choice of quick service ones. Kim et al. (2020)<sup>[43]</sup> also found that this factor was more important in the choice of fine-dining and casual-dining restaurants than in those of the buffet type. Blešić et al. (2018)<sup>[44]</sup> found that vendor's physical environment is positively related to street food vending patronage intention as well as patronage behaviour.

#### ***Foodborne Diseases Common among Consumers of Street Food and their Impact on Health of the People***

According to Gardner (2016)<sup>[6]</sup>, some of the foodborne disease includes cholera, diarrhoea, salmonella, food poisoning, Lassa fever, cholera, typhoid fever, diarrhea, typhoid fever resulting to vomiting among others. These are illnesses contacted from eating food or beverages that have been contaminated, spoiled, attacked by bacteria, pest, rodents and other vermin, such as flies, cockroaches, rat among others. Food borne disease occurs in places with poor sanitation such as street food vendor's outlets. In this unit, three out of these diseases will be highlighted here:

#### ***Cholera, Diarrhoea and Typhoid Fever Diseases***

In 2021, the global number of cholera reported cases decreased. However, during 2013, cholera outbreaks still affected several continents and continued to pose a serious public health problem among

developing world populations with non-reported in Africa whereas between 2001 and 2019, 93% to 98% of total cases worldwide were reported from that continent (WHO, 2021)<sup>[45]</sup>. Cholera is a serious bacterial disease that can cause severe diarrhea and dehydration. The disease is usually spread through contaminated water. It is a diarrhoeal disease that is very sudden in onset. It is characterized by a massive loss of body fluids through diarrhoea and vomiting leading to severe dehydration which can be fatal.

Cholera is caused by bacteria called *Vibrio cholerae*. The disease's deadly effects are the result of a strong toxin known as CTX that is produced by these bacteria in the small intestine. CTX interferes with the normal flow of sodium and chloride when it binds to the intestinal walls. When the bacteria attaches to the small intestine's walls, the body begins to secrete large amounts of water that leads to diarrhea with rapid loss of fluids and salts (WHO, 2021)<sup>[45]</sup>. Immediate treatment is necessary because death can occur within hours with severe case of cholera, even if healthy before being infected. Modern sewage and water treatment have effectively eliminated cholera in most countries.

Diarrhoea is derived from the Greek word 'diarroia' meaning 'flowing through' and is defined as the passage of three or more loose or liquid stools per day or more frequent passage than is normal for the individual (World Health Organization, 2007)<sup>[46]</sup>. It is usually a symptom of an infection in the intestinal tract, which can be caused by a variety of bacterial, viral and parasitic organisms. Infection is spread through contaminated food or drinking-water, or from person-to-person as a result of poor hygiene (WHO, 2017)<sup>[47]</sup>. Diarrhoea is the passing of increased amounts (more than 300g in 24 hours) of loose stools and can be acute (short term) or chronic (long term) lasting more than 2 to 3 weeks. Most people are affected by diarrhoea at sometimes in their lives. It is often accompanied by stomach pains, feeling sick and vomiting. It is usually due to consumption of contaminated drinking water, which contain bacteria, undercooked meat and eggs or inadequate kitchen hygiene (UNICEF, 2016)<sup>[48]</sup>.

In the words of Mahtab (2018)<sup>[13]</sup> Diarrhoea is mainly caused by bacteria or viral infection and food poisoning. About seven (7) children dies of diarrhoea every minute, mainly due to poor quality of drinking water and malnutrition which still affect the majority of the world population (Mahtab, 2018)<sup>[13]</sup>. Proper health education, adequate mobilization and sensitization of people (especially those living in rural settings) will contribute immensely to maximum and efficient management/prevention of diarrhoeal diseases.

Typhoid fever, also known as enteric fever, is caused by the Gram-negative bacterium *Salmonella entericaserovarTyphi*. The disease is mainly associated with low socio-economic status and poor hygiene, with human beings the only known natural hosts and reservoir of infection. Estimates for the year 2000 suggest that there are approximately 21.5 million infections and 200,000 deaths from typhoid fever globally each year (Bhan, 2005; Bhutta, 2006; Crump, 2004)<sup>[49-51]</sup>. It is thus considered one of the most serious infectious disease threats to public health on a global scale, with particular concern over the rapid and widespread emergence of resistance to multiple antibiotics (Akinyemi, 2005)<sup>[52]</sup>.

The global burden of disease estimates for typhoid were based on a total of 22 community-based incidence studies with 19 from continents other than Africa and only three from Africa. On the basis of these data and a prediction rule based on climatic and socio-economic features, continental estimates of disease burden were derived (Crump, 2004)<sup>[51]</sup>. These estimates suggested a moderate incidence of typhoid of 10-100 cases/100,000-person years in most African countries, with the incidence highest in childhood. In East Africa, incidence was estimated at 39/100,000-person years. Recently, increasing amounts of data on the prevalence of different pathogens found in sick children presenting to health facilities in Africa have been reported. These data have considerably raised the profile of non-typhoidal salmonella infections (Graham, 2000)<sup>[53]</sup>. To date, however, these data have not been used to examine the burden of disease attributable to typhoid.

### ***Empirical Review***

Nonato et al., (2016)<sup>[54]</sup> in a study on nutritional issues concerning street foods analyzed the characteristics of street foods with emphasis placed upon food security and nutrition, food safety, risk of foodborne diseases, overweightness and obesity, as well as other chronic non-communicable diseases. The study revealed that street foods are a source of culturally accepted, inexpensive, convenient and often

appealing foods for both urban and rural people worldwide. However, street foods are often seen as possessing nutritional components associated with an unhealthy diet and potentially holding a higher risk of contamination by physical, chemical and biological agents, thus, becoming a serious concern in terms of food safety. Nonato et al.<sup>[54]</sup> noted that street foods can cause the emergence of foodborne diseases, due to the ease of contamination by pathogenic and non-pathogenic microorganisms, and the development of chronic non-communicable diseases, since the street foods usually have high quantities of carbohydrates and fats. The study concluded that the consumption of street foods contributes towards a given population meeting their nutritional needs. However, due to the lack of facilities in street mobile vending of foods, cheaper raw materials, as well as insufficient knowledge of good manufacturing practices linked to street vendors, street foods may cause foodborne diseases and chronic non-communicable diseases.

In a study on predictors of consumer patronage of street food vendors in a typical developing economy context, Ayodele and Panama (2016)<sup>[55]</sup>, the factors that predict street food patronage were examined in Anambra State, Nigeria. Analysis of the data showed that attitude, subjective norms, perceived behavioral control, food quality and cultural influence are significant in predicting street food patronage with perceived behavioral control as the best predictor, followed by subjective norm, cultural influence, attitude and food quality in that order.

Similarly, Khairuzzaman et al., (2014)<sup>[1]</sup> carried out a study on food safety challenges towards safe, healthy, and nutritious street foods in Bangladesh. It was posited that the quality and safety of street foods is determined by numerous factors such as the business organization, regulatory aspects, technical aspects related to the preparation, preservation and display of food sold in the streets, the consumer perspective, and educational programs. In order to improve the conditions of street food vendors and to make sure that the food sold does not jeopardize public health. The researchers also stated that the first and foremost necessity is to create awareness that food vendor should maintain certain quality standard. In many areas, street foods are sold and food safety issues are not taken into consideration neither on the producer nor on the consumer side. Consumers tend to look mostly at the price and might be already accustomed to the taste of unhealthy meals. Vendors, on the other hand, have a very small margin of profit and are incentivized to keep expenses low by utilizing low quality ingredients and disregarding costly hygienic practices.

Furthermore, Umeanyika et al., (2021)<sup>[34]</sup> carried out a study on consumer motivations and patronage of street food vendors in South-East of Nigeria. Specifically, the study sought to ascertain the influence of food quality and quality of service delivery on consumer patronage of street food in South East of Nigeria. The findings revealed that food quality had a positive and significant influence on consumer patronage. It also showed that quality of service delivery had no significant influence on consumer patronage. The study's findings have many valuable implications to many stake holders, policy makers, marketers, consumers and scholars. The study recommended amongst others that street food vendors should continue to improve on quality of food and also put enough efforts by cooking quality menu that enhances consumer patronage of street food vendors.

Iwu et al., (2017)<sup>[56]</sup> conducted a study on knowledge, attitude and practices of food hygiene among food vendors in Owerri, Imo State, Nigeria. It was revealed that 32% and 46% of the respondents received training on food hygiene and environmental health worker inspection respectively. It was also revealed that, there were statistically significant relationships between knowledge, attitude, formal training on food hygiene and the level of food hygienic practices. Okojie and Isah (2014)<sup>[57]</sup> examined the sanitary conditions of vending sites as well as food handling practices of street food vendors in Benin City, Nigeria. This study showed that street food vending sites in Benin City were sanitary and that food vendors had good food handling practices.

## **Research Methodology**

### ***Study Area***

This study was conducted in EkpoAbasi Community, Calabar South Local Government Area of Cross River State. Calabar South Local Government Area administration headquarters is situated at Anantigha, in the Southern part of Cross River State. It was created in 1997 from the former Calabar

Municipal Local Government Area. It has an area of 264 km<sup>2</sup> and lies 4 meters above sea level with a population of 191,630 as estimated by the National Population Commission (NPC, 2006)<sup>[58]</sup>. It is bounded by Calabar Municipality to the North, in the South by Akpabuyo Local Government Area, while in the East by Atlantic Ocean and Akpabuyo Local Government Area and in the west by Calabar River with longitude 8° 19' East of the Greenwich meridian and latitude 4° 58' North of the equator.

Calabar South climate is tropical with two main climate conditions which are the wet and dry seasons. The wet season begins from the months of April to October, and a dry season spanning from the month of November through the month of March yearly. The major occupation in Calabar South is fishing. Others include farming, trading, artisan and civil service work. (Ering, 2020)<sup>[59]</sup>.

### ***Sampling Procedure***

The researcher employed accidental sampling technique in conveniently selecting 125 street food consumers in Ekpo Abasi Community for the study. This sampling technique was best suitable for the study because it allowed for timely completion of the study and involvement of only consumers who were available for the study as at the time of data collection.

### ***Methods of Data Collection***

This study made use of primary data obtained from the respondents directly through the use of questionnaire and secondary data obtained from past research works such as journals, internet materials, text books etc. The questionnaire was constructed by the researcher and has two (2) major parts: Part 1: Background information of respondents and Part 2 featured the questionnaire items. A total of 20 items were raised in Part 2 of the questionnaire. The items were close-ended with Yes and No options for the respondents to choose from. For easy administration of the instrument, the researcher used two (2) research assistants so as to complete the procedure on time. It took a duration of two week to complete this exercise.

### ***Data Analysis***

Data obtained from the 125 copies of questionnaire administered to the respondents were analyzed using simple percentage and presented on frequency tables.

## **Results and Discussions**

### ***Data Presentation on the Demographic Data of Respondents***

Table 1 shows that out of 125 respondents, 54 respondents representing 43% were males while the majority being 71 (57%) were females. In the analysis based on the age of respondents, a total of 70 respondents representing 56% were between the ages of 18-30 years; those between 31-50 years were also 34 (27%) while those between 51-70 years were 21 (17%).

Out of the 125 respondents, 19 respondents representing 15% had primary education, 27 (22%) had secondary education while the remaining 79 (63%) respondents had tertiary education. Concerning occupation of respondents, 75 (60%) were students, 20 (16%) respondents were civil servants while the remaining 30 (24%) were into various businesses. Finally, in the analysis on marital status of street food consumers, a total of 84 (67%) were single, 37 (30%) of the respondents were married while only 4 (3%) were separated.

**Table 1: Demographic Characteristics of Respondents**

Variables	Frequency	Percentage (%)
<b>Gender</b>		
Male	54	43
Female	71	57
Total	125	100
<b>Age</b>		
18 – 30 years	70	56
31 – 50 years	34	27
51 – 70 years	21	17
Total	125	100
<b>Educational Status of Street Food Consumers</b>		
Primary education	19	15
Secondary education	27	22
Tertiary education	79	63
Total	125	100
<b>Occupation of street food consumers</b>		
Student	75	60
Civil Servant	20	16
Business	30	24
Total	125	100
<b>Marital Status of street food consumers</b>		
Single	84	67
Married	37	30
Separated	4	3
Total	125	100

**Source:** Field Survey, 2023.

### Analysis of research questions

#### *How Patronage of Street Food Vendors due to Lack of Knowledge on Food Hygiene Affects the Health of Consumers*

After analysis of the results in table 2, it was revealed that 70 (56%) of the respondents agreed that they do not perceive any risk associated with patronizing street food vendors while 55 representing 44% disagreed. A total of 80 (64%) of the respondents said that as Africans, hygiene is not really important provided the food is well cooked while only 45 (36%) said NO. Concerning the item which said “I am aware that poor food hygiene can expose consumers to diseases”, a total of 64 (51%) of the respondents said YES while 61 (49%) said NO. Out of the 125 respondents, 78 (62%) agreed that street food vendors lack necessary resources to maintain high standard of hygiene while 47 (38%) disagreed. Finally, 60 (48%) of the total respondents said when properly covered, flies cannot contaminate street foods while 65 (52%) disagreed. Since the total number of those who answered YES under item 6-10 were more than those who said NO, it was agreed and concluded that patronage of street food vendors due to lack of knowledge on food hygiene affects the health of consumers. Analysis of Table 2 showed that the total number of those who answered “Yes” under item 1-5 were more than those who answered “No”. Since the total number of those who answered YES under item 6-10 were more than those who said NO, it was agreed and concluded that patronage of street food vendors due to lack of knowledge on food hygiene affects the health of consumers. This finding corroborates Mulugeta and Bayeh (2021)<sup>[22]</sup> in a study in May 2021 among 455 food handlers. Findings revealed that among the 455 subjects, 99 (21.8%) have had food hygiene training and that there was statistically significant association between the sanitary conditions and license status of the establishments. This finding is also in tandem with Mwamakamba et al. (2021)<sup>[24]</sup> who revealed that many cases of foodborne disease occur due to basic errors in food preparation or handling either in food service establishments or at home. They noted that educating food handlers, including consumers, therefore, can significantly reduce the chances of contracting foodborne illnesses and the effects of outbreaks, as well as improve public health.

**Table 2:** Responses on how Patronage of Street Food Vendors due to Lack of Knowledge on Food Hygiene and the Health of Consumers

S/N	ITEMS	YES	%	NO	%
1	Inadequate access to solid waste disposal facilities result in indiscriminate disposal in open space and surface drains	70	56	55	44
2	Uncontrolled dumping of wastes destroys the beauty of the environment	80	64	45	36
3	Exposure to hazardous waste in dumpsites affects human health	64	51	61	49
4	Residents who stays close to solid waste dump sites are exposed to several diseases	78	62	47	38
5	Solid waste dump sites serve as breeding ground for reptiles and flies	60	48	65	52
Total		352	281	273	219
Mean score		= 352/5 = 70	56	=273/5 = 55	44

**Source:** Field Survey, 2023.

#### *How Patronage of Street Food Vendors due to Cheaper Offerings Affect the Health of Consumers*

Results in tables 3 revealed that 100 (80%) of the respondents agreed that they patronize street foods vendors because their offerings are cheap while 25 representing 20% disagreed. A total of 112 (90%) of the respondents said that with as low as N300, they can eat street food to my satisfaction while only 13 (10%) said NO. Concerning the item which said "Eating outside is far cheaper than preparing food at home", a total of 120 (96%) of the respondents said YES while 5 (4%) said NO. Out of the 125 respondents, 110 (88%) agreed that their regular vendor is very considerate and can add extras without charge while 15 (12%) disagreed. Finally, 105 (84%) of the total respondents said with little funds, they enjoy food varieties when patronizing food vendors compared to when they cook at home while 20 (16%) disagreed. Since the total number of those who answered YES under item 6-10 were more than those who said NO, it was agreed and concluded that patronage of street food vendors due to cheaper offerings affects the health of consumers. Analysis of Table 3 revealed that the total number of those who answered "Yes" under item 6-10 were more than those who answered "No". Since the total number of those who answered YES under item 6-10 were more than those who said NO, it was agreed and concluded that patronage of street food vendors due to cheaper offerings affects the health of consumers. This finding is supported by Sweeny et al. (2021)<sup>[29]</sup> who posited that a low price may increase the probability of choosing a particular restaurant, while a low price may also decrease consumer perceptions of restaurants quality. In addition, Knutson (2020)<sup>[30]</sup> also affirm that price is the third most important factor in the selection of fast-food restaurants. However, in other studies conducted by Liu and Jang (2019)<sup>[31]</sup> and Park (2014)<sup>[32]</sup>, price was considered to be an attribute of major importance when compared to other factors. This finding also corroborates Atinkut et al. (2018)<sup>[33]</sup> who opined that price is one of the attributes that positively influence the patronage of vendor's sales outlets especially among the low-income earners. The researchers added that menu price is very important in the selection of a food selling outlets in many studies that investigated it.

**Table 3:** Responses on How Patronage of Street Food Vendors due to Cheaper Offerings Affect the Health of Consumers

S/N	ITEMS	YES	%	NO	%
6	I patronize street foods vendors because their offerings are cheap	100	80	25	20
7	With as low as N300, I can eat street food to my satisfaction	112	90	13	10
8	Eating outside is far cheaper than preparing food at home	120	96	5	4
9	My regular vendor is very considerate and can add extras without charge	110	88	15	12
10	With little funds, I enjoy food varieties when patronizing food vendors compared to when I cook at home	105	84	20	16
Total		547	438	78	62
Mean score		109	88	16	12%

**Source:** Field Survey, 2023.

### *Why Patronage of Street Food Vendors due to Convenience of Consumers Affect the Health of Consumers in the Study Area*

Results in table 4 shows that 90 (72%) of the respondents agreed that they are more comfortable eating outside than eating alone at home while 35 representing 28% disagreed. A total of 110 (88%) of the respondents said that satisfying one's cravings with little funds is one of the causes of consumer patronage of street food vendors while only 15 (12%) said NO. Concerning the item which said "I enjoy cool evening breeze while patronizing street food vendors", a total of 120 (96%) of the respondents said YES while 5 (4%) said NO. Out of the 125 respondents, 110 (88%) agreed that they prefer to pay for street food than to pass through the stress of cooking while 47 (38%) disagreed. Finally, 105 (84%) of the total respondents said their tied schedule does not permit them to cook, thus, their continuous patronage of street food vendors while 20 (16%) disagreed. Since the total number of those who answered YES under item 11-15 were more than those who said NO, it was agreed and concluded that patronage of street food vendors due to convenience of consumers affects the health of consumers.

Analysis of table 4 indicated that the total number of those who answered "Yes" under item 11-15 were more than those who answered "No". Since the total number of those who answered YES under item 11-15 were more than those who said NO. It was therefore agreed and concluded that patronage of street food vendors due to convenience of consumers affects the health of consumers. This finding is in line with Nonato et al. (2016)<sup>[54]</sup> who revealed that street foods are a source of culturally accepted, inexpensive, convenient and often appealing foods for both urban and rural people worldwide. The finding is also affirmed by Orugun and Nafiu (2014)<sup>[37]</sup> who stated that South-South/ South Eastern part of Nigeria, especially Igbo and Ibibio ethnic group formed the economic stronghold of Nigeria since they have tight trade schedule. Some people do businesses outside their house and may not have enough time to eat food from their house. Thus, they represent an admirable target market where street food vendors can proactively take the initiative in a highly competitive dining world, providing convenience and ease for consumers.

**Table 4:** Responses on the reasons why patronage of street food vendors due to convenience of consumers affect health of consumers

S/ N	ITEMS	YES	%	NO	%
11	I am more comfortable eating outside than eating alone at home	90	72	35	28
12	Satisfying one's cravings with little funds is one of the causes of consumer patronage of street food vendors	110	88	15	12
13	I enjoy cool evening breeze while patronizing street food vendors	120	96	5	4
14	I prefer to pay for street food than to pass through the stress of cooking	110	88	15	12
15	My tied schedule does not permit me to cook, thus, my continuous patronage of street food vendors	105	84	20	16
Total		535	428	90	72
Mean score		107	86	18	14

**Source:** Field Survey, 2023.

### *Foodborne Diseases common among Consumers of Street Food and their Impact on Health of the People in EkpoAbasi*

Majority of the respondents (95)76% agreed that they have had stomach upset after patronizing street food vendors while 30 representing 24% disagreed. A total of 85 (68%) of the respondents supported the position that diarrhoea is commonly associated with patronage of street food vendors due to lack of proper food hygiene by the vendors while only 40 (32%) said NO. Concerning the item which said "I treat typhoid fever regularly since I started patronizing street food vendors", a total of 75 (60%) of the respondents said YES while 50 (40%) said NO. Out of the 125 respondents, 77 (62%) agreed that cholera is a common disease amongst residents of EkpoAbasi community while 48 (38%) disagreed. Finally, 69 (55%) of the total respondents said they have had to vomit out after patronizing street food vendors while

65 (52%) disagreed. Since the total number of those who answered YES under item 16-20 were more than those who said NO, it was agreed and concluded that foodborne diseases common among consumers of street food such as diarrhea, typhoid fever and cholera have negative impact on health of the people in EkpoAbasi. (Table 5).

Analysis of table 5 revealed that the total number of those who answered “Yes” under item 16-20 were more than those who answered “No”. Since the total number of those who answered YES under item 16-20 were more than those who said NO, it was agreed and concluded that foodborne diseases common among consumers of street food such as diarrhea, typhoid fever and cholera have negative impact on health of the people in EkpoAbasi. This finding is in line with Nonato et al. (2016)<sup>[54]</sup> who revealed that street foods are a source of culturally accepted, inexpensive, convenient and often appealing foods for both urban and rural people worldwide. However, street foods are often seen as possessing nutritional components associated with an unhealthy diet and potentially holding a higher risk of contamination by physical, chemical and biological agents, thus, becoming a serious concern in terms of food safety. Nonato et al. (2016)<sup>[54]</sup> noted that street foods can cause the emergence of foodborne diseases, due to the ease of contamination by pathogenic and non-pathogenic microorganisms, and the development of chronic non-communicable diseases, since the street foods usually have high quantities of carbohydrates and fats.

**Table 5:** Responses on Foodborne Diseases common among Consumers of Street Food and their Impact on Health of the People In EkpoAbasi

S/N	ITEMS	YES	%	NO	%
16	I have had stomach upset after patronizing street food vendors	95	76	30	24
17	Diarrhoea is common associated with patronage of street food vendors due to lack of proper food hygiene by vendors	85	68	40	32
18	I treat typhoid fever regularly since I started patronizing street food vendors	75	60	50	40
19	Cholera is a common disease amongst residents of EkpoAbasi community	77	62	48	38
20	I felt nauseous and then vomited after patronizing street food vendors	69	55	56	45
Total		401	321	224	179
Mean score		80	64%	45	36

**Source:** Field Survey, 2023.

### Conclusion

While street vended foods are appreciated for their unique flavors as well as their convenience, they are also important in contributing to the nutritional status of the population. In contrast to these potential benefits, it is also recognized that street food vendors are often poor, uneducated, and lack knowledge in safe food handling, environment, sanitation and hygiene, mode of food display, food service and hand washing, sources of raw materials, and use of potable water. Consequently, street foods are perceived to be a major public health risk. In many areas, street foods are sold and food safety issues are not taken into consideration neither on the producer nor on the consumer side. Consumers tend to look mostly at the price and might be already accustomed to the taste of unhealthy meals. Vendors, on the other hand, have a very small margin of profit and are incentivized to keep expenses low by utilizing low quality ingredients and disregarding costly hygienic practices. In the course of the study, it was observed that patronage of street food vendors was determined by factors such as lack of knowledge on food hygiene, cheaper offerings by the vendors, as well as convenience of consumers. The devastating nature of foodborne diseases arising from patronage of street food vendors calls for intensive health education on the dangers associated with patronage of street food vendors among residents of EkpoAbasi Community, Calabar South Local Government Area. This will help consumers of street food vendors make informed decisions on how to curb this menace.

### **Recommendations**

1. Street food vendors should be given some basic training on how to safely prepare and store food by nutritionists.
2. All street food vendors operating within EkpoAbasi community should be medically examined and certified fit before they are permitted to function accordingly
3. The Local Government Authority should provide vendors with appropriate infrastructures like access to clean water and sewage systems in order to promote their hygiene practices
4. Street food vendors should be encouraged to partake in awareness raising programmes and given access to microcredit to boost their businesses.
5. Food vendors should not only wear clean aprons as part of food aesthetics, but they should also perform periodic medical examination and store food items in such a way that they are free of contamination.
6. Food vendors should maintain standard environmental and personal hygiene while preparing and packaging or serving food products to consumers.
7. Provision of adequate health centres in all communities by the Government to enhance easy access by residents of all ages who may be victims of foodborne diseases should be given priority.
8. Health workers should educate members of EkpoAbasi Community especially consumers of street foods on the importance of food hygiene so as to reduce the rate of food-borne diseases.
9. The government and non-governmental organizations should give special attention to the prevention of cholera, diarrhoea and typhoid fever among residents as these conditions are the commonest foodborne diseases in the study area.
10. Community members should be given intensive health education on the dangers associated with patronage of street food vendors among residents of EkpoAbasi Community, Calabar South Local Government Area. This will help consumers of street food vendors make informed decisions on how to curb this menace.

### **Implications of the Study to Community Health Practice**

- Findings of this work will be beneficial to community health practitioners by providing contemporary information on the level of patronage of street food vendors and how it affects the health of consumers, thereby helping them to step up health and nutrition education in the community in order to promote adequate diet and food hygiene.
- Findings of this study will add to the body of literature available to community health workers on the health implication of the observed unhygienic conditions common among street food vendors, thereby, providing as a reference material during health education and other enlightenment programmes in the community.
- Furthermore, this study will help community health workers to know the common foodborne diseases among consumers of street food in the area of study and the ways of preventing/managing them.

### **Suggestions for Further Studies**

The researcher suggests the following topics for further research studies:

1. Replication of the research topic in another area of study inclusive of other sub-variables that were not captured in this research study.
2. Foodborne diseases and their impacts on the health of residents in EkpoAbasi Community, Calabar South Local Government Area of Cross River State.

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