UNIVERSITY OF EDUCATION, WINNEBA

LOCAL FOOD JOINTS IN THE TAMALE METROPOLIS: HYGIENE, FOOD SAFETY PRACTICES AND REGULATIONS

NINA HALIDU ADAMU

2021

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A Thesis in the Department of HOSPITALITY AND TOURISM EDUCATION, Faculty of VOCATIONAL EDUCATION, submitted to the School of Graduate Studies, University of Education, Winneba, in partial fulfilment of the requirements for the award of Master of Philosophy (Catering and Hospitality) degree

OCTOBER, 2021

DECLARATION

STUDENT'S DECLARATION

I, NINA HALIDU ADAMU, declare that this thesis, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

SIGNATURE: ……

DATE: ……

SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of thesis laid down by the University of Education, Winneba.

NAME OF SUPERVISOR: DR. GILBERT OWIAH SAMPSON

SIGNATURE ……

DATE ……

ACKNOWLEDGEMENT

I am humbled by the guidance and protection of the Almighty Allah for the gift of life offered me.

I wish to express my sincere gratitude to Dr. Gilbert Owiah Sampson, my thesis supervisor who has taken time of his schedules to offer his comments, invaluable advice and painstaking efforts in reading through this thesis.

My profound gratitude again goes to my super wonderful husband Dr. Jamal Mohammed for his unconditional love, support and care.

To all the lecturers in the Hospitality and Tourism Education Department, thank you all and may the good Lord bless you all.

Again, to all the food joint operators in the six communities in the Tamale Metropolitan Assembly where I gathered my data from and the Environmental Health Service Officers, I say God bless you all.

Last but not the least, I would like to thank my big sister Hajia Hajara Halidu and her dear husband Sulemana Fuseini for their constant love and support from day one to date, may Allah bless them abundantly.

Lastly, to all those who in diverse ways contributed to the success of this thesis, I am so much grateful to you all.

DEDICATION

This thesis is dedicated to the Almighty Allah for helping me through my study. My sincere dedication goes to my late parents in blessed memory, may Allah be pleased with them for given me a foundation in education.

The thesis is also dedicated to my super wonderful husband, Dr. Jamal Mohammed and the Halidus.

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ABSTRACT

Local food joints in the Tamale Metropolis have become very popular due to the lucrative nature of this business. This notwithstanding, most of the food joints in the Tamale Metropolitan Assembly are often susceptible to unsafe abuses, in many cases from the raw material handling, through processing to the finished stage of consumption thus contaminating the food. The main objective of the study was to investigate the hygienic and food safety practices of Food Joints in the Tamale Metropolis in the Northern Region of Ghana. The study used a mixed research approach, and also adopted a descriptive cross-sectional design. A total of 240 food vendors were randomly sampled from Six (6) communities in the Tamale Metropolis using simple random sampling. The study used the questionnaire along with observation to collect data from local food joint operators. In addition, an interview was conducted for two health inspectors. The data was entered into a statistical software for quantitative statistical analysis (Statistical Package for the Social Sciences–SPSS, 23.0). Data analysis was descriptive statistics involving computation of mean, counts, standard deviation and correlation to facilitate the interpretation of the data gathered. The major findings of the study were that the physical state of the food vending places was satisfactorily healthy; the safety of food vendors' food handling practices was compromised; the institutional set-up was not effectively promoting conformance to the food vending controls; and most of the foods were contaminated above acceptable levels for consumption. The study again revealed that 31.2% of the respondents obtained their raw food transported to them by vehicle, 68.8% obtained their raw food by human transport, and this could compromise the safety of food vendors' food handling practices; In addition, 68.8% of the respondents stored their raw foods through means of refrigeration and 31.2% of the respondents transports home their raw foods as a means to store them. All these practices contribute in contaminating the food. Monitoring and regulating had a statistically significant positive relations with the performance. The sanitary inspectors were able to inspect between 35 and 40 food outlets. 31.2% of the respondents have undergone cookery training whiles 68.8% have not undergone cookery training, The study concluded that: sanitary and hygienic practices among respondents are demonstrated on how the food is handled from the source to the food vendor's place. The nature of the raw state of the food, their carriage and storage contribute to hygiene issues. The study recommended food vendors to practice proper personal hygiene and to avoid making direct skin contact with food. The Metropolitan Assembly and the Food and Drugs Authority were advised to advocate for political neutrality in their duties and to advocate for provision of logistics to facilitate inspection.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Foods joints are ready- to- eat food and beverages prepared and sold by vendors or hawkers on streets and other public places (FAO, 2013). The springing up of local food joints in nooks and crannies of Ghana has been recognized as one of the forces that has boosted the economy of the sub region (World Bank, 2013). Urbanization has made many Ghanaians to abandon the culture of cooking and/ or eating at home (Annor & Baiden, 2011). Foods sold at these eateries are available, accessible and sometimes affordable. Joint foods contribute significantly to the diet of many people in the developing world (FAO 2010; Sunitha, Manjula, & Depur, 2011). Food joints provide millions of people daily with a wide variety of foods that are relatively cheap and easily accessible (Mensah et al., 2002).

In Ghana, the food joint is a million-dollar sector. In 2014, the sector was estimated to employ about 75,000 street food vendors in urban Accra with an annual turnover of US $100million (Tomlins, 2014). The operation of fastfood joints, restaurants and chop bars has increased in the Ghanaian community, especially in the urban areas (Ayeh-Kumi et al., 2016). Nonetheless, food safety is a serious concern with food joints, as these foods are most of the times cooked and sold under unsanitary conditions, with limited access to safe water, sanitary services, or waste disposal facilities (Rheinländer et al., 2008). In developing countries like Ghana, factors such as poverty, lack of adequate health care facilities, lack of adequate food inspectors and other public health workers have led to the issue of foodborne diseases and illness becoming one of the leading causes of morbidity and death among the population

(Abelson, Forbes & Hall, 2006). According to FAO (2002) figures, over 1.8 million people from developing and under-developed countries die from foodborne diseases annually.

However, in Ghana the responsibility regarding inspection and regulation of the activities of food vendors are shared among the "Food and Drugs Authority (FDA), under the Ministry of Health (MOH); the Environmental Health and Sanitation Units (EHSUs) of the Municipal, Metropolitan and District Assemblies (MMDAs), under Environmental Health and Sanitation Directorate (EHSD) of the Ministry of Local Government and Rural Development; the Ghana Tourism Authority (GTA), under the Ministry of Tourism and Diaspora Relations (MTDR); and the Environmental Protection Agency (EPA), under the Ministry of Environment, Science, Technology and Innovation" (Ghana Tourist Board, 2008; FAO/WHO, 2009). These Agencies inspect, regulate and monitor the activities of the food joints and vendors. Their responsibility is geared towards ensuring the preparation and distribution of healthy foods by the food vendors to Ghanaians. Thus, to prevent and reduce the incidence of foodborne diseases and ailment, and their related morbidity cases and other related consequences.

In Ghana, per the estimates of the Ministry of Food and Agriculture and the World Bank (2015), 1 in every 40 Ghanaian suffers foodborne disease or ailments annually which translates into 420,000 reported cases annually with the death rate of 65,000 which cost the government $69 million annually (World Bank, 2017). It has even been suggested that the figures could be far higher than these as individuals who patronize health facilities with foodborne illness is very low due to poverty and lack of access to medical facilities in some communities across the country and as such, will rely on traditional herbal medications. Operations of local food joints in Ghana, on

some occasions, has often been considered unsanitary and low in quality seemingly as a result of the bad environmental conditions under which they operate and also due to the lack of proper or enough education as far as preparation and handling of food is concerned (Annan-Prah et al., 2011).

In relation to this, the Institute of Statistical, Social and Economic Research ISSER (2002) explains that inadequate and ineffective education and training for food vendors in relation to health and sanitation, lack of appropriate infrastructure coupled with non-compliance of regulations and enforcement of laws which governs the operations of food vending on the streets by local and responsible authorities has been observed to give rise to low hygienic practice of these local food joint operators. The FAO (2017) also affirms to the fact that unsanitary food vending practices may result in serious food poisoning and hence the outbreak of diseases in a community. The FAO report mentioned quite a lot of issues including inadequate knowledge and skills among local food joint operators and street food vendors relating to causes of food-borne diseases, poor sanitation and hygiene, unfitting use of seasonings, as key risk factors. This, therefore, makes the issue of food safety and regulation across the food joint in the country an issue of massive national importance.

In Tamale, most of the inhabitants especially those employed in the informal sector including the Food Vendors are not educated and as such are poorly informed on food management and hygienic practices. Being uneducated and poorly informed in food management and hygienic practices, these food vendors sell their food in unhygienic conditions, thus under dirty environment, using contaminated water for preparing their food, using utensils that are not well cleaned and sterilized amongst others. The food vendors therefore prepare and sell contaminated food to their customers, spreading food borne diseases and their related consequences. Thus, due to

poor education and lack of training on food management and hygienic practices by food vendors and joints, their vender ship are detrimental to the health conditions of the inhabitants of the Metropolis. As indicated by Kunadu et al., (2016) food joints are prevalent in every location in Ghana but most of them are uneducated and lack the knowledge of proper food handling and management and hygienic practices. This makes Ghanaians susceptible and vulnerable to foodborne diseases and ailment and their related morbidity and other concerns. This reveals the importance and need for education and training to the food vendors in the Tamale Metropolis and the whole of Ghana for that matter, to help curb the plight of the incidence of food borne diseases and their related morbidity and deaths in the Country. The current study will investigate and bright to light the nature and practices of food joints in the Tamale Metropolis to make informed recommendation to help curb the situation.

1.2 Statement of the Problem

Local food joints and food vending on streets is one practice very much known in Ghana. Almost every street in every region of Ghana, evidently has lots of food vending joints providing access to cluster of local foods and in some cases foreign dishes as well (Kunadu, et al., 2016). The practice which is emerging in several parts across the country is attracting and providing job opportunities for people, however, it has also been recognized that local food vendors lack knowledge in safe food handling, environment, sanitation and hygiene, mode of food display, food service and hand washing, and the use of potable water which causes adverse effects to human health and economic consequences of foodborne illness, foodborne injury, and food spoilage (Kunadu,et al., 2016).

Food poisoning is therefore a great concern due to the consumption of unwholesome foods. Food vendors are known to be responsible for food borne diseases and related illnesses due to the poor food handling and management behavior. Angelilo, Vigiani, Rizzo, and Bianco (2000) are of the view that even though food vendors are important in their role of producing food for consumption, they more often contaminate the food they prepare and distribute through the introduction of pathogens in the process of preparation, production, processing, distribution and service. Studies by Akonor and Akonor (2013) indicated food safety is an important public health issue associated with consumption of contaminated water and food, which in most of the cases is through improper handling of food.

In recent times, in the Tamale Metropolis, local food joints are therefore becoming one popular activity. Most of the food joints in the Tamale Metropolis are often susceptible to unsafe abuses, in many cases at all stages of handling products (from the raw material to the finished stage) are often laid open to sources of contamination (Ministry of Health/Ghana Health Service Report, 2015). Moreover, the operators of food joints prepared food in unhygienic conditions, do not use aprons, handled food with bare hands, handled money while serving food and wore no hair coverings. The practice of stirring and reheating left over foods by food joint operators in Tamale Metropolis is very low.

The issue of unhygienic practice among food joints in Tamale Metropolis is associated with inefficient or lack of effective education, training of food vendors on health and hygiene, non-provision of needed infrastructure as well as non-regulation and enforcement of by-laws governing street food vending by local authorities. The study would therefore examine the prevailing sanitation and hygiene practices among

local food joint operators in the Northern region from a comprehensive outlook of food vendors and consumers as well as regulatory and law enforcement bodies in the region.

Unhygienic and poor food management practice are prevalent among food vendors in the Tamale Metropolis. Most of these food vendors in the Metropolis lack food hygiene and sanitation precautions during preparing, cooling, storage and selling to the customers. This sometimes results in cases of food poisoning and deaths of customers. As indicated by (Rheinländer et al., 2008), food safety is a dire concern with food vendors in Ghana as most of them usually cook and sell under unsanitary condition with absolutely low food hygienic practices. The unhygienic and poor food management practices exhibited by the food vendors in the Tamale Metropolis is therefore of great concern since most of the inhabitants of the Metropolis are exposed to the risk of food poisoning and contracting of food borne diseases. In light of this, the current study was set up to properly and adequately investigate food management practices and regulations in the Tamale Metropolis and to bring to light the intensity of the problem in the Metropolis. This would foster the generation of policy recommendations for the Ministry of Health, Food and Drugs Authority and other related agencies to implement in order to curb the situation in the Metropolis and the whole of Ghana for matter. The current study was especially motivated by the lack of adequate studies on the research topic especially in the Northern part of the country.

1.3 Main Objective

The main objective of the study was to investigate the hygienic and food safety practices of Food Joints in the Tamale Metropolis in the Northern Region of Ghana.

1.4 Specific Objectives

Specifically, the objectives of the study were to:

1. Analyze the scope of hygiene and sanitation practices in relation to factors that inform such practices among local food joint operators in the Tamale Metropolis.
2. Assess the nature and effectiveness of hygiene and sanitation education among food joint operators in the Tamale Metropolis.
3. Identify the roles of regulatory agencies as well as monitoring and implementation of by-laws that governs local food joint operation in the Tamale Metropolis.

1.5 Research Questions

The following research questions were addressed in line with achieving the stated objectives:

1. What is the prevailing hygiene and sanitation measures that are practiced by local food joint operators in the Tamale Metropolis?
2. What is the effectiveness of sanitation and hygiene education among local food joint operators in the Tamale Metropolis?
3. To what extent are the regulatory and law enforcement agencies effective in carrying out necessary roles as far as local food joint operation is concerned in the Tamale Metropolis?

1.6 Significance of the Study

Findings from this study will provide insights into a fairly new but evolving research area in hygienic and sanitation measures that are practiced by local food joint

operators in the Tamale Metropolis. The study will contribute to knowledge especially in the dimension of Community Health and help streamline food joint activities in the Tamale Metropolis in the Northern Region of Ghana.

Furthermore, finding of this study would serve as a crucial factor for policy makers and regulators in formulating and enforcing practical and proactive hygiene communication strategy for local food joint operators in the region and the country as a whole. The study would also offer a basis for supplementary study in the practice within other regions of the country.

From the academic perspective, the findings could be used to further research and to better understand the issue of food safety and regulation across food joints in Ghana.

1.7 Scope of the study

The study was limited to the Tamale Metropolis in the Northern Region of Ghana only with great emphasis on the springing up of local food joints in the region. In view of this, the targeted population for the study was local food joint operators who offer ready prepared meals and snacks at public places including market places, lorry stations, school campuses, on the streets as well as other open places in the Metropolis with the exception of restaurants and recognized canteens. Taking into consideration the large size of the Metropolis, information on the activities and locations of some of these local food joint operators was obtained from the Northern Regional Environmental Health Directorate.

1.8 Organisation of the Study

The study was organised in five chapters. Chapter one deals with the introduction. It gives the background to the study, statement of the problem, the main and specific objectives of the study and research questions. It also examined the scope of the study and the significance of the study.

Chapter two also reviewed the related literature on the concept of food, concept of hygienic practices, food hygiene practices, food safety regulation and effect of hygiene practices on food safety. Chapter three discusses the methodology of the study. This is divided into study area, research design, population, sample size and sampling techniques, data collection instrument, data collection procedure and data analysis.

Chapter four is a detailed analysis, discussion and presentation of the data collected and the discussion on the results and findings. Finally, chapter five presents the summary of findings, conclusion, recommendations and areas for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Review

This study was influenced by the Emic and Etic perspective of hygiene behaviour. The emic and etic follows the tradition of psychological studies of folk beliefs (Wundt, 1888) and cultural psychology from "the native's point of view" (Malinowski, 1922).

The perspectives have been explained by Rheinländer (2006) focuses on understanding hygiene and sanitation behaviour from the viewpoint of those involved. It seeks to understand the socio-cultural factors that influence hygiene and sanitation practices among a group of people and argue that motivations for hygienic and sanitation behaviours are socially rooted. The Etic perspective of hygiene and sanitation focuses on observing and assessing performed hygiene practices from a scientist outside view. It places emphasis on sources of contamination and risk of infection. Etic Hygiene from this point of view involves the practice of keeping one's self and surroundings clean, especially to avoid illness and the spread of infection.

2.2 Concept of Hygiene and Sanitation

Sanitation is the effective use of tools and actions that keep the environment healthy including waste management, food preparation, effective drainage and other such mechanisms. Hygiene includes personal practices for good health including bathing, cutting hair/nails and hand-washing (Shuvo, 2018). Food hygiene and sanitation are precaution food sellers make use of during food preparation, cooling, storage and service. Lack of adequate hygiene and sanitation can lead to food poisoning

and death of consumers. The key components of food hygiene, with reference to World Health Organisation (WHO) including the prevention of contaminating food with pathogens spreading from people, pests and pets. "To ensure sanitation and hygiene means food handlers must pay attention to personal hygiene, environment, food preparation and storage as well as the service of food" (Wikipedia, 2014).

According to Shuvo (2018), man has always made strides to cure diseases to prolong and improve life. Diseases that are caused by daily activities and intakes such as hygiene and food, threatens human life and health. As established, contaminated and unhygienic foods in our daily consumptions caused millions of lives all around the world especially in Africa (Dun-Dery, 2012).

Shafie and Azman (2015) indicated that globally, contaminated water and food cause serious health implications to humans. Diseases like Cholera, Diarrhea, Typhoid and Hepatitis A are therefore of great concern to health professionals particularly in Africa where access to education on hygiene is of low quality especially to food vendors. Containers for transporting food materials in some instances are used without cleaning and disinfection. It is therefore sacrosanct that food preparing utensils should regularly be cleaned and disinfected in the food processing processes.

Microorganism are usually transferred by those preparing food both public vendors and those for self-consumptions to the food they are preparing. (Samakupa, 2003). "Low infectious doses of organisms such as Shigella and pathogenic *Escherichia coli* have been linked to hands as a source of contamination" (Snyder, 1998). Poor hygiene has been determined as the mode of transmission. Food joints are the main source of contaminated foods (Liu, Liu, Zhang, Lu, Liang & Huang, 2015).

In Ghana most health care facilities have patients of different ages and background suffering from food related diseases (Agyei-Takyi, 2012). Unhygienic food

can cause dire complications and diseases. Food vendors aimed to satisfy their customers/ consumers and to make profit simultaneously. Food vendors on the streets of Ghana are known to contribute significantly to the Ghanaian Economy. According to the Head of the Food Research Institute in the Unit of Food Engineering and Processing in a survey they conducted, 334 food vendors said they made considerate contribution to the Economy of Ghana. The Street food sector generate 100 million dollars to the economy and a profit of 24 million dollars annually employing 60,000 people. (Kunadu, Ofosu, Aboagye & Tano-Debrah, 2016).

A study conducted by Rheinlander (2012) revealed food vendors have the basic knowledge and information on food safety. The study emphasized on the following mode of selections, (1) appearance of the food vendors, (2) consumers often chose to prioritize price and accessibility of food-not putting much stress on food hygiene, (3) aesthetic appearance of food and food stand . Consumers however relied on neatness, trustworthiness, appearance and other risk avoidance strategies on choosing their desired food vendors (Rheinländer, 2012).

In 1984, FAO/WHO Joint Expert Committee on Food Safety, noted that: "It is not easy to maintain control over food handlers. There is often a rapid turnover and it may be difficult to keep track of them. Medical examinations are costly and do not guarantee the detection of more than a small proportion of carriers of pathogenic organisms. Also, infections may occur after the examinations. Screening for pathogens in stool specimens from food-handlers is not cost-beneficial and is not recommended, and the identification of a carrier is not likely to make a significant contribution to the control of food borne diseases. A much more effective preventive measure, the education of food-handlers in hygienic practices, is most often neglected." “These views were reinforced in 1987 by the second meeting of the WHO Regional Working

Group on Food Safety, held in Kuala Lumpur, Malaysia, which questioned the relevance of the routine medical examination of such personnel". Despite the conclusions of these meetings, the debate has continued among public health authorities and health professionals on the costs, benefits and related merits of food-handling personnel health surveillance, countries still lack uniformity in conducting such surveillance.

2.3 Regulatory and law enforcement agencies ensuring Food Safety in Ghana

Safe food is important in preventing food borne diseases. Merican (2015), has explained that, it is a legal requirement to document food preparation procedures to ensure that food served is safe to eat. Food handlers must read the food safety policy and sign to show that they understand its content. A supervisor must check monthly that the food safety policy is being adhered to and record outcome in the food safety diary. The need to protect the public against infections is of paramount importance in the food industry. Food safety policies and procedures are therefore used to create safety management and such safety polices include procedures, quality assurance and the use of HACCP.

Ensuring food safety is a trans disciplinary task involving government ministries, departments and agencies (MDAs). While the enactments are made by Parliament and the regulations made pursuant to these enactments provide the main corpus of food law, the work of these MDAs are critical for the successful development and application of food laws and improvement in food safety (Fairman & Yapp, 2014). Harmonization of the activities in these MDAs is important in ensuring food safety. The status of food safety legislation institutions is set up with specific mandates derived from various legislative instruments. Most of these legislations need urgent revision to

align with the current trends in modern food regulations. There are two areas of concern; Separation of standards setting and advice responsibilities from standard control and enforcement as well as separation of risk assessment and advice from risk management. Unfortunately, low compliance with food safety policies, and factors influencing compliance to food safety guidelines have been described as complicated and include education and strong institutions (Oliver, 2011; Angelillo et al., 2009).

According to Oliver (2011), ensuring food safety everywhere in the world required appropriate legislations and institutional backing. Ghana over the years has done that to ensure food safety. In Ghana, the Standard Board, Food and Drug Authority and the Ministry of Health, controls and ensures food safety. Ghana Standard Board (GSB) has the major aim of promulgating and establishing of the required standards for ensuring quality in the food industry.

Also, according to Article 3(2) (d), the Standard Board and Food and Drug Authority "maintains the necessary machinery to ensure that goods prepared and manufactured for export are distinctly marked for export only, and to provide for issue of a certificate to the effect that goods comply with known requirement of standards in the country to which they are or about to be consigned, before the export of such goods are permitted. Others include; Article 3(2) (k) to cooperate with representatives of any industry, or with any government department, local authority, or other public bodies or persons with a view to securing the adoption of standards safety" (PNDC LAW 305, Ackah, 2010).

"Institutionally, responsibilities regarding inspection and regulation of the activities of food vendors are shared among the Food and Drugs Authority (FDA), under the Ministry of Health (MOH); the Environmental Health and Sanitation Units (EHSUs) of the Municipal, Metropolitan and District Assemblies (MMDAs), under

Environmental Health and Sanitation Directorate (EHSD) of the Ministry of Local Government and Rural Development; the Ghana Tourism Authority (GTA), under the Ministry of Tourism and Diaspora Relations (MTDR); and the Environmental Protection Agency (EPA), under the Ministry of Environment, Science, Technology and Innovation" (Ghana Tourist Board, 2008; FAO/WHO, 2009).

In the words of Ghana News Agency (2014) "at the national level, all the legislations on food hygiene and safety are passed by Parliament of Ghana (PoG) with the assent of the President. Meanwhile, at the local level also, MMDAs are constitutionally recognized as the local authorities and have legal mandate to enact by-laws regarding food hygiene and safety. Both the FDA and the GTA are mandated to register and inspect catering enterprises while the EHSUs of MMDAs are tasked with the oversight responsibility of protecting public health at the local level. The EHSU therefore, as part of their responsibilities, also conduct food premises inspections and monitor medical examination status of food vendors as part of their work. All these institutions also carry out education and training sessions independently for food vendors across the country and their efforts in this regard are complemented by the Ghana Traditional Caterers Association (GTCA); a union of food vendors in Ghana. GTCA has more than 500,000 registered members scattered across the country and organises capacity building workshops for their members from time to time with the support of the Skills Development Fund (SDF) and Council for Technical Vocational Education Training (COTVET) programme"

"The statistics in 2013 shows that the FDA carried out 18 training sessions to educate street food vendors on food hygiene and safety for almost 3,000 food vendors nationwide while there is evidence of training sessions carried out by the Environmental

Health and Sanitation Units in the various MMDAs, GTA and GTCA for food vendors across the country as well" According to (Ghana News Agency, 2014).

Figure 2.1 shows the institutions ensuring food safety in Ghana

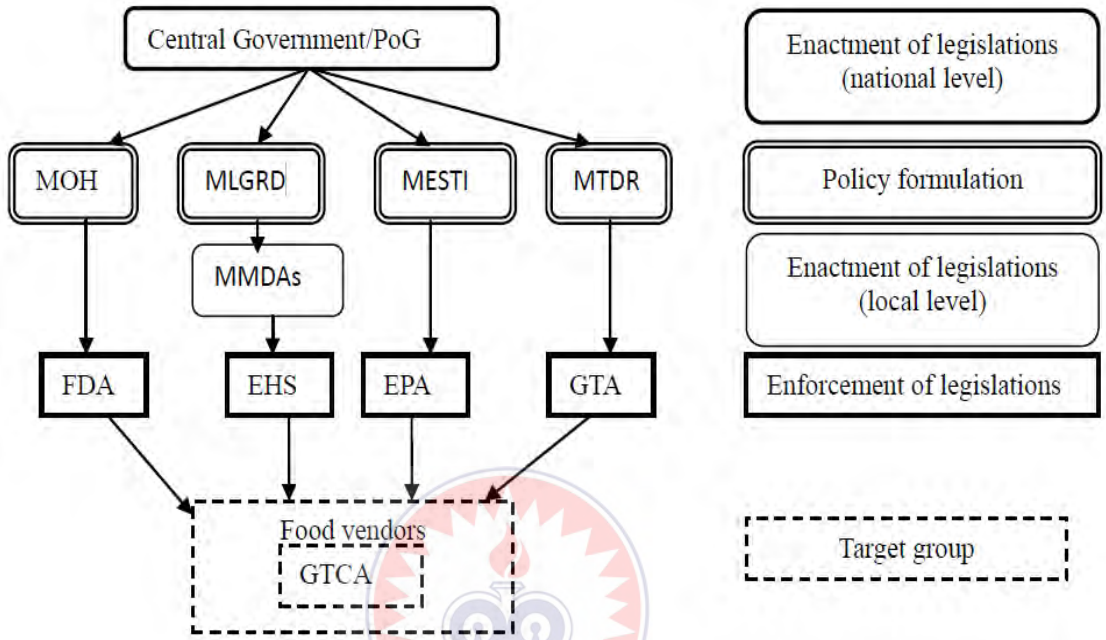

Figure 2.1: Ghana's institutional framework for ensuring food safety

Source: Adopted from Monney et al. (2014)

2.4 Conceptual Framework

Based on the literature and the theoretical reviewed in the preceding sections of this chapter, Henson and Heasman's (1989) conceptual model was considered the most suitable and was therefore reviewed and adopted for the purpose of this study. Some of the inherent strengths for the selection of the Compliance Process Model are that unlike the HACCP model which assumes that food handlers are aware of safety precautions and would willingly comply, the Compliance Process Model points out that small businesses make decisions whether to comply with a regulation based upon what exactly is being required of them. The Decision Process Model (DPM) does not also

confer food safety responsibility solely on the food service operators; rather it ropes in the regulatory agencies whose duty it is to enforce regulation. In spite of its advantage over the HACCP model, the DPM does not account for variables, which may prevent food handlers from identifying and interpreting regulations not to talk of compliance. Yet many researches indicate that non-compliance with food safety measures are influenced by some socio-economic factors. Taking into consideration the limiting factors in the model, the framework has been modified to include variables that account for non-compliance with food safety measures (see Fig 3.). Additionally, caterers are used in place of SMEs because the study is interested in the individual caterers as well as the establishment.

Within the Compliance Process Model, the caterer becomes aware of relevant regulation through an enforcer who might have identified a deviation from the code of practice and for that matter instructs the caterer to make changes. The caterer is made aware of relevant regulation through enforcement interventions which can be in the form of inspection visits, training courses, seminars, workshops, written information and phone calls. After the caterer has been made aware of what needs to be done, she in turn interprets the regulation and takes a decision as to whether the regulation is worth complying with. The interpretation of the relevant regulation may be influenced by such factors as the level of education, level of motivation, religion, ethnic background, traditional beliefs and ignorance. Although this last factor has been isolated as the most single factor that accounts for noncompliance (Fiarman & Yapp 2003; Brown & McKinley, 1982; Knowles 2002), the use of the decision process model does not make this tenable. The model is suggestive that through enforcement interventions, caterers are provided with information regarding food safety hence; other factors also come into play.

Again, through enforcement interventions, enforcer specifies method of compliance, which ensures maximum realization of food safety. Unfortunately, however, a caterer's method of compliance may be influenced by her level of understanding, level of motivation and other beliefs. A study conducted by Taylor (2001) revealed that certain factors do not motivate small scale enterprises to change the old ways of doing things. Factors include the belief that the existing procedures are safe, presumably because people are not dying from eating the food being produced under unhygienic conditions. Another barrier to compliance identified by Taylor was the remoteness of enforcement.

The next phase of the model is where the caterer makes a decision to comply and actually does so. In the course of implementation management is expected to monitor progress as enforcers evaluate procedures. Any ascertained discrepancies are fed back to inform subsequent interventions as postulated by (Steritech Group Inc., 2004). This group of researchers noted that, information gained on the level of compliance with regard to specific risk factors help to shape future intervention strategies in the areas such as employee training, food safety auditing, equipment purchasing and others. In sum DPM establishes regulatory measures, monitors system performance and facilitates continuous improvement. Figure 2.2 shows the adopted framework for the study.

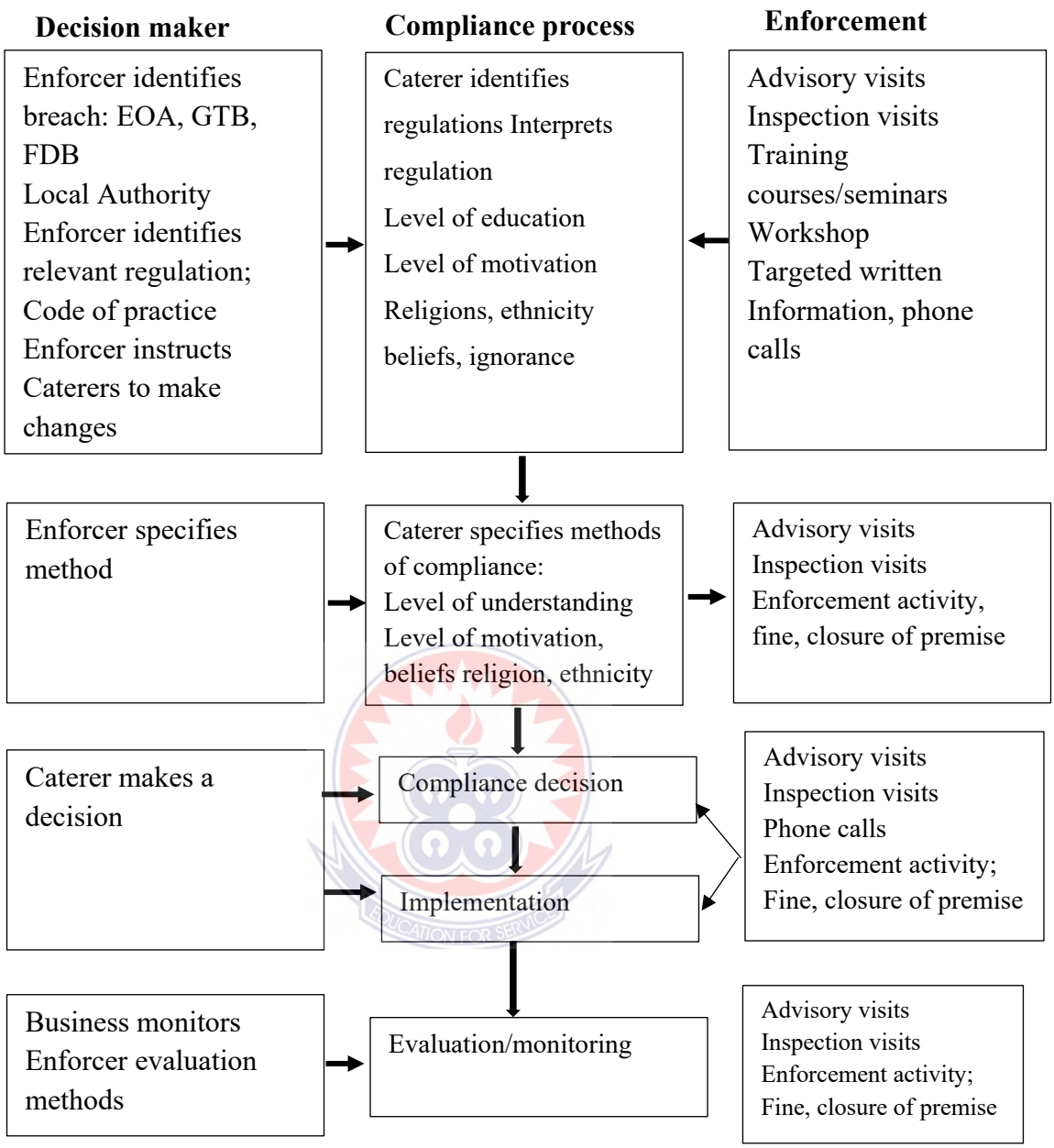

Figure 2.2 Adapted Compliance Process Model for the Study

Source: Adapted from Henson & Heasman (1989).

2.5 Empirical Literature

Previous studies, for instance, Ababio & Lovatt (2015) has reported that food safety and hygiene in Ghana has been prevalent in the country. Their study focused on commercial food. They opined that food joints, food vendors, schools and individual homes contributed

to food borne diseases. They explained that their operations did not make use of food safety measures management systems. They recommended that, regulation and ensuring adherence to food safety measures will curb the plight.

Ababio & Adi (2012) investigated food safety and hygiene awareness in the Kumasi metropolis. They stated that about 89% of the people know of food borne diseases and believed hygienic practices could prevent food borne diseases. They realised that, 30% of the respondents prepared food in the open while another 32% prepared in wooden structures, 67% of food preparation areas had no process flow in mind. The study recommended that, education and training on food safety measures and good hygiene are needed to ensure food safety.

Dun-Dery & Addo (2016) study was descriptive cross-sectional in design with a multi-stage sampling technique applied in selecting 266 food vendors. The results showed that, there was almost a universal awareness of food and personal hygiene among vendors (90%). The majority of the vendors adhered to basic hygiene practices (87%). The study realised that storage of food for resale (Chi-square=256.329, p-value<0.001) and the use of hand in serving food, (Chi-Square=17.035, P<0.001) were the main predictors of food hygiene practice among vendors. The study recommended that it will be prudent to ensure continuous education and enforcement of policy regulations within the food industry.

CHAPTER THREE

METHODOLOGY

3.1 Research Design

Descriptive cross-sectional study was adopted for this study. As a widely accepted method in educational research, the descriptive cross-sectional approach of research is effective and efficient. According to Labree (2013), descriptive cross-sectional design best aims at describing, observing and documenting situations as they naturally occur rather than explaining them. Descriptive cross-sectional covers a range of social characteristics in its processes. A descriptive cross-section design was appropriate to examine the issue of food safety and regulation across the food joints in the Tamale Metropolis.

3.2 Population

The targeted population for the study was environmental health service officers, and local food joint operators who offer ready prepared meals and snacks at public places including market places, lorry stations, school campuses, on the streets as well as other open places in the Tamale Metropolis in the Northern Region of Ghana. The environmental health service officers were included in the study to identify the nature and effectiveness of the training needs of food joint operators.

3.3 Sampling Technique and Sample Size

The list of communities of food vendors was obtained from the Tamale Metropolitan Assembly (Sampling Frame-26 Communities' (TMA, 2019)). Six (6) communities were randomly sampled using simple random sampling. The communities

were given number codes (A, B, C, D, E, F, G and so on). Then a simple random sample of six communities were chosen. Because of homogeneity of income, education, culture, religion and other characteristics of the people, any chosen community was appropriate to represent the Tamale Metropolis. From the TMA records, 602 food vendors were registered. Using Krejcie and Morgan table, a population 600 gives a sample of 234. Therefore, the study considered 240 as an approximation for the sample size. Two hundred and forty (240) food joint operators were randomly selected for the study, comprising forty (40) food joint operators from each community in the Tamale Metropolis in the Northern Region. Each community was purposively allocated 40 respondents based on the homogeneity of the communities. The researcher conducted a face-to-face interview with two (2) environmental health service officers in TMA. Therefore, the Sample size was two hundred and forty-two (242).

3.4 Data Collection Instrument

This research made use of questionnaire, interview and observation as the main source of instruments for data collection.

3.4.1 Questionnaire

A self- designed structured questionnaire was used to collect data from 240 food joint operators. A questionnaire consisting of closed-ended was designed for the various food joint operators in the Tamale Metropolis. The items on the questionnaires had options from which respondents selected the options that best suited the extent to which they agreed with the statement. The items addressed particular research questions. The questionnaire sought data on the prevailing hygiene and sanitation measures that are

practiced by local food joint operators, the extent to which regulatory and law enforcement agencies effectively carrying out necessary roles as far as local food joint operation is concerned, and the effectiveness of sanitation and hygiene education among local food joint operators in the Tamale Metropolis. The questionnaire was initially prepared in English and translated into the language which the food joint operators understand for effective data collection.

3.4.2 Interview

The researcher conducted a face-to-face interview with two (2) environmental health service officers in the TMA to gather essential information to complement the questionnaire and also what the observation was not able to provide. The interview schedules consisted of open-ended based on the objectives of the study. The interview schedule addressed details on the respondents' views and opinion on the hygiene and sanitation measures that are practiced by local food joint operators, the extent to which regulatory and law enforcement agencies effectively carrying out necessary roles as far as local food joint operation is concerned, and the effectiveness of sanitation and hygiene education among local food joint operators. The interview enabled the researcher to obtain clear and in-depth information.

3.4.3 Observation

Observation as a data collection instrument, systematic describes behavior and events. Observation could be done in two ways: the situation where the observer takes part in the activities (Participant Observation); and situation where the observer sits somewhere and take note of what is happening in the study area. That is, he watches rather than take part (Direct Observation).

An observation check-list was designed and categorized under environmental hygiene which consisted, personal hygiene and food hygiene was used. The construction of the observation check-list was guided by WHO's rules and guidelines for ensuring food safety. This approach was useful to the study because the researcher needed to observe how food joint operators practice hygiene in their activities. The naturalistic observation helped the study to throw more light on the information gathered from the questionnaire and the interview.

3.5 Data Collection Procedure

A letter of introduction was obtained from the researcher's Head of Department, University of Education, Winneba-Kumasi Campus to carry out the research work in the selected study area. The researcher visited the Tamale Metropolitan Assembly (TMA) and the food joint operators in the Tamale Metropolis and when the permission was granted, the researcher requested from the food joint operators and environmental health service officers at TMA some information and data needed to support the findings. In addition, questionnaires were administered and interview were conducted personally.

3.5.1 Data Analysis

The data was entered into a statistical software for quantitative statistical analysis (Statistical Package for the Social Sciences–SPSS, 23.0). Data analysis was descriptive statistics involving computation of mean, counts, range, standard deviation to facilitate the interpretation of the data gathered. This made the study free from personal values and biases.

The Miles & Heberman framework (1998) for qualitative data analysis was used to analyze the interview. It provides a comprehensive analysis of the responses which aided significantly in addressing the research objective.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Demographic Characteristics of the Respondents

The study captured some demographic characteristics of respondents who participated in the study. This includes gender, educational background and number of children, marital status and age of the respondents as shown in Table 4.1

Table 4.1: Demographic Characteristics of the Respondents

Variable	Frequency	Percent
Gender		
Male	69	29.0
Female	171	71.0
Total	240	100.0
Marital status		
Divorced	88	36.5
Married	152	63.1
Total	240	100.0
Number of Children		
One	77	32.1
Two	75	31.3
Three or more	88	36.7
Total	240	100.0
Educational Level		
Junior high	46	19.2
Senior high	18	7.5
Tertiary	4	1.6
No Formal education	172	71.7
Total	240	100.0
Age of **Respondents**		
19 – 28	74	30.8
29 – 38	157	65.4
39 and above	9	3.8
Total	240	100.0
Reasons for Selling on the Street		
Lack of employment	75	31.3
Interest	77	32.1

Inheritance	88	36.7
Total	**240**	**100.0**
Type of Food		
Rice	139	57.9
TZ	75	31.3
Kenkey	12	5.0
Fufu	14	5.8
Total	240	100.0
Reasons for Continue Selling		
Patronage by customers	165	68.8
Community food and preference	75	31.3
Total	240	100.0

Table 4.1 details demographic characteristics of respondents; out of the total respondents who participated in the study, 29% were males and the remaining 71% were females. The results on gender of respondents revealed that females constitute a large majority of those who were food vendors in the study area. In similar studies, Boateng (2014) found that 90% of food vendors in Dunkwa-Offin in the Upper Denkyira East municipality were females. Also, Monney et al. (2014) showed that majority 86% of food vendors in the Sunyani Township were females while a recent study by Aovare (2017) indicated 94% female dormancies in food vending in Bolgatanga. These studies confirmed that most food vendors in different localities in Ghana are females. Therefore, the current study further buttressed the knowledge that food vending in Ghana is mostly carried out by females. Again, 63.7% of the respondents were married whiles 36.7% of the respondents were divorced. Analysis of the demographic data revealed that 19.2% of the participants of the study have had Junior High School education, 7.5% had completed Senior High School, 1.6% had completed Tertiary education and 71.7% had No formal level of education. The educational attainment of the respondents was also explored, given that some studies found out that educational level of

vendors is a significant determinant of the hygienic practices in food vending (Chukuezi, 2010; DunDery, 2012; Mensah et al. 2002; Monney et al., 2013). The current study revealed that the highest proportion of the respondents 71.7% had no formal education. Earlier studies that examined the educational attainment of food vendors presented mixed results. The Food and Agriculture Organisation (2012) found out that a relevant number of informal street food vendors had a secondary level of education (57% in Freetown, 47% in Accra). Boateng (2014) found out that the highest proportion of food vendors in Dunkwa-Offin were those with no formal education, whereas Monney et al. (2014) found out that most of their respondents in Sunyani had basic education. This study therefore adds to the side of the results, which indicated that food vendors usually have no formal educational attainment. From the analysis of the results obtained in Table 4.1, 30.8% of the respondents are between the ages of 19-28 years, 65.4% of the respondents are 26-38 years of age, and 3.8% of the respondents are 39 years of age and above. In similar studies, Boateng (2014) used a class interval of 10 and found out that teenagers as young as 15 years were working as food vendors in Dunkwa-Offin and those older than 48 years formed the least represented age cohorts in his sample. Monney et al. (2014) also found out that the least represented in their sample of food vendors in Sunyani were teenagers, whereas the majority were those within the age brackets of 31-35 years. The results of the current study therefore bear similarities to earlier studies, in terms of the age of food vendors. Also, the study revealed that 31.3% of the respondents started selling on the street because of lack of equipment, 32.1% had been selling the food on the street because they had interest in it and finally, 36.7% of the respondents inherited. Table 4.1 further reveals the kind of food the respondents sell, the results

shows that 57.9% of the respondents sell rice, 31.3% of the respondents sell TZ, 5.0% and 5.8% were respondents who sell kenkey and fufu respectively. Lastly, the results reveal why they sell the kinds of food on the street, 68.8% sell the kind of food because it is being patronize by customers and 31.2% had interest in selling the kind of food because it is community food and preference.

4.2 Food hygiene and sanitary practices among Food Vendors

The study captured some hygienic and sanitary practices of respondents who participated in the study. The results of the hygiene and sanitary practices is presented in Table 4.2 below.

Table 4.2: Hygiene and Sanitary Practices

Variable	Frequency	Percent
Sources of Raw food		
Market	75	31.3
Farm	88	36.7
Supplier	77	32.1
Total	240	100.0
Medium of Transporting raw food		
Vehicle	75	31.3
Human transport	165	68.8
Total	240	100.0
Food Storage		
Refrigerated	165	68.8
Transported home	75	31.3
Total	240	100.0
Do you prepare all food here in the premises?		
Yes	75	31.3
No	165	68.8
Total	240	100.0
Place of Preparing Food		
Home	165	68.8
Premises	75	31.3
Total	240	100.0

Do you prepare the food alone?		
No	240	100.0
Those who assist in food preparation		
Relatives	152	63.3
Hired help	88	36.7
Total	240	100.0
Do you sell all the food that you prepare?		
Yes	75	31.3
No	165	68.8
Total	240	100.0
Management of Leftovers		
Give to street children	77	32.1
Carry home	75	31.3
Preserve for the next day	88	36.7
Total	240	100.0
Participation in cookery training		
Yes	75	31.3
No	165	68.8
Total	240	100.0
Sources of cookery skills		
Observation	163	67.9
Trial and error	77	32.1
Total	240	100.0
Major consumers		
Students	88	36.7
Casual workers	77	32.1
Office workers	75	31.3
Total	240	100.0
Sources of Water		
Tap	163	67.9
Home	77	32.1
Total	240	100.0
Do you have enough water		
Yes	163	67.9
No	77	32.1
Total	240	100.0
Do you have a license		
Yes	75	31.3
No	165	68.8
Total	240	100.0
Do the public health Officers inspect your food		
Yes	152	63.3
No	88	36.7
Total	240	100.0

If yes, how often do they inspect your food		
After two months	75	31.3
Once a year	77	32.1
Others	88	36.7
Total	240	100.0
Once the public health officers come, what do they inspect		
Environment	88	36.7
License	75	31.3
Kind of food sold	77	32.1
Total	240	100.0
Do you go for medical examination		
Yes	165	68.8
No	75	31.3
Total	240	100.0
If yes, how often		
Less than two months	75	31.3
After two months	77	32.1
After six months	88	36.7
Total	240	100.0

Table 4.2 deals with sanitary and hygienic practices of respondents; out of the total respondents who participated in the study, 31.3% were respondents who got their raw materials from the market, 36.7% were those who got from farmers and 32.1% were those who had their raw materials from suppliers. The study of FAO (2017) corroborated this finding as unsanitary food vending practices which often are attributed to sources of raw food. Again, handling of these raw food if not properly managed leads to serious hygiene issues (Dwomfour-Asare & Agyapong, 2014). The study also revealed that 31.2% of the respondents obtained their raw food transported to them through vehicle and 68.8% of the respondents received their raw food by human transport. In addition, 68.8% of the respondents stored their raw foods through means of refrigeration and 31.2% of the respondents' transport home their raw foods as a means to store them. Table 4.2 further reveals that 31.2% of the respondents prepare all the foods they sell in their premises and 68.8% were food sellers who prepare the

foods somewhere before bringing them to the street to sell. Also, with respondents who prepare the food outside the premises, 68.8% were respondents who prepare it home and 31.2% were respondents who neither prepare the food at the premises nor home. It was also revealed from table 4.2 that respondents do not prepare the food alone, 63.3% of the respondents are supported by their relatives, and 36.7% hired peoples to help them in preparing their foods. Table 4.2 further showed the results on whether respondents sell all the foods prepared, 31.2% were those that sell all the food prepared and the remaining 68.8% were respondents that are unable to sell all the foods prepared. Food prepared and sold in environment not well organized with improper temperatures or food mishandled by vendors raises issues about food hygiene (WHO, 2001, 2003; Muinde & Kuria, 2005; Ghosh et al., 2007) and thus corroborates this current study. With the remaining of the foods left, 32.1% of the food sellers give the remaining foods to the street children, 31.3% carry the remaining foods home and 36.7% preserve the remaining foods for the next day. Furthermore, the results from the study showed that 31.2% of the respondents have undergone cookery training whiles 68.8% on the other hand have not undergone any cookery training. 67.9% were respondents that acquired their skills in cookery through observation and 32.1% were respondents through trial and error acquired their cookery skills. The knowledge and education on food hygiene was found to be a challenge among the respondents. This was corroborated by the study of Barro et al. (2007) and Rheinländer (2006).

The results from the study also shows that 36.7% of the major food consumers of the respondents were students, 32.1% and 31.3% were casual and office workers respectively. 67.9% of the food sellers' tap water from nearby source for their food preparation and 32.1% were those who got their source of water from their homes. 31.2% of the food sellers have license to their business where as 68.8% operate their

business without a license. This result in which most food vendors operate without license is corroborated by a Annor and Baiden (2011) when they found out that, despite government role to regulate the activities of food vendors, many vendors in Accra still operate without license. Lastly, the results reveal whether public health officers inspect food joint vendors' food, 63.3% were food sellers that were being inspected by public health officers whiles 36.7% were food sellers that were not inspected by the public health officers. Also, 31.3% of the food sellers are being inspected by public health officers after every two months, 32.1% and 36.7% were food sellers inspected by the public health officers once a year and others respectively and as such was corroborated by Annor and Baiden (2011). 31.3% of the food joint vendors were inspected by the public health officers to only check and inspect their license whiles 32.1% were inspected to know the kind of food sold by the food joint vendors. 68.8% of food joint vendors have been going for medical examination while 31.2% do not go for medical examination; 32.1% of food vendors go for medical examination after two months and 36.7% were food joint vendors that undergo medical examination after six months. As Merican (2015) puts it, regulatory practices should be paramount on permit for food businesses and therefore, the results that health officers only check their license is not supported by this his study. The vending places were also described in terms of how vendors learnt their trade. This was important in the sense that professional caterers are more likely to have knowledge of safe food practices as compared to unprofessional cooks. It was found out that 67.9 % of the vendors in the total sample were self-taught through observation and learnt from try and error approach. This confirms why only 31% of the vendors had prior professional training. In an observation, it was also noticed that majority of the vendors in casual restaurants were professionals, the majority of those in vending stalls and those who sold on tabletops were not. Similar

findings were made by Boateng (2014) who found out that 90 % of food vendors he studied taught themselves food safety measures.

4.3 Assessing the Effectiveness of Hygiene and Sanitation Education and the Role of Regulatory Agencies and Monitoring and Control on Local Food Joint Operation in the Tamale Metropolis

The study investigated Sanitation and Hygienic Practices and Monitoring and Regulation among Local Food Joints in The Tamale Metropolis. Results were estimated using percentages and frequencies and Pearson's correlation analysis.

Table 4.3: The Effect of Education and Monitoring and Regulation on the Performance of Food Joints

Operational Performance		Education and Training	Monitoring and Regulation
	Correlation Coefficient	0.513	0.463
	P-value	0.000	0.000
	N	240	240

Table 4.3 presents the Pearson's correlation statistics on the effects of the education, monitoring and regulation on the operation performance of food vendors in the Tamale Metropolis. Education and training had a statistically significant ($P < 0.01$) positive effects on the operational performance of food vendors in the Tamale Metropolis. That is, food vendors who received training on cooking practices are more productive and produce healthy behaviour outcomes. This brings an insight about the importance of education and training to food vendors cooking and hygienic conditions. Results of the current study further revealed that monitoring and regulating food vendors also had a statistically significant ($P < 0.05$) positive relations with the performance of the food vendors in the Tamale Metropolis. This means, the following:

regular medical examination and screening of food vendors, sanctioning them on poor sanitary and hygienic practices and regular inspection by safety officers helps to regulate the food selling business and ensure public safety in the Tamale Metropolis. This also will gain both food vendors and their customers' appreciation, as the process helps to bring business, enhance the economic condition of the environment and ensure public safety.

Findings of the study therefore brought evidence that education and training of food vendors as well as the regulation of their food selling processes work hand-in-hand to ensuring the prosperity of food vendors in the Tamale Metropolis and ensuring public safety as well in both the short and long run. Findings of the study were substantiated by Dubik et al., (2018) who studied Food Hygiene and Environmental Practices in Kintampo and revealed that the regulation of the operation of food vendors is helpful to their operations.

Table 4.4: Observation Guide for the Local Food Joint Vendors

Variable	Frequency	Percent
Location of the local food vendor		
Near the roadside	163	67.9
Far from the road	77	32.1
Total	240	100.0
Stand where the food is sold		
On the ground	152	63.3
Off the ground	88	36.7
Total	240	100.0
Visibility of dust inside the premises		
Yes	77	32.1
No	163	67.9
Total	240	100.0
Hair		
Covered	163	67.9
Uncovered	77	32.1
Total	240	100.0

Apron/dust coat		
Used	75	31.3
Not used	165	68.8
Total	240	100.0
Jewelry		
Worn	77	32.1
Not worn	163	67.9
Total	240	100.0
Finger nails		
Short	165	68.8
Long	75	31.3
Total	240	100.0
Garbage receptacles		
Present	163	67.9
Not present	77	32.1
Total	240	100.0
If present, are they used		
Yes	163	67.9
No	77	32.1
Total	240	100.0
Is the person serving the food the same person handling the money		
Yes	240	100.0
If yes, when serving the food, does he/she put on gloves, use tongs or other equipment to prevent direct contact with the food		
Yes	77	32.1
No	163	67.9
Total	240	100.0
Kind of packing material used		
Leaves	88	36.7
Polythene bags	152	63.3
Total	240	100.0
Are the prepared foods protected by suitable covering		
Yes	240	100.0
Kinds of utensils used		
Plastic	75	31.3
Metal	77	32.1
Enamel	88	36.7
Total	240	100.0
Kind of water used for cleaning utensils		

Warm soapy water	240	100.0
Is the water used for cleaning utensils dirty		
Yes	75	31.3
No	165	68.8
Total	240	100.0
Utensils kept above the ground and covered		
Yes	88	36.7
No	152	63.3
Total	240	100.0
Whether containers for food additives covered		
Yes	152	63.3
No	88	36.7
Total	240	100.0
Method of water drainage		
Sewer	88	36.7
Tunnel	77	32.1
Thrown beside the stall	75	31.3
Total	240	100.0
Is the environment free from refuse disposal		
Yes	163	67.9
No	77	32.1
Total	240	100.0
Presence of latrine		
Yes	165	68.8
No	75	31.3
Total	240	100.0
Do the food safety officers come for inspection		
Yes	77	32.1
No	163	67.9
Total	240	100.0
If yes, how often do they come for inspection		
After two months	77	32.1
Others	163	67.9
Total	240	100.0
Have you flouted any food safety rules before		
Yes	240	100.0
If yes, did you face any sanction by the regulatory body		
Yes	77	32.1
No	163	67.9
Total	240	100.0

Table 4.4 deals with Observation Guide for The Local Food Joint Vendors. Out of the total respondents who participated in the study, 67.9% were local food joint vendors that are located near the road side and 36.7% were those far from the road side. Again, 63.3% were food sold on the ground and 36.7% were food sold off the ground. Also, 32.1% were food joint vendors that are venerable to dust and 67.9% were those that are safe from dust. 67.9% were food joint vendors that have their hair covered and 32.1% are those with uncovered hair. 31.2% are food joint vendors that used apron and 68.8% were those that did not use apron. Also, 32.1% and 67.9% were food vendors that worn and do not worn jewelry respectively. 68.8% were food joint vendors with their finger nails being short and 31.2% have their finger nails to be long. 67.9% of the food vendors have garbage receptacles whiles 32.1% of food vendors do not have garbage receptacles. 67.9% of the food vendors with garbage receptacles use them whiles 32.1% do not use the garbage receptacles they have. Also, the same food vendors that serve the food take the money as well as 32.1% of the food vendors put on gloves, use tongs or other equipment to prevent direct contact with the food whiles on the other hand, 67.9% are food vendors that do not wear gloves nor use tongs or other equipment. 36.7% of food vendors used leaves as packing materials for their food and 63.3% use polythene bags. All food joint vendors use suitable coverings to protect the prepared food before selling. 31.3% of the food joints vendors' used plastics as their utensils to serving their customers, 32.1% and 36.7% were food vendors that used Metal and Enamel respectively as their serving utensils. Nicolò (2012) found out that utensils do contribute to food hygiene challenges.

All food joint vendors used warm soapy water in cleaning their utensils; in addition, 31.2% of the food vendors used dirty water to clean their utensils after its usage by the customer's whiles 68.8% of the food vendors used clean water in cleaning

their utensils. 36.7% of food joints vendors covered utensils that are kept above the ground and 63.3% do not cover their utensils kept above the ground. 63.3% were food joints vendors that covered containers for food additives whiles 36.7% were those that do not cover. Again, 36.7% were food vendors with sewer as their method of water drainage, 32.1% and 31.3% were food joint vendors having tunnel and thrown beside the stall respectively as their method of water drainage. 67.9% of food vendors are within an environment free from refuse disposal whiles 32.1% of food vendors are not free from refuse disposal environment. 68.8% of food joint vendors have latrine present in their premises whiles 31.2% on the other hand do not have. 32.1% of food joint vendors were inspected by the food safety officers and 67.9% were food joint vendors who were not inspected by the food safety officers; 32.1% of the food joint vendors were often inspected by the food safety officers after every two months, 67.9% were food vendors inspected every six months. Lastly, all food joint vendors have flouted food safety rules before and as result, 32.1% were those that faced sanction by the regulatory body whiles 67.9% were food joint vendors who has never faced any sanction by the food safety regulatory body.

The study delved into the sanitary characteristics of the food vending sites. This was done through observation of the vending sites. The purpose was to identify whether health and sanitation reasons either implicitly or explicitly manifested in the choice of vending sites of the respondents. The first variable that was assessed among the food vending sites was the presence of open sewage near the premises of the food vending. It was observed that there were no open sewages of the vending sites. While this study asserts that most food vendors practising away from open sewages and gutters, it runs contrary to Ofeei-Akoto's (2015) general claim that food vendors in Bolgatanga sell close to these unclean places. Earlier studies reviewed in this study did not employ such

a disaggregated approach to analyse sanitary conditions of food vending locations. However, the general indication by other studies, have been that food vending sites in Ghana are unkempt (Nurudeen, Lawal & Ajayi, 2014). The study found out that most of the food-vending outlets were located near road side. The sources of water used for cooking was also analysed. It was noted that most of the respondents had access to regular supply of pipe-borne water for cooking. Majority (67.9%) of the food vendors did not have visible dustbins within their premises. Again, the same percentage of the respondents were found to have covered their hair during cooking and serving their consumers. The study also discovered that majority of the local food vendors in the study area did not wear aprons/ dust coat. The results revealed that all the food vendors who participated in the study were the same people serving food and collecting their money at the same time. Only 32.1% of the vendors were wearing gloves while serving and majority of them packaged the food using polythene bags. It was also discovered that even though water for washing utensils were warm and soapy, some 36.7% were dirty and utensils kept on the floor.

Among the measures put forward by FAO (1997) and WHO's (2010) for ensuring hygienic environment for safe food preparation included adequate supply of portable water. In this study, most of the food vendors indicated they had regular supply of potable water for cooking. Boateng (2014) also found most of the food vendors he studied in Dunkwa-Offin to have clean potable water available for cooking and hand washing. This study thus attested to the fact that water for cooking by food vendors in Ghana is usually from a clean source, mostly pipe-borne.

The response on the frequency of health inspection visits to food vendors differed among sanitary inspectors, the Director of FDA and the Municipal Environmental Health Officer. The sanitary inspectors indicated that they visited the

food vendors twice in a month; the Director of FDA responded that the visits were a month apart, and the Municipal Environmental Health Officer responded that the visits were two months apart. This conformed to the various responses given by the food vendors on the visits paid by sanitary inspectors. Although, the responses were varied, they still showed that health inspectors actually pay visits to food vendors to carry out their inspection duties. The sanitary inspectors also indicated that they inspected between 35 and 40 food outlets in a period of one month. The Municipal Environmental Health Officer confirmed that the visits ranged between 50 and 65 outlets per month, and the Director of FDA also added that about 25 to 40 outlets were visited every month.

When asked of the commonest violations that operational food vendors are guilty of, the Director of FDA indicated that the commonest violation was the lack of proper medical approvals but was quick to add that this was due to delays from the authorities in charge of approving medical record and requirements. On the same issue, the Municipal Environmental Health Officer's response was that food vendors are fond of using wet napkins repeatedly, and using the same napkins for washing and wiping plates, as well as cleaning hands. The responses from the sanitary inspectors were more diverse. They pointed out that food vendors often use dirty utensils for cooking; have poor personal hygiene; often expose their foods to flies and dirt when selling; do not have protective clothing like aprons and they also touch the food with their bare hands.

The respondents were asked about the reactions of the inspectors to food vending violations. The Municipal Environmental Health Director noted that the officials are directed to give immediate education on the types of violation which they observe. For food vendors who continuously succumb to the same violations,

warnings are issued, and in the extreme cases, they are prosecuted. In the same way, the Director of the FDA indicated that they issue fines to offenders, as well as advice and education on food hygiene. Verbal warnings are also issued to offenders, and in extreme cases, they are prosecuted. However, when asked if any of the food vendors had been sanctioned for violating food safety practices, none of the respondents indicated that they had ever been sanctioned for violating food safety standards. This raised concerns about the effectiveness of the municipal authorities in their inspection duties, given that the researcher observed several malpractices among the food vendors as reported earlier.

In this respect, the key informants were asked of their opinions on the effectiveness of the inspectors in controlling malpractices among food vendors. The Municipal Environmental Health Director responded that the inspectors were not effectively promoting hygienic food vending practices among the food vendors within the Region. The Director of the FDA also added that political interference in their jobs makes it difficult to achieve the desired level of effectiveness in monitoring and controlling food vending practices. Thus, the Director noted that their work was not as effective as could ideally have been. The sanitary inspectors were also asked about the effectiveness of their sanitary inspection duties in encouraging safe food practices among food vendors. They indicated that street food vendors are very widely dispersed and it is difficult to pay them repeat visits as required. They indicated that food vendors add up to their numbers daily but closing their businesses would lead to a lot of political tension which makes them resort to only educating them whenever they can. The Municipal Environmental Health Director also confirmed that political interference is a major deterrent to the work of the Directorate. The Director confirmed that the lack of transport creates mobility

problems for the health inspectors and that limits the effectiveness of their inspections. The responses of the Director of FDA were captured as follows:

> *The collaboration between FDA and the Municipal Assembly has not been effective due to differences in what we look out for in food vending. There is also inadequate staffing which leads to lower coverage of inspectors and work overload.*

From the responses, it could be deduced that the major challenges encountered by the inspectorate were; understaffing, inadequate logistics and transportation, political interference, and ineffective institutional collaboration.

The key informants were asked on their suggestions to improve the monitoring duties of the inspectorate. The Director of FDA was of the opinion that increasing the staff strength of the directorate and a harmonious collaboration among the Municipal Assembly and the FDA would help improve the health regulatory duties of the inspectorate. The Municipal Environmental Health Director also indicated that political interference in their jobs should be eliminated and transport and logistics for health inspectors should be provided by the government. The health inspectors also offered their opinions, which centered on the provision of transport like motorbikes for health inspectors, and also continuous media education on health issues regarding food vending. The response of a health inspector was as follows:

> *If our work is to be effective and satisfactory, then a lot of improvements need to be made in the way we are supported to do our work. Right now we lack motorbikes to move around this metropolitan area. There are hundreds if not thousands of food vendors here but how many can we contact just by walking around. We need motorbikes for each inspector. People are also buying food in very risky places; maybe because they*

are not aware of the risks involved, so continuous mass-media education is key to also making our work effective. If the risky food vendors are not getting patronage because people know the risks involved in buying from them, our work would be very easy.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

Sanitary and hygienic practices among respondents are demonstrated on how the food is handled from the source to the food vendor's place. The nature of the raw state of the food, their carriage and storage contribute to hygiene issues. The study also revealed that 31.2% of the respondents obtained their raw food transported to them through vehicle and 68.8% of the respondents received their raw food by human transport. In addition, 68.8% of the respondents stored their raw foods through means of refrigeration and 31.2% of the respondents transports home their raw foods as a means to store them. The study further revealed that 31.2% of the respondents prepare all the foods they sell in their premises and 68.8% were food sellers who prepare the foods somewhere before bringing them to the street to sell. Also, with respondents who prepare the food outside the place of sale, 68.8% were respondents who prepare it home and 31.2% were respondents who neither prepare the food at the premises nor home. Furthermore, the results from the study showed that 31.2% of the respondents have undergone cookery training whiles 68.8% on the other hand have not undergone any cookery training. 67.9% were respondents that acquired their skills in cookery through observation and 32.1% were respondents through trial and error acquired their cookery skills. It was found that 67.9 % of the vendors in the total sample were self-taught through observation and learnt from try and error approach. Approximately, 68.8% of food joint vendors have been going for medical examination while 31.2% do not go for medical examination.

Results of the current study further revealed that monitoring and regulating food vendors also had a statistically significant ($P < 0.05$) positive relations with the performance of the food vendors in the Tamale Metropolis. Thus, education and training of food vendors as well as the regulation of their food selling process work hand-in-hand to ensuring the prosperity of food vendors in the Tamale Metropolis and ensuring public safety as well in both the short and long run.

Of the total respondents who participated in the study, 67.9% were local food joint vendors, 63.3% were food sold on the ground, and 67.9 % were those that are safe from dust. 67.9% were food joint vendors that have their hair covered and 68.8% were those that did not used apron. Also, 68.8% were food joint vendors with their finger nails being short and 67.9% of the food vendors have garbage receptacles. Again, 68.8% of food joint vendors have latrine present in their premises and 67.9% were food joint vendors who were not inspected by the food safety officers.

The sanitary inspectors also indicated that they inspected between 35 and 40 food outlets in a period of one month. When asked of the commonest violations that operational food vendors are guilty of, the Director of FDA indicated that the commonest violation was the lack of proper medical approvals but was quick to add that this was due to delays from the authorities in charge of approving medical record and requirements. The Director confirmed that the lack of transport creates mobility problems for the health inspectors and that limits the effectiveness of their inspections. The health inspectors also offered their opinions, which centered on the provision of transport like motorbikes for health inspectors, and also continuous media education on health issues regarding food vending.

In most cases, the food vendors were not sited near open sewage, open gutters, dump sites, and toilet facilities. There was also little litter around the food

vending sites. The safety of food vendors' food handling practices was compromised. This conclusion was based on the fact that most food vendors used dirty water in washing dishes, and they either had no dustbins or left them uncovered. Most of the vendors cooked their foods with bouillon cubes which were found to be dangerous to health and they also stored their food in plastics which could potentially harm the consumers. Most of the respondents did not wear aprons and they also make direct contact with their foods, but the majority of the vendors covered their hair and did not allow their jewelry to touch their foods. The institutional set-up was not effectively promoting conformance to the food vending controls instituted by the Municipal Assembly and the FDA. This conclusion was reached at based on the insights obtained from the key informants. They indicated that the effectiveness of their duties was compromised by poor collaboration between the Municipal Assembly and the FDA, political interference, and lack of transport.

5.2 Recommendations

Considering the summary and conclusion food vendors are advised to:

- Practice proper personal hygiene. Personal hygiene was said to be one of the core areas that food vendors failed to measure up to. Thus, by practicing proper personal hygiene food vendors can reduce the risk of transmitting pathogens into food from their skin.
- Avoid making direct skin contact with food. The high incidence of infection-causing agents in the food samples pointed to reason that there was frequent skin contact with food through serving or touching food with bare hands. Thus, avoiding such contact can help reduce the risk of transmitting food poisoning agents into foods consumed by customers.

- Use healthy methods of washing dishes and cleaning utensils. The recycling of washing water and the multiple use and reuse of napkins was high among the food vendors. This increased the chances of food contamination, and thus, by using of clean water for washing, pathogen transfer into foods can be reduced.

The FDA and Municipal Assembly officials are advised to:

- Align their environmental and sanitation objectives in order to enforce the collaboration between the FDA and the Municipal Authorities in monitoring the activities of food vendors.
- Advocate for no political agenda in their duties in order to objectively render their responsibility.
- Advocate for the provision of logistics and vehicular means to make their visits to food vendors easier and to also obtain wider coverage in their duties.
- Embark on frequent media and personal education for the food vendors on safe food handling, and also for consumer on identifying safe food to purchase on the streets.

5.2.1 Recommendation for Further Studies

The study recommends further studies into the practical ways of implanting safety standards for food vendors. While the study found out that political influence was a major obstacle to monitoring and implementing the penalties for poor food influence, it did not delve into the specifics of the issue. This can be conducted by other studies to throw more light of the situations and how to help reduce or use the political influence to enforce proper monitoring of food vendors. The factors hindering effective collaboration of the FDA and the Municipal Assembly in their monitoring duties, with respect to food vendors, can also be studied to identify and implement a resolution. Subsequent studies should determine the effects of street foods consumption on the health of the consumers. In particular, an examination of loss of productivity due to illnesses acquired from street foods' consumption would be useful in understanding the spread and depth of the problem of poor sanitation

among food vendors and its effects on the economy of the municipality. Furthermore, a more critical analysis of microbial load of the food would have been useful in determining the specific environmental conditions that directly affect food contamination.

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APPENDICES

APPENDIX A

QUESTIONNAIRE ON LOCAL FOOD JOINTS IN THE TAMALE METROPOLIS: HYGIENE, FOOD SAFETY PRACTICES AND REGULATIONS

Dear respondent,

You have been selected as one of the participants in this study. This study is aimed at obtaining information regarding the emergence of local food joints in the Tamale Metropolis with emphasis on hygiene, food safety and regulations. Please assist us by answering the following questions as accurately as possible. You are assured of confidentiality of any information you give. It will be used for academic purposes only. Thank you.

SECTION A

DEMOGRAPHIC CHARACTERISTICS

1. Gender: Male [ ] Female [ ]
2. Marital status: Widowed [ ] Divorced [ ] Single [ ] Married [ ]
3. How many children do you have? One [ ] Two [ ] Three or more [ ]
4. How old are you? Below 18 [ ] 19 – 28 [ ] 29 – 38 [ ] 39 and above [ ]
5. What is the highest level of education you attained? No Formal Education [ ] Primary [ ] Junior High [ ] Senior High [ ] Tertiary [ ]
6. a) What made you start selling food on the street? Lack of employment [ ] Interest [ ] Inheritance [ ] Employment [ ]

b) How many years have you sold food on the street? Below one year [ ]

1 - 3 years [ ] 4-6years [ ] 7-9years [ ] 10 years and over [ ]

7. a) What kind of food(s) do you sell?

_____

b) Why do you sell such kind of food(s)?

_____

SECTION B

HYGIENIC AND SANITARY PRACTICES

8. a) Where do you get the raw food you use in cooking from? Market [ ]

Farm [ ] Supplier [ ] Other specify _____

b) How is the raw food transported to your premises? Vehicle [ ]

Human transport [ ] Others specify _____

c) How do you store the raw foods? Refrigerated [ ]

Kept at the vending premises [ ] Transported home [ ]

Others specify _____

9. a) Do you prepare all the food here in the premises? Yes [ ] No [ ]

b) If no, where do you prepare the food? Home [ ] Premises [ ]

Others specify _____

c) Do you prepare the food alone? Yes [ ] No [ ]

d) If no, who helps you? Relatives [ ] Hired help [ ]Others specify _____

10. a) Do you sell all the food that you prepare? Yes [ ] No [ ]

b) If no, how do you manage the leftovers? Give to street children [ ]

Throwaway [ ] Carry home [ ] Preserve for the next day [ ]

Others specify _____

c) If you preserve for the next day how do you do it

_____

11. a) Have you undergone any cookery training? Yes [ ] No [ ]

b) If yes where, and what level?

_____

c) If no where did you acquire the skills of cookery? Observation [ ]

Parents [ ] Trial and error [ ] Others specify _____

12. a) Who are the major consumers of your food? Students [ ] Children [ ] Casual workers [ ] Office workers [ ] Other specify _____

b) Which gender consumes the food most? Females [ ] Males []

13. a) Where do you get your water from? Tap [ ] Home [ ]

Borehole [ ] Purchase [ ] Others specify _____

b) Do you have enough water? Yes [ ] No [ ]

c) If no, how do you cope with water shortage?

_____

14. List some of the problems that you encounter in your business?

_____

_____

15. What would you like to be done by the government in order to improve your business? _____

16. What are your future plans in relation to street food vending?

_____

17. a) Do you have a license? Yes [ ] No [ ]

b) If yes how much did you pay for the license? _____

18. a) Do the Public Health Officers inspect your food? Yes [ ] No [ ]

b) If yes, how often do they inspect your food? Once a month [ ] After two months [ ]After six months [ ] Once a year [ ] Others specify _____

c) Once the public health officers come what do they inspect? License [ ]

Kind of food sold [ ] Medical examination reports [ ] Hygiene [ ]

Others specify _____

19. a) Do you go for medical examination? Yes [ ] No [ ]

b) If yes, how often? Once a month [ ] After two months [ ]

After six months [ ] Once a year [ ] Others specify _____

c) When did you last go for medical examination? ----------

d) If no, why not? _____

20. Using a rating scale from the lowest point of 1 to the highest point of 5, please tick the number that indicates your level of agreement or disagreement with the following statement. SD = strongly disagree | D = Disagree | N = Neutral | A = Agree | SA = Strongly Agree

Practices	**SD**	**D**	**N**	**A**	**SA**
I frequently ensure protection of food from flies and dust	1	2	3	4	5
I frequently cut my finger nails	1	2	3	4	5
My hair protection is always assured	1	2	3	4	5
I frequently use apron	1	2	3	4	5

APPENDIX B

OBSERVATION GUIDE FOR THE LOCAL FOOD JOINT VENDORS

21. Location of the Local food vendor: Near the roadside [ ] Far from the road [ ]

22. a) Stand where the food is sold: On the floor [ ] Off the floor [ ]

b) Visibility of dust inside the premises: Yes [ ] No [ ]

23. Hair: Covered [ ] Uncovered [ ]

24. Apron/dust coat: Used [ ] Not used [ ]

25. Jewelry: Worn [ ] Not worn [ ]

26. Finger nails: Short [ ] Long [ ] Polished [ ] Not polished [ ]

27. a) Garbage receptacles: Present [ ] Not present [ ]

b) If present are they used? Yes [ ] No [ ]

28. a) Is the person serving the food the same as the one handling the money?

Yes [ ] No [ ]

b) If yes, when serving the food does he/she put on gloves, use tongs or other equipment to prevent direct contact with the food? Yes [ ] No [ ]

c) Kind of packaging material used: Plastic paper bags [ ]

Used newspapers [ ] Polythene bags [ ]

29. Are the prepared foods protected by suitable covering? Yes [ ] No [ ]

30. a) Kinds of utensils used: Plastic [ ] Metal [ ] Enamel [ ]

Disposable paper plate [ ]

b) Kind of water used for cleaning utensils: Warm soapy water [ ]

Cold soapy water [ ] Warm water [ ] Cold water [ ]

c) Is the water used for cleaning utensils dirty? Yes [ ] No [ ]

d) Are the utensils looking clean? Yes [ ] No [ ]

e) Utensils kept above the floor and covered: Yes [ ] No [ ]

31. Are containers for food additives covered: Yes [ ] No [ ]

32. Method of water drainage: Sewer [ ] Tunnel [ ] Thrown beside the stall [ ]

33. Is the environment free from refuse disposal? Yes [ ] No [ ]

34. Presence of latrine: Yes [ ] No [ ]

35. a) Presence of sitting area: Yes [ ] No [ ]

b) Is the sitting area dusty? Yes [ ] No [ ]

36. a) Do the food safety officers come for inspection? Yes [ ] No [ ]

b) If yes, how often do they come for inspection?

Every week [ ] Once a month [ ] After two months [ ] After six months [ ]

Once a year [ ] Others specify _____

37. a) Have you flouted any food safety rules before? Yes [ ] No [ ]

b) If yes, did you face any sanction by the regulatory body? Yes [ ] No [ ]

c) What sanction was meted out to you when you flouted the rules?

_____

38. How effective is the food safety officers in carrying out their sanctions if there is any flout in food safety rules and regulations?

APPENDIX C

QUESTIONNAIRE FOR THE PUBLIC HEALTH OFFICERS

I am a student from University of Education, Winneba (Kumasi Campus) offering Master of Philosophy in Catering and Hospitality from the Department of Hospitality and Tourism Education. I am currently carrying out a Research titled: " **Local Food Joints in the Tamale Metropolis: Hygiene, Food Safety Practices and Regulations**".

You have been selected as one of the participants in this study. This study is aimed at determining your experiences with Local Food Joints in the Tamale Metropolis: Perspective of Hygiene, Safety and Regulations. Please assist us by answering the following questions as accurately as possible. You are assured of confidentiality of any information you give. It will be used for academic purposes only. Thank you.

1. Gender _____

2. Have you been trained as a Public Health Officer?

_____

3. How long have you been working as a Public Health Officer?

_____

4. How long have you worked in this Metropolis?

_____

5. What is your role as a Public Health Officer?

_____

6. Is there an act, which deals with the safety of local Food joins in the Tamale Metropolis? Yes [ ] No [ ]

7. If yes, how adequate _____

8. How regularly do you inspect the Local food Joint vendors?

_____

9. What are the requirements of food safety for the Local food Joint vendors?

_____

10. What do you look for when inspecting the Local food Joint vendors?

_____

11. What do you do when you find Local food Joint vendors who do not meet the requirements for food safety?

_____

12. What are some of the difficulties you face as a Public Health Officer?

_____

_____

13. Give your comments about Local food Joints?

_____

_____

Thank you for your co-operation