UNIVERSITY OF GHANA

EXAMINING THE HYGIENE PRACTICES AMONG STREET FOOD VENDORS IN NSAWAM AND ADOAGYIRI

BY

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DECLARATION

I, Godfred Tabanye Wuliyeng, hereby declare that except for references to other people’s work which have been acknowledged, this thesis is the result of my own research work carried out at the Institute of Statistical, Social and Economic Research (ISSER), under the supervision of

Dr. Simon Bawakyillenuo.

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Signature

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Date
DEDICATION

This work is dedicated to my family and friends especially; John Nsobila, Frank Arthur (both of TNS RMS, Ghana), Belinda Koranteng and Roland Zunuong Wuliyeng.
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Many people played key roles towards the completion of this work. But for their encouragements, support and contributions, I would not have been able to come out with this piece of work.

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ABSTRACT

The vending of food on the street is considered an important part of the economies of many developing countries due to its socio economic benefits. In Ghana, the sector provides both direct and indirect employment as well as incomes to many people in urban and medium-sized towns. Despite its importance, many have expressed concerns over the hygiene, quality and safety of street foods. Many have also associated street foods with food poisoning and other food-borne diseases. In order to reap the full benefits of this growing sector in developing countries, there is need to fully understand the sector and issues of hygiene and safety addressed. However, many studies in this sector tend to focus on urban and large cities to the neglect of rural and semi-urban areas. This study therefore set out to examine the hygiene and safety practices among street food vendors and the factors that inform these practices in a medium-sized town (Nsawam and Adoagyiri) in the Eastern Region of Ghana. The mixed methods research approach was adopted and a total of 72 respondents sampled using a purposive/judgmental sampling method. Primary data was gathered using semi-structured questionnaires, qualitative/ in-depth interviews, and direct observation. Findings of the study shows that street food business in Nsawam and Adoagyiri is female dominated and that most vendors had formal education, with 70% having Junior High school education and above. However, only 12% of the vendors had formal knowledge/training in food safety, handling and cooking. It was found that poor hygienic practices exist among food vendors in Nsawam and Adoagyiri during food preparation and sale. Most do not wash their hands during food preparation and sale. They also use their bare hands to serve customers while using those same hands to receive money. Among factors contributing to improper hygienic and safety practices were; lack of formal knowledge/training in food safety, handling and cooking skills among both vendors and their support staffs, poor infrastructural and social amenities such as pipe borne water, modern toilet facilities, waste collection services and
electricity, poor monitoring and controls of vendors activities, and ineffective enforcement of rules and regulations governing street food vending by local authorities at Nsawam and Adoagyiri. The study recommends that: district assemblies should establish food vending sites with good social amenities and infrastructure such as portable water, modern toilet facilities, waste collection services and electricity in their various jurisdictions. They also need to provide capacity building and logistics for departments and units tasked with regulating the street food sector, provide capacity building for vendors and other support staff and foster more collaboration among institutions at the local level in order to promote effective monitoring and regulation of the street food sector in Ghana.
CHAPTER ONE

BACKGROUND TO THE STUDY

1. Introduction

The vending of food on the street is considered an important part of the economies of many developing countries. It provides numerous jobs for people and serves as a linkage between rural agriculture and the modern economy (Tomlins, 2002; Rheinländer, 2006; Food and Agricultural Organization (FAO), 2009). The sector helps in meeting the basic food needs of the urban poor, travelers, children and the busy worker by providing easily accessed cooked meals at relatively cheaper prices (Muinde and Kuria, 2005; Mensah et al., 2002). In most emerging economies, the sector tends to attract people with low skills, training and educational qualification who could otherwise not get formal sector employment. Low set-up financial requirement and ease of entry into the sector enable most urban and peri-urban poor to enter into the sector as a coping strategy (FAO, 2009). According to the World Health Organization (WHO, 1996:2) the sector offers a ‘chance for self-employment and the opportunity to develop business skills with low capital investment’.

In Ghana, the street food industry is a million-dollar sector. In 2002, the sector was estimated to employ about 60,000 street food vendors in urban Accra with an annual turnover of US $100 million (Tomlins, 2002). In a similar study in Kumasi, Rheinländer (2006) estimated the number of street food vendors to be over 10,000. Street food business operates under the informal sector in Ghana and provides direct employment for both men and women with low skills and little or no education especially in the urban and peri-urban parts of the country. The sector also provides ready market for both urban and rural food producers as there are purchases of inputs such as vegetables, tubers, fruits, etc., from farmers (WHO, 1996).
The growing importance of the street food sector can be attributed to several factors including urbanization (Tomlins, 2002; Mensah et al., 2002; Muinde and Kuria, 2005). As urbanization and population growth occur in developing countries, the street food sector is also likely to grow in response to the food demands of urban dwellers (WHO, 1996). For the majority of urban dwellers who cannot afford to buy raw food products and cook, have no agricultural lands to farm on, relatively cheap cooked food vended on the streets, becomes their source of daily nourishment (Maxwell, 2000, cited in Rheinlander, 2006).

The changing pattern of contemporary Ghanaian family system has also contributed to the high demand for street food. With the entrenchment of the nuclear family system and coupled with the occupational demands of both the husband and wife there is little time to cook and as a result both parents and children resort to eating food sold on the streets. Changing life style, preference and taste among the emerging middle class in Ghana has also been observed as a driver for street food consumption. For instance, it has been noted that in recent times there is a preference for eating food prepared outside the home because some people consider it as a sign of good living and affluence (Mensah et al., 2002).

1.2 Statement of the Problem

In recent times, the street food sector has attracted a lot of interests from public health practitioners, local and international organizations as well as social science researchers. Despite its importance in terms of providing employment and meeting the food needs of many people in developing countries, many have expressed concerns over the quality and safety of street vended food. Street food is often considered unhygienic and low in quality partly due to the poor environmental conditions under which it is prepared or sold, and also due to the lack of adequate knowledge on food preparation and handling by people involved in the street food business (FAO, 2009; Rheinlander, 2006; Annan-Prah et al., 2011). The 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 has been observed to contribute to the low hygiene level of street vended food (ISSER, 2002). According to FAO (2009), unhygienic street food is associated with the outbreak of serious food poisoning in most parts of the world. Microbiological contamination is said to be the cause of many food-borne diseases which lead to several deaths in many developing countries. The report cited several factors such as lack of knowledge among street food vendors on the causes of food-borne diseases, poor hygiene, and improper use of additives, as major risk factors.

In a study on the microbiological quality of street vended food in Accra, Mensah et al (2002) found that several main dishes were contaminated with bacteria of various kinds. They attributed the contamination to improper handling of cooked food by vendors, poor storage of cooked food, serving of food with bare hands, and inadequate reheating of food cooked in advanced of consumption. Most cholera outbreaks in Ghana have been linked to eating contaminated street vended food. For instance, a combined team from the Food and Drugs Board and the Ghana Health Service traced the source of the cholera outbreak involving 49 cases in the Akwapim South Municipality in 2012 to eating of contaminated street food called “waakye” (rice and beans) from Nsawam (Ministry of Health/Ghana Health Service Report, 2012). Major risk factors identified by the team of investigators were unhygienic food handling practices and unavailability of adequate toilet facilities around where food was sold (Ministry of Health/Ghana Health Service Report, 2012). In Kumasi, a similar study by Rheinländer (2006) raised concerns about the poor infrastructure with which street food vendors work and how that impacted on the quality and safety levels of most street foods in Ghana.
Street food vending is an important informal business activity that requires an integrated approach and adequate attention from local authorities and other relevant stakeholders (such as ministry of health, food and drugs board, law enforcement agencies, NGOs etc.) through the provision of needed infrastructure and safe environments for the business to operate, education of vendors on good food handling, safety and hygienic practices, consumer education and food safety awareness creation, regular monitoring and enforcement of regulations on street food, as well as empowerment of these institutions to carry out their duties effectively.

With Nsawam being the capital of the newly created Nsawam-Adoagyiri Municipality and also serving as residence for many people who work in the National capital, Accra, street food vending is a popular activity. Its new status as a Municipal capital will further attract a lot of people in search of jobs and cheap accommodation hence the growing importance of the street food sector in the area. But being a medium-sized town with limited infrastructural facilities and services provision, there is the need to understand the nature of hygiene and food safety practices put in place by street food vendors to ensure food they sell are safe for consumption. Given the significance of street vended foods in the Ghanaian society, such understanding will guide policy makers and regulators in designing effective hygiene communication strategy for the street food sector in the country. This study therefore sought to examine the current hygiene practices among food vendors in Nsawam and Adoagyiri from an integrated perspective of food vendors, consumers and also regulatory institutions in the municipality.
1.3 Aim and Objectives of the Study

The main aim of this study is to examine the hygiene practices among street food vendors in Nsawam and Adoagyiri and their implications for street food safety.

The specific objectives are to:

1. Examine the nature of hygiene practices and the factors which inform these practices among street food vendors in Nsawam and Adoagyiri.
2. Examine the role of regulatory institutions in the education, regulation and enforcement of by-laws governing street food vending in Nsawam and Adoagyiri.
3. Examine the nature and effectiveness of hygiene education among street food vendors and street food consumers.
4. Identify appropriate means of strengthening good hygiene practices among street food vendors in Nsawam and Adoagyiri.

1.4 Research Questions

The following research questions were asked in order to help address the objectives of the study:

1. What are the current hygiene practices employed by street food vendors in Nsawam and Adoagyiri and to what extent do these practices promote street food safety?
2. How effective is the enforcement of by-laws and regulation of street food vending in Nsawam and Adoagyiri?
3. How effective is hygiene education among street food vendors and consumers?
4. To what extent does hygiene awareness relates to good hygiene practice among street food vendors in Nsawam and Adoagyiri?

1.5 Significance and Justification of the Study

Street food vending constitutes an essential component of the informal sector in developing countries due to its socioeconomic benefits. As such its continuous existence and
improvement in terms of safety and quality is considered necessary. However, this important activity is perceived as an urban phenomenon in most developing countries. As a result of that research in the sector tends to be limited to the cities and large towns, with little or no work done on it in the rural areas and medium-sized towns. In Ghana current research on street food safety, quality, and hygienic practices among vendors has been concentrated in urban areas (for example, Rheinlander, 2006; Annan-Prah et al., 2011; Tomlins, 2002; Mensa et al., 2002). Available literature from other developing countries equally reflects this phenomenon. Thus, data and insights on the current hygienic practices of street food vendors in the fast growing peri-urban areas in Ghana are very scarce. It is in the light of this that the present study was carried out in Nsawam and Adoagyiri, considered as among the most urbanizing areas in the country. The study presents an opportunity to examine the quality of hygiene practices of street food vendors in an environment with limited infrastructure and social amenities, in order to add different perspectives of knowledge on the subject in Ghana from different settings. Findings from this study will help in formulating effective hygiene communication strategies targeted at promoting street food safety in Ghana. It will also provide the basis for further research in the sector within the peri-urban context.

1.6 Organization of the Study

The study is organized into six chapters. Chapter one deals with introduction to the study, statement of the problem, objectives of the study and research questions which shape the focus of the study and concludes with a subsection on significance and justification of the study and definitions of key terms as used in the study.

Chapter two involves a review of theoretical and empirical literature on street food vending and description of the conceptual framework which guides this study.
Chapter three of the study presents the research methodology, sampling techniques and methods of data collection as well as methods of data analysis.

Chapter four covers a profile of the district and background characteristics of the study area, whilst Chapter five deals with data analysis and discussion of findings.

Finally, Chapter six covers summary of key findings, recommendations and conclusions.

1.7 Definition of Concepts/Terms

**Street food:** It refers to ready-to-eat foods and beverages that are prepared and/or sold by itinerant or stationary vendors, especially on streets and in other public places (FAO, 2009).

**Street Food Vendor:** Street Food vendor(s) in this study will include people who engage in preparing and sale of food on the street and other public places.

**Stationary vendor:** in this study, it shall refer to street food vendors who carry out their activities from fixed point or locations.

**Mobile vendor:** Food vendors who sell their food by moving from one location in search of customers.

**Support staff:** In this study, support staff includes all other people apart from the owner of the vending stall/site who assist with various roles (such as cooking, cleaning dishes, chopping meat, and many more) during food preparation and or sale.

**Hygiene Practice:** In this study, it will refer to practices put in place by street food vendors to prevent food from contamination and or spread of food borne/related diseases. In this study, the terms hygiene behavior and hygiene practice will be used interchangeably.

**Hygiene Education:** it shall include any training/capacity building given to food vendors in the area of food safety, good food preparation, and handling during sale; as well as personal and environmental hygiene education.
CHAPTER TWO
LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1 Introduction

This chapter presents a review of research works which have been undertaken in the area of street food vending. The chapter begins with a review of various thoughts and perspectives on the subject as well as a review of empirical findings and conclusions emerging from these works. The following sub-topics are covered in this chapter: definition of street food, emergence of street food vending in developing countries, economic importance of street food vending, hygiene and safety concerns of street vended food, regulation of street food vending in Ghana, gaps in the literature reviewed, and theories/perspectives underpinning hygiene practices. The chapter also presents a conceptual framework to guide the study. It then concludes with definitions of some key concepts as used in the study.

2.1.1 Definition of Street Food

Street food is defined as ready-to-eat foods and beverages that are prepared and/or sold by itinerant or stationary vendors, especially on streets and in other public places (FAO, 2009). Street foods, according to WHO (1996) refer to foods and beverages prepared or sold by vendors on the streets and other public places for immediate consumption or consumption at a later time without further processing or preparation. This includes fresh fruits and vegetables. In a comparative study on street vended foods among four West African countries, FAO (2012) found that most cooked foods vended on the streets and other public places tend to reflect the staple foods of the people of that country.

Street food vending is considered an important informal business activity in most developing countries. Due to its socio-economic contributions, the sector has over the years attracted many researchers from both developed and developing countries. Empirical studies have
looked at the subject from various dimensions such as the socio-economic contributions of street food vendors to development, while others have been exploring the safety, quality, and hygienic aspects of street vended food.

2.1.2 Emergence of Street Food Vending in Developing Countries

The emergence of the street food sector in most developing countries has been attributed to urbanization and the growth of city life (Muinde and Kuira, 2005). WHO (1996) notes that urbanization and population growth in developing countries contribute to the emergence of street food activities. As many people move from the rural areas to urban centres their food requirements will need to be catered for till they settled down, and street food vending exists to provide this essential service (WHO, 1996). Similar conclusions have been reached by other researchers. For instance, Nirathron (2006) observes that the persistence of street food activities in Bangkok-Thailand is attributable to urbanization in Asian countries. She noted that rural urban migration coupled with the challenges of urban life and conditions such as small living spaces, skills, time, convenience, and the amount of preparation required to cook food; encourages the consumption of street vended foods and hence the growth of the sector.

Laryea (2012) posits that street food vending in Ghana can be traced to the early post-independent era when many people moved from rural areas into towns and cities to undertake various kinds of work brought about by Ghana’s new industrialization initiatives. He noted that with people leaving for work outside their homes and their inability to carry food with them, some people saw the need to provide these workers with various kinds of food, a practice which eventually grew into what is seen today as street food vending.

2.1.3 Economic Importance of Street Vended Food

According to WHO (1996), street vended food plays an important role in the lives of many people in urban and peri-urban centers in developing countries. Street vended food serves as:
▪ A source of inexpensive, convenient and often nutritious food for urban and rural poor
▪ A source of attractive and varied food for tourists and the economically advantaged
▪ A major source of income for a vast number of persons, particularly women
▪ An avenue for self-employment and an opportunity to develop business skills with low capital investment.

Winarno and Allain (1991) found in their study that the benefits of street food vending extend beyond the individuals and their families that own and operate these businesses. It provides an opportunity for low-income groups to access nutritious food at affordable prices. Street food vending, they noted, also provides ready markets for local farmers. This conclusion was confirmed by other studies conducted in the Ashanti region of Ghana which found that majority of the lettuce produced in Kumasi got purchased by street food vendors for their businesses (Henseler, 2005, cited in Rheinlander, 2006).

In a comparative study of street vending among four West African capitals (Bamako, Abidjan, Freetown and Accra), FAO (2012) reported that in West Africa, women tend to dominate in the sale of street foods. However, it was also noted that consumers of street food cut across a variety of social backgrounds, income groups, gender, age and education. The report added that street food vending provides a large source of employment and offers abundant opportunities in the informal sector for low skilled people.

While opinions on the nature of consumers of street vended foods appear to vary among researchers (with some positing that street vended food is consumed mostly by low and middle income people, whilst others point out that it is for all manner of persons irrespective of one’s income, educational background, gender or age), studies such as Mensah et al (2002), notes that street vending provides an essential service to people such as workers, travelers and school children by offering them variety of complete meals, snacks and
refreshments at relatively low prices. Similar observation was by Annan-Prah et al (2011) in their study of street food vending in the central region of Ghana. Their study revealed that street vended foods provide the food needs of many local residents as well as tourists visiting the region by offering them various indigenous foods and beverages. Thus, the conclusion by some researchers that street foods are meant for the poor and low income people might not entirely be true in recent times.

2.1.4 Hygiene and Safety Concerns of Street Vended Food

Although street food vending plays a significant role in the economy of developing countries, studies have shown that it also serves as a source of transmission of various kinds of food-borne diseases. FAO (2009) observes that the risk of food poisoning resulting from street vended food remains a threat in many parts of the world, especially microbiological contamination. The study noted that food-borne pathogens continuous to pose a serious health hazard. Contamination of street foods can occur through the use of contaminated raw materials, inadequate access to clean water, poor personal hygiene, poor surroundings and improper food preparation, as well as improper use of additives such as unauthorized colouring agents (FAO, 2009). Thus, poor hygienic practices at any stage of the food chain can lead to the introduction, growth and survival of harmful bacteria that will render the food unsafe. The activities of food vendors such as washing of foodstuff and vegetables before cooking, the cooking processes, handling and serving of cooked food, storing of cooked food and leftovers as well as cleaning of dishes should therefore be keenly monitored (FAO, 2009).

WHO (1996) noted that, inadequate infrastructure and service provision such as lack of access to clean and safe water, lack of proper disposal of waste, lack of access to electricity and many more, affect hygiene and safety practices of street food vendors. For instance, inadequate supply of clean and safe water greatly affects the operations of street food vendors
such as regular hand washings, cleaning of utensils, and cleaning of raw food stuff before cooking. In some cases, lack of adequate supply of clean water may force vendors to wash their utensils in water which has been used many times. Other factors such as insufficient resources for inspection and laboratory analysis as well as low consumer education leading to inadequate public awareness of the hazards posed by certain street foods, contribute to the public health risk associated with street vended food (WHO, 1996). To ensure proper hygienic and safety practices among street food vendors it is therefore recommended that government in developing countries should actively intervene by providing proper services and infrastructure such as provision of clean water, toilets, waste disposal services, education and trainings for the street food sector (WHO, 1996). WHO also recommends that in order to prevent contamination of food, the following should be observed by vendors and their support staff:

- **Food should be sold in a clean, well-lit place protected from strong sun, dust, rain and wind.**
- **Vending point should be sited away from sources of contaminants such as solid and liquid wastes.**
- **Food vendors should either sanitize eating and drinking utensils between use or use disposable utensils (preferably recyclable or biodegradable), wherever possible** (WHO, 1996)

In their study of the industry in the Kenyan city of Nairobi, Muinde and Kuria (2005) reported that though street food contributes significantly towards urban economic growth, it is also a source of public health concern due to the risks associated with it. According to them the industry is poorly regulated, and vendors operate under precarious and unstable conditions. Their findings revealed that, most street food vendors lacked formal training in food preparation and handling, and as such do not observe hygienic practices during food preparation and serving. Also, most foods were found to be sold in unsanitary conditions. They therefore recommended the need for the establishment of street food centers by the city
council, the training of street food vendors on hygiene, sanitation and the establishment of a code of practice for the street food industry and the empowerment of Public Health Officers.

A study conducted by Nirathron (2006), in the Thailand city of Bangkok revealed that street food vending provides an opportunity for self-employment and social mobility as poor people who successfully engage in the business can move up the economic ladder. However, the study noted that despite the existence of laws concerning food hygiene, many vendors do not observe them and that street food regulation appears ineffective as officers do not properly monitor the cleanliness of street vended food.

In a similar study in the Indian city of Kolkata, Janie and Marie (2010) reported the growth in street food vending activity, with an estimated number of between 130,000 to 150,000 vendors. Unlike other countries, their findings revealed that males dominated the industry, owning about 90% of fast food enterprises in Kolkata and with majority of their employees being males as well. They found that most vendors had very low educational background (21% of them being illiterates), and although some had knowledge of good hygienic practices, they did not apply them at their work places. For instance, they observed that at most vending sites, food preparation took place in unhygienic conditions and utensils were improperly washed and kept. Handling of cooked food was reportedly poor as most foods were uncovered. Accordingly, “in worst places, used plates and cups lay on the ground side by side with garbage and leftovers from commodities often piled up in the drain. Many flies, small cockroaches and crows were everywhere around the stands” (Janie and Marie, 2010: 21). Lack of facilities and resources on the vending locations also made good storage and heating practices poor, hence, forcing vendors to sell unheated food to customers.

In Ghana, studies conducted on street food safety and hygienic quality revealed that most street vended foods are contaminated with pathogenic bacteria. In a study to investigate the
microbial quality of street vended foods in Accra, Mensa et al (2002) found that though some street foods in Accra were within acceptable microbiological quality, most main dishes and soups were highly contaminated with unacceptably level of pathogenic bacteria. Analysis of food samples revealed the presence of bacteria such as *Salmonella arizonae, Escherichia coli, and Shigella sonnei*. Contamination was attributed to poor handling practices such as serving food with bare hands, poor storage and management of leftovers, exposure of foods to flies, working on food at ground level and cooking food well in advance of consumption.

Through laboratory testing and analysis of sampled street vended foods in Cape Coast, Annan-Prah et al (2011) also found out that most street foods were contaminated with threatening level of bacteria namely *Escherichia coli of faecal origin*, and fungi of various kinds. The researchers noted that street food business in Cape Coast operated under poor sanitary conditions, and was dominated by middle age women with little or no education at all, and that knowledge and skills on food preparation was acquired from informal parental training. The report also cited the lack of good sanitary and hygienic practices by vendors as sources of street food contamination. The study therefore recommended stakeholder education, legislation, inspections and environmental sanitation improvement as necessary to improving the hygiene and safety levels of street vended food in Ghana.

Another study in Kumasi by Rheinländer (2006), it was noted that the absence of potable water and toilet facilities, as well as dust bins affected good hygienic practices on the part of vendors. Practices such as hand washing after using the toilet, proper cleaning of dishes, reheating of cold food, etc., were not observed by vendors. The researcher discovered that there was a gap between hygiene knowledge and practice, as most vendors with good knowledge of how to avoid food contamination never cared about putting in the necessary measures to doing so.
2.1.5 Institutional Framework for Regulation of Street Food Vending in Ghana

In Ghana, the regulation of street food vending and related activities fall under two Ministries; Ministry of Local Government and Rural Development (MLRD) and Ministry of Health. According to the National Environmental Sanitation Strategy and Action plan (NESSAP 2010-2015), the Ministry of Local Government and Rural Development is responsible for formulating polices to guide street food vending and street trading. These policies are then implemented at the local levels by various Metropolitans, Municipals, and District Assemblies (MMDAs) through the Environmental Health Units. The various Environmental Health Departments are responsible for granting licenses/trade permits, educating, monitoring and enforcement of rules and by-laws on food hygiene and food safety (ISSER, 2002). The development and provision of social amenities such as pipe borne water, modern toilet facilities, waste collection services, and electricity is the responsibility of Local government authorities.

The Ministry of Health on the other hand designs and implements public health education policies and undertakes surveillance in order to promote good health and hygiene practices among food vendors and consumers. However, as noted by Todaro and Smith (2009), the informal sector in most developing countries has largely been neglected by governments despite its strategic role in employment generation. In looking at the role of local authorities in promoting street food hygiene and safety, Anan-Prah et al (2011) found that street food vendors in Cape Coast were not effectively monitored by local authorities. Based this observation, they argued that Municipal and District Assemblies are not active in their regulatory role. This, according to them contributed to poor hygienic conditions of some vendors in Ghana. In a similar manner, Muide and Kuira (2005) in their study in Kenya noted that poor by-laws enforcement contributed to poor hygienic practices among street food vendors.
A study by FAO between 2011 and 2012 in four West African capital towns (Bamako, Abidjan, Freetown and Accra), revealed that though there exist some regulations governing street food vending activities, these laws and regulations are hardly enforced. The study cited overlapping functions and unclear guidance on functions among regulatory institutions as well as cumbersome and complex procedures for obtaining permits, as contributing to weak enforcement of bye-laws and regulations. The study also found that due to these difficulties, many vendors operated without formal permits and certificates to operate as food vendors (83% in Abidjan and 8% in Accra).

2.2 Gaps in the Literature

Though a lot of work has been done on street food vending especially in emerging economies, it is clear that the focus of most of these studies have been on big cities and urban centres with limited attention on medium-sized towns. Also, few studies have touched on the ineffective roles of regulatory institutions in promotion of food safety and hygienic practices among vendors. A holistic approach that looks at the perspectives of food vendors, food consumers and regulatory bodies or institutions is limited. Most of the studies have also described street food vending as an informal activity undertaken by low-skilled and uneducated people in large urban centres and towns and thus no active research in the sector among rural and peri-urban communities. Having identified these gaps, this study focuses on examining street food hygiene from three dimensions namely; food vendors, consumers and regulators or institutional point of view within a medium-town setting in Ghana.

2.3 Theories Underpinning Hygiene Behaviour

Social research on health and hygiene has been dominated by two main perspectives namely; the Etic and Emic perspectives. Even though other behavioural theories have attempted to explain the hygiene behaviour of people/individuals, their applicability appears far less compared with that of the Etic and Emic perspectives. Whereas the Etic perspective of
hygiene focuses on studying hygiene behaviour from the scientist’s point of view, the Emic perspective tends to focus on the socio-cultural factors which motivate hygiene behaviour or the lack of it among a group of people and thus involves more qualitative in-depth study (Rheinländer, 2006).

The terms *Emic* and *Etic*, originated in Linguistics and Anthropology during the 1950’s and 1960’s and over the years, they have been adopted by researchers in various fields including public health to their areas of study (Headland, 1990). These two perspectives have been briefly described below by Rheinlander (2006):

### 2.3.1 Etic Perspective

The Etic perspective of hygiene, also referred to as the outsider’s view, focuses on observing and assessing performed hygiene practices from a scientists’ outside view. It places emphasis on sources of contamination and risk of infection (Rheinländer, 2006). Hygiene from this point of view involves the practice of keeping one's self and one's surroundings clean, especially to avoid illness and the spread of infection. The Etic perspective of hygiene was greatly influenced by two dominant 19th century theories; the Miasma theories; the idea that poor sanitation and waste management caused diseases and contributed to its spread, and the Germ theory of Louis Pasteur and others which discovered the significance of microorganisms and their role in the transmission of diseases (Janie and Marie, 2010). Those who hold this view assume that issues of hygiene can be studied objectively. It is argued that when people become aware of how water and sanitation diseases are caused and transmitted, they would replace unhygienic practices with improved ones.

### 2.3.2 The Emic Perspective

The Emic perspective, also referred to as the insider’s view or perception of the actors themselves, focuses on understanding hygiene behaviour from the view point of those involved. It seeks to understand the socio-cultural factors that influence hygiene practices
among a group of people and argue that motivations for hygienic behaviours are socially rooted. This perspective finds much acceptance with qualitative researchers than with quantitative researchers.

This study looks at street food hygiene within the framework of these two perspectives of hygiene. Since hygiene practice or the lack of it among street food vendors is considered part of social behavior, an understanding of it from both a qualitative point of view as well as from the detached/objective quantitative point of view will help yield much insight on the phenomenon.

2.4 Conceptual Framework

2.4.1 Factors affecting street food hygiene practices

The literature review identified certain factors which predispose street vended foods to contamination. These factors can be grouped under three dimensions: vendors’ dimension, institutional or regulatory dimension and the consumer’s dimension. Fig.1 illustrates these dimensional perspectives.
From Fig. 1, good hygiene practices among street food vendors can be looked at from three main perspectives:

i. the vendor’s perspective/ dimension,

ii. Institutional or regulatory dimension, and

iii. Consumer dimension.

Vendors’ perspective

Street food hygiene can be maintained when food vendors put in place the necessary measures to prevent food from contamination. Factors such as vendors’ knowledge and awareness of good hygienic practices, food safety and food preparation skills, handling as
well as storage practices, and finally vendors’ level of formal education and level of personal
hygiene all tend to impact on their practices.

**Institutional or regulatory dimension**

Institutions at the local level such as Municipal Environmental Unit, Health Service Unit, Food and Drugs Board; are expected to provide capacity building, grant licenses and set standards to regulate street food vending. Local government authorities are also expected to provide the necessary infrastructure and services for food vendors to operate with. Without good social amenities such as portable water, toilet facilities, it will be difficult for vendors with good hygiene and safety knowledge to apply their knowledge to their activities. Also, these institutions are tasked with the responsibility of educating, monitoring and controlling the activities of vendors so as to guarantee the safeness of street vended food for the consumer.

**Consumer dimension**

The consumer’s action or inaction can contribute to good hygienic practices or otherwise. It has been observed that the practice of regular hand washing with soap and clean water by consumers before eating can reduce the spread of diseases. Knowledge and awareness of food hygiene and food safety issues among the population will also enable them to demand hygienic food from vendors. It is this sense that some believe that when consumers are aware of the health hazards of poor hygienic food sold to them on the street they will demand for better and improved food from vendors Thus, improving street food hygiene demands on the coordinated efforts of food vendors, consumers and regulatory institutions.

**Outcome of hygienic practices**

Finally, the outcome of hygiene practices can be good or bad. Outcome of good hygiene practices includes reduced food-borne diseases, improved consumer welfare as well as a
growth in vendors’ activities and incomes. Among the outcome of bad hygienic practices includes increased risks of food poisoning and food-borne diseases, deterioration in consumer welfare, loss of productivity as well as increased government expenditure on health care delivery.

2.5 Conclusion

This chapter involved a review of previous studies that have been undertaken on street food vending in Ghana and other developing countries. The chapter then presented a theoretical perspective underpinning hygiene behavior, and a conceptual framework to guide this study.
CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology, research design, methods and techniques that were used to collect and analyze the data in this study. The chapter begins by looking at the required data and their sources for the study; the approaches used to collect these data and the target population from which the data was collected. The chapter also outlines the sample size and sampling approaches that were used to select the respondents and the techniques for data analysis. In addition, the chapter presents the main limitations of the study and ends with a conclusion.

3.2 Study Design

Three main research designs have been identified among social science research. These are; Quantitative research, Qualitative research and an emerging approach, the Mixed Methods research (Creswell, 2014). In this study, the mixed methods approach involving a combination of both quantitative and qualitative methods of data collection, analysis and interpretation, was employed.

3.2.1 Quantitative Research

According to Ahiadeke (2008), quantitative research methods involve the attempt to objectively study social phenomenon through the application of scientific laws to the social world.

It involves the use of hypothesis to test a theory by way of data collection and analysis, to generate findings which can either confirm or reject the theory. The use of hypothesis is an attempt to show causal relationship between concepts. Quantitative research involves generating statistics through the use of large-scale survey research methods such as questionnaires or structured interviews (Dawson, 2002). The typical approaches to data
collection include the use of primary survey research such as close-ended questionnaires, structured observations, experiments, and also secondary data collection from journals, government statistics, (Ahiadeke, 2008; Dawson, 2002). While quantitative research is said to be more objective and convenient for large scale studies, it is often criticised for attempting to reduce human behavior and experiences to mere numbers.

3.2.2 Qualitative Research

According to Dawson (2002), qualitative research tends to explore attitudes, behaviour and experiences through the use of methods such as interviews or focus groups. It attempts to get an in-depth opinion from participants. It is an approach for exploring and understanding the meaning individuals or groups give to their social or human problem, and thus involves emerging questions and procedures rather the use of hypothesis (Creswell, 2014). Qualitative research is said to be contextual as it focuses on case studies under particular circumstances in order to discover meanings. It therefore involves both interpretation and critical approach to the social world (Ahiadeke, 2008). Common data collection methods include ethnography, unstructured interviewing using open-ended questionnaires, focus group, participant observation, etc. Qualitative research is often criticized for being subjective with findings difficult to replicate.

Both quantitative and qualitative researches have different philosophical assumptions and also historical evolutions (Creswell, 2014). Quantitative research takes its roots from the natural sciences especially disciplines such as Psychology and Physics. It has been influenced by the positivist and post-positivists philosophical worldview (Ahiadeke, 2008, Creswell, 2014). The approach gained dominance in social science research during the late 19th and early 20th centuries. Proponents of this approach hold the view that social reality exist out there and can be studied or measured objectively using scientific laws and principles. In conducting inquiry, attempts are made to avoid biases, ensure accurate measurement, and
control for alternative explanations in order to arrive at findings that can be generalized to the larger population and also replicated (Creswell, 2014; Ahideke, 2008). Qualitative research on the other hand, took its roots from Anthropology and Sociology. This approach was applied to mainstream social science research during the late 20th century. Proponents of qualitative research recognize the role of research participants and how they construct their world based on their particular situations. The approach tends to be inductive and focuses on individual case studies (Creswell, 2014).

3.2.3 The Mixed Methods Research

This method involves the integration of both qualitative and quantitative forms of research in a study (Creswell, 2014). In the mixed methods research, both qualitative and quantitative data are collected using a combination of methods such as open-ended and closed-ended questionnaires, experiments, focus groups as well as qualitative interviews. Data analysis and interpretation of findings follows both quantitative and qualitative approaches such as statistical and text analysis (Creswell, 2014). This approach is influenced by the Pragmatic worldview or philosophical assumption, which states that instead of focusing on methods, researchers should concentrate on the research problem and use all available approaches to understand it and provide solutions (Creswell, 2014). Proponents of this approach to inquiry have argued that the use of mixed research methods allow researchers to simultaneously generalize from a sample to a population and to gain a richer contextual understanding of the phenomenon being researched (Creswell, 2014; Henson et al, 2005; cited in Gray, 2009). Other scholars have also argued that by combining both quantitative and qualitative approaches, the weakness of one approach can be complemented by the strengths of the other (Ahiadeke, 2008; Clough and Nutbrown, 2012, Dawson, 2002). The major challenge often pointed out by critics of this approach to inquiry is that with this approach, the researcher requires adequate experience of both qualitative and quantitative research techniques in order
to undertake a successful study. Thus, in this study the mixed methods approach was adopted due to the advantages stated above.

The use of a qualitative approach enabled the researcher to explore the concept of hygiene practice among vendors and also to collect in-depth data on the institutional perspectives on street food hygiene. Data on issues including the nature of food related diseases and their trends, as well as the strategies put in place by regulatory institutions within the municipality to ensure proper sanitary practices by street food vendors, environmental and personal hygienic practices were collected and analysed with the support of qualitative approaches. The qualitative approach also enabled the assemblage of data on the main constraints affecting these institutions in their duties and responsibilities. The application of quantitative approach on the other hand facilitated the collection of quantifiable data such as vendors knowledge of cooking skills, frequency of hand washing, reheating of food during sale, waste disposal methods, methods of serving food, etc., which enabled the researcher to carryout statistical analysis on the data.

3.3 Research Methods

3.3.1 Data Requirement/Sources of data

Two major sources of data exist within the context of social science research namely primary and secondary data sources. Whereas primary data is directly gathered by the researcher to address his or her research questions or hypothesis, secondary data includes any relevant data collected by others other than the researcher himself or herself but which are of importance to the study (Ahiadeke, 2008, Dawson, 2002). A combination of these two sources provides an opportunity for the researcher to learn about the phenomenon directly through first-hand information and also from the perspectives of others (Dawson, 2002). In carrying out this study, both primary and secondary data were collected.
3.3.1.1 Primary Data Sources

Primary data refers to data collected by a researcher to address the specific needs of his/her study. It involves using either quantitative and qualitative methods or a combination of both to gather first-hand information on a subject of study (Dawson, 2002, Ahiadeke, 2008). In this study, primary data was collected at Nsawam and Adoagyiri among street food vendors, street food consumers and representatives of regulatory institutions. Among street food vendors and consumers, data was gathered using a semi-structured questionnaire consisting of both open-ended and closed ended questions. An interview schedule was used to collect data from the regulatory institutions. The interviews were tape-recorded later transcribed for analysis and interpretations.

3.3.1.2 Secondary Data Sources

Apart from gathering first hand data, this study also reviewed a lot of secondary data in order to have a broader understanding of the topic. Secondary data, according to Ahiadeke (2008), refers to data which has been collected by other people for a different purpose but which have significance for the present study. It involves using information from studies others have conducted on the subject of study (Dawson, 2002). Secondary data were collected from the following sources; governmental statistical sources (census data, and other national data), book, previous research studies on street food, journals, internet search, records of Nsawam municipal health directorate on cholera outbreaks and other food-related diseases within the municipality.

3.3.2 Methods of Data Collection and Data Collection Instruments

The methods of data gathering for this study followed the mixed methods research approach which calls for the use of both qualitative and quantitative approaches to data collection. In this way, both numerical and qualitative data can be obtained from the study participants.
(Creswell, 2014). The study combined the use of the survey method, qualitative or in-depth interviews and direct observation.

### 3.3.2.1 The Survey Method

The survey method is a quantitative technique of gathering large scale primary data often using structured questionnaire with closed-ended questions (or questions with pre-determined set of answers). However, in some cases, semi-structured questionnaires are used, i.e., a combination of both closed ended questions and open-ended questions, thus allowing respondents to express their views on a subject of study. It enables researchers to collect data quantifiable and opinion–based data from respondents (Ahiadeke, 2008; Dawson, 2002).

The survey method was one of the methods adopted to gather primary data among street food vendors and consumers for this study. Two set of semi-structured questionnaires containing both closed ended and open-ended questions were used to collect data from vendors and consumers respectively. For the consumers, the questionnaire captured data on their socio-economic background, nature and methods of hygiene practices, factors influencing such practices, their knowledge of hygiene and food safety, personal hygiene, challenges affecting their activities and hygiene practices. It also sought their opinions on the role of regulatory institutions in terms of capacity building for vendors. The consumer questionnaire on the other hand, also gathered data on consumers’ socio-economic backgrounds, knowledge of food hygiene and factors that influence their choice of food and vendors when consuming food outside their homes. The questionnaires were administered face-to-face to owners of vending sites and their employees as well as street food consumers by the researcher with the assistance of one trained interviewer. Field data collection took place between June, 2013 and July, 2013 at Nsawam and Adoagyiri in the Eastern Region of Ghana where this study was undertaken.
The use of semi-structured was considered appropriate for the study because it afforded the researcher an opportunity to probe for details on answers that need elaboration and clarifications and at the same time respondents had the opportunity to express their opinions on hygiene practices and the constrained affecting them. Environmental conditions under which vendors conduct their business were also observed during the questionnaire administration.

3.3.2.2 Qualitative Interviews

Qualitative or in-depth interview as the name suggests, is a technique of data collection mostly used by qualitative researchers. It is used when a researcher seeks to achieve holistic or in-depth information on a subject from the perspective of the respondent (Dawson, 2002). Establishing good rapport, that is good interpersonal relationship between the researcher and the respondent, is a key requirement in this method. The interviewee is allowed to talk freely without restrictions and the researcher tactfully guides him or her not to digress from the topic of study (Dawson, 2002). In order to gather in-depth data on street food vending at Nsawam and Adoagyiri, two in-depth interviews were conducted using an interview schedule with the municipal environmental health director and municipal disease control officer on issues including trends of street food vending in the area, food-borne related diseases, hygiene practices among vendors, the role played by their respective units in the municipality towards promoting street food hygiene and the challenges affecting their work. Both interviews were tape recorded and transcribed later for analysis and interpretation.

3.3.2.3 Direct Observation

The third data collection approach used to gather data was direct observation. In addition to using semi-structured questionnaire and in-depth interview, direct observations were made on vendors behavior during questionnaire administration on issues such hand washing among
vendors, holding of money, serving food with bare hands, covering of hair, the use of aprons by vendors, and the general surroundings where food was been sold. These direct observations on vendors hygiene behavior was used to validate vendors reported hygiene practices.

3.3.3 Pretesting Of Data Collection Instruments

Pilot study or pretesting of data collection instruments is an important aspect of effective questionnaire design and administration. Pre-testing the questionnaire on a group of people similar to the intended sample provides useful feedback on the questionnaire such as questions phrasing, layout and understanding of particular questions by respondents (Dawson, 2002; Ahiadeke, 2008). This therefore enables the researcher makes corrections to his or her instrument before actual field data gathering. In this study, the questionnaires were pre-tested on street food vendors (waakye and kenkey sellers) at Amasaman, a town in the Ga West municipality. The pretesting drew the researcher’s attention to some limitations of the instruments such as difficulty in understanding and answering some questions due to question wording and layout of questionnaire. These issues were therefore rectified on the final questionnaire before commencement of field work.

3.3.4 Study Population and Sample Size

The target population for this study were all street food vendors who sell ready to eat foods and snacks on the street and other public places such as lorry parks, stations, school premises, market areas, during the day (but excluding restaurants and big chop bars) in Nsawam and Adoagyiri. The population of street food vendors in Nsawam and Adoagyiriri is estimated to be about 500. The vendors are located in various parts of the two communities and therefore information on where major vending activities are carried out was obtained from the Nsawam Municipal Environmental Health Directorate. A sample size of 72 respondents was selected.
for this study. The sample consisted of 50 street food vendors, 20 consumers and 2 representatives of regulatory institutions (Municipal Environmental Health Director and Municipal Disease Control Officer). This sample was chosen because of the short time duration within which the researcher had to conduct this study. Also, combining both qualitative and quantitative approaches allowed for the collection of rich descriptive data as well as in-depth qualitative and explanatory information on hygiene practices from the participants.

3.3.5 Sampling Technique

Samples for social research studies can either be selected through probabilistic or non-probabilistic methods (Dillon et al., 1993, Ahiadeke, 2008). Whereas probabilistic sampling gives every element a known chance of being selected for inclusion in the study, non-probability sampling does not guarantee each element an equal chance of being selected for inclusion in the study. Some scholars hold the opinion that in situations where a sampling frame of the target population for the study does not exist, a non-probabilistic sampling approach may be more ideal to use (Ahiadeke, 2008; Babbie, 2005; Dawson, 2002).

In this study, a non-probabilistic sampling method was used to select respondents. This was informed by the lack of a sampling frame of street food vendors in Nsawam and Adorgyiri. The sampling procedure followed a two-stage approach; first the study area was classified into various sectors/locations like lorry parks, markets, school premises, hospital area (with the help of the Municipal Environmental Health Directorate). The second stage involved selecting food vendors from each cluster or location as described above. Selecting vendors in the various vending locations or clusters followed the purposive or judgmental sampling method. This method, according to Babbie (2005) involves selecting units or respondents to participate in a study on the basis of the researcher’s knowledge of the population, its
elements, and the purpose of the study. It is most useful in situations where the researcher intents to study a large population in which most members of the subset can be identified but enumerating them all become impossible.

3.3.6 Selection of Respondents

Upon entering each vending cluster, the food vendor to the left was first interviewed and thereafter, a gap of two vendors was observed before the next interview. This process was repeated until the area is exhausted. Consumer selection on the other hand followed the intercept method where customers were approach and interviewed after they had made purchases at various vending stalls. Finally, the two representatives (Municipal Environmental director and Disease control officer) were purposively selected for participation in the study.

3.4 Techniques for Data Analysis

In this study, both quantitative and qualitative approaches were combined. Quantitative data from the field were analyzed using the Statistical Package for Social Sciences (SPSS). All questionnaires collected from the field were first edited for completeness and all open-ends coded. The data was then entered into SPSS (Version 20). Using the SPSS tools, frequency distributions tables were constructed and cross tabulation undertaken on the data for interpretation. The qualitative interviews were transcribed verbatim and coded into themes. All field notes on the other hand were immediately typed upon returning from field each day. Qualitative analysis was undertaken through content analysis. Babbie (2005) described content analysis as a social research method which is appropriate for studying human communications as well as other forms of social behavior. It involves transforming raw data (texts, books, newspaper publications, interview transcripts,) into categories based on some conceptual schemes. This enables the researcher to make sense out the data gathered.
3.5. Limitations of the Study

Social science researchers encounter different challenges at different times which affect their studies. In carrying out this study, there were some challenges and limitations the researcher encountered. Major among these limitations were limited time, financial constraints and difficulty in getting vendors cooperation during field work. These challenges affected both the scope and depth of the study. Due to limited time, the data collection methods were limited to three approaches, i.e., use of semi-structured questionnaires, in-depth interview and direct observation. The use of focus group discussion and participant observation could have enriched the outcome of this study. Again, night street food vendors could not also be included in the sample due to time and financial limitations. Despite these challenges, thorough data collection and analysis were done and the quality of this study is in no way affected.

3.6 Conclusion

This chapter presented the methodological design adopted for this study. The mixed methods research involving a combination of both quantitative and qualitative approaches was adopted. The chapter also outlined the target population for the study and sampling procedure that was used in selecting respondents for the study. It described preparations put in place to ensure the reliability and validity of the data collections tools. The chapter outlined the constraints the researcher encountered and how they were addressed in order to produce quality work.
CHAPTER FOUR
PROFILE OF THE STUDY AREA

4.1 Introduction

This chapter presents a description of the study area where this project was conducted. The chapter is subdivided into two parts. Part one presents a general overview of the municipality within which the study was conducted. It describes the political and administrative background, location, characteristics of natural environment, infrastructure, and economic development. Part two focuses on the actual study area. It describes the location, demography, economic activities, environmental characteristics; socio-cultural characteristics; characteristics of social amenities (water, toilets, waste disposal sites, health facilities, etc.) and their accessibility by different people. The chapter then ends with a conclusion.

4.1 Political and Administrative Background of Municipality

The Nsawam Adoagyiri Municipal Assembly is one of the newly created district assemblies in Ghana. The Nsawam Adoagyiri Municipal Assembly was established under Legislative Instrument (L.I 2047) 2012. Until the middle part of 2012, Nsawam and Adoagyiri were both part of the then Akuapem South Municipal Assembly with Nsawam as its capital. However, in mid-2012 the Akwapim South Municipal Assembly was split into two following the creation of more districts under the Government Decentralization Policy which aims at promoting grass root participation in national politics and development policies formulation. Following this development, the Akwapem South Municipal Assembly was divided into two assemblies namely;

(i) The Akuapem South District Assembly, with its capital being Aburi, and

(ii) The Nsawam Adoagyiri Municipal Assembly with its capital being Nsawam.
The Nsawam Adoagyiri Municipal Assembly currently has 29 electoral areas and three zonal councils, comprising the Nsawam Zonal Council, Adoagyiri Zonal Council, and the Nkyenenkyene Zonal Council (Nsawam Adoagyiri Composite Budget, 2013).

4.2 Location

The Municipality is located between latitude 5.45° N and 5.58° N, and longitude 0.07° W and 0.27°W. It is about 23km from the national capital, Accra and covers a land area of 503 sq. Km. It shares political boundaries with the Ga and Tema Municipalities to the south, Akuapem North Municipality to the north, and Suhum-Kraboa Coaltar District and the West Akim Municipality to the west. The Municipality has over 122 communities with Nsawam and Adoagyiri being the biggest and most developed towns. Nsawam and Adoagyiri are adjoining towns separated by the Densu River. Other notable settlements in the municipality are Sakyikrom, Djankrom, Ntoaso, Amoakrom, Owuraku, Prisons, Dobro Atsikope, and Adaeso. In general, the municipality is relatively underdeveloped with most communities being rural. The municipality has estimated population of 132,024 of which 42,790 are males and 44,617 are females. In terms of ethnic composition, the municipality has a number of ethnic groups such as Akwapems, Akyims, Akwamus, Ga, Ewes, and Asantes (Nsawam Adoagyiri Composite Budget, 2013).

4.3 Characteristics of Natural Environment

The Nsawam Adoagyiri municipality is located within the mountainous regions of Eastern Ghana. The municipality is endowed with fertile agricultural soil and also frequent rainfall patterns. Due to the combinations of fertile soil and frequent rainfalls, the area is noted for its agriculture potentials. Different cash crops including cocoa, pineapple, and pawpaw as well as other food crops (cassava, cereals,) are cultivated by farmers in the municipality. There a
number of rivers within the municipality with River Densu as the most common (Nsawam Adoagyiri Composite Budget, 2013).

There are number of tourism sites within the municipality including Waterfalls located at Mensama and Boade at Nsakye, these waterfalls have a unique natural rocky formation of varied intricate designs on them. Other tourists’ attractions are the Osudom Lake which has crocodiles, alligators as well as other sacred reptiles in it and the Nsawam prison (Nsawam Adoagyiri Composite Budget, 2013).

4.4 Economic Activities

A number of economic activities are undertaken within the Nsawam Adoagyiri municipality. These include agricultural activities, commerce, services, tourism and industrial activity.

4.4.1 Agriculture

According to the Nsawam Adoagyiri Composite Budget (2013), Nsawam Municipality is endowed with fertile soil and good rainfall patterns. Majority of the inhabitants are therefore into agriculture notably food crop production. Commercial pineapple and pawpaw cultivation are also undertaken on large scale. Agriculture employs about 37% of the total labour force.

4.4.2 Commerce

Apart from agriculture, commerce is another important activity in the municipality. The commercial sector employs about 20 percent of the labour force. The types of commercial activities undertaken in the area includes the sale of clothing, electrical gadgets, foodstuffs, plastic wares, chemicals, beverages and toiletries (Nsawam Adoagyiri Composite Budget, 2013)
4.4.3 Services and Industrial Sector

The service and industrial sectors engage about 15 and 20 percent of the labour force respectively. The industrial sector comprises few factories and industries which offer employment to limited number of people. The industries comprise agro-processing, stone-quarrying, artifacts/craftworks production, pharmaceutical production, Batik tie and dye, and fruit processing (Nsawam Adoagyiri Composite Budget, 2013). Table 4.1 shows some major industries and their products in the Nsawam Adoagyiri municipality.

Table 4.1: Major Industries and their Products in Nsawam Adoagyiri Municipal

<table>
<thead>
<tr>
<th>Industries</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Adafot Sawmill Enterprise</td>
<td>Timber Boards</td>
</tr>
<tr>
<td>2 Ghana Paper Finishing Company</td>
<td>Paper Products</td>
</tr>
<tr>
<td>3 Nsawam Canary</td>
<td>Beverage and Food Products</td>
</tr>
<tr>
<td>4 Astek Fruit Processing Limited</td>
<td>Fruit Beverages and (Insu) Mineral Water</td>
</tr>
<tr>
<td>5 Paebo Quarry Limited</td>
<td>Quarry Projects</td>
</tr>
<tr>
<td>6 Gem Mineral Water industry</td>
<td>Mineral Water</td>
</tr>
<tr>
<td>7 Pam Pharmaceuticals</td>
<td>Drugs</td>
</tr>
<tr>
<td>8 Densu Industries</td>
<td>Disinfectant, Blue, Polish, etc</td>
</tr>
<tr>
<td>9 Still Pure Water</td>
<td>Bottled Water</td>
</tr>
<tr>
<td>10 Blue Skies Limited</td>
<td>Pineapple, Pawpaw, Water Melon juice</td>
</tr>
<tr>
<td>11 Mobile Water Ltd</td>
<td>Mineral Water</td>
</tr>
</tbody>
</table>

Source: Nsawam Adoagyiri Composite Budget, 2013

The service sector is dominated by financial institutions. These financial institutions provide general banking services as well microfinance services. The following banks and financial institutions currently operate in the Municipality; Ghana Commercial Bank, Akuapem Rural Bank, Citizens Bank, and South Akim Rural Bank.
Tourism is also becoming a huge part of the service sector within the Municipality. Currently, the Nsawam Adoagyiri Municipal Assembly has the following tourist sites; the Mensama and Boade -Nsakye Waterfalls, the Osudom Lake, the Nsawam prison, and the River Densu (Nsawam Adoagyiri Composite Budget, 2013)

4.5 Infrastructure and social Amenities

4.5.1 Health Infrastructure

The Nsawam Adoagyiri Municipality has one Government Hospital and over five other health centres. These facilities serve most of the communities within the Municipality and residents from other neighbouring districts. The hospital and other service levels have 135 beds with 8 doctors, 5 of them being specialists. There are 79 nurses and 20 paramedics. Given the fact most people in and around Nsawam and Adoagyiri depend on the same health facility the doctor/patient ratio is 1:16,000, compared with the National Standard of 1:10,000 (Akwapim South Composite Budget, 2012).

4.5.2 Educational Infrastructure

The Nsawam Adoagyiri Municipality has over seven (7) second cycle institutions most of which are private. In addition, there are several public and private basic schools. However, these schools tend to concentrate more in the most relatively urbanized towns in the municipality. For instance, among the second cycle institutions are St. Martins Senior High at Adoagyiri, Nsawam Senior High School at Nsawam, BOPA College of Arts and Sciences situated in Nsawam and Millennium Kings Academy also at Nsawam.

4.5.3 Water and Electricity Supply

Majority of the residents of Nsawam and Adoagyiri Municipality do not have access to pipe borne water from the Ghana Water company. Due to the limited supply of water from this source, some residents tend to patronize well water, rivers and stream water which they use for cooking and other domestic chores. It is reported that about 70% of the water required
comes from unsafe sources such as streams, shallow wells, and ponds (Ministry of Health/Ghana Health Service report, 2012). In terms of access to electricity, most of the communities within the Nsawam Municipality have access to electricity supply with the exception of few remote villages. The availability of electricity supply promotes the use of information technology especially mobile phones and computers. Currently, all the various telecommunication networks have services in the area. In terms of toilet facilities and waste management, the Municipality is lacking. Most residents within Nsawam and Adoagyiri do not have access to improved toilet facilities in their homes.

4.6 Profile of Nsawam and Adoagyiri

Nsawam and Adoagyiri are two predominantly Akwapem speaking communities (part of the Akan group) located on the Accra-Kumasi highway. The railway line also passes through these two communities. The two communities are considered relatively most developed within the Nsawam Adoagyiri Municipality in the Eastern Region of Ghana. Until mid-2012, both communities were under the Akwapem South Municipal Assembly with Nsawam as the district capital. The two communities are separated by the Densu River and are about 100 meters apart.

4.6.1 Demographic Characteristics of Nsawam and Adoagyiri

Both Nsawam and Adoagyiri are predominantly Akwapem speaking communities within the Nsawam Adoagyiri Municipality, formerly Akwapem South Municipal Assembly. The two communities have an estimated population of about 43,044. Nsawam has about 29,986 people and Adoagyiri has 13,058. Due to trade and other commercial activities, Nsawam and Adoagyiri have multi-ethnic compositions. Apart from the Akwapems, other ethnic groups from various parts of the country such as Akims, Akwamus, Ga, Ewe, Dagomba, Dagaaba, Fante as well as other West African nationals are found in both Nsawam and Adoagyiri (Nsawam Adoagyiri Composite Budget, 2013).
4.6.2. Economic Activities

The people of Nsawam and Adoagyiri engage in various forms of economic activities such as agriculture, petty trading, mining, and formal paid employments (from the government, service and industrial sectors in the municipality). Agriculture currently engages majority of the people within these two communities, follow by informal sector business through self-employment. Public sector and private formal sectors employs only a small number of the active population (Akwapim South Composite Budget, 2012). Street food vending is a common activity in both communities due to their location along the Kumasi Highway. Nsawam and Adoagyiri serve as major transit point for travelers to and from the southern, middle and northern parts of Ghana. Bread and Tsofe (fried turkey tail) and fried yam are the most dominate street foods in the area. Other varieties of foods such as; fufu, kenkey, waakye, and rice with stew are sold in this area in response to the demand from both travelers and local residents (Ghana Health Service, 2012).

4.6.3 Social Amenities (Water, Toilets, Waste Disposal Sites, Health Facilities):

The Nsawam Hospital is the main health facility for the people of the area. In addition, there are other health facilities, some of which are privately owned. These health facilities take care of the health needs of the entire Municipality and due growing population, these facilities are overstretched. In terms of electricity supply, both communities have access to electricity supply from the national grid. Educational infrastructures are also relatively well developed in these two communities. There are over 7 second cycle schools within these two communities and over 20 basic schools, majority of which are privately owned. Portable water is still a challenge to inhabitants of these communities. Only 30% of the water needs of the people come from Ghana Water Company and 70% from unsafe sources such as wells, streams and rivers (Ministry of Health/Ghana Health service report, 2012).
Sanitation and proper waste disposal also remains one of the major challenges in the two communities. Private domestic waste collection is unpopular among residents of Nsawam and Adoagyiri. Most people in these communities still rely on using public dumping sites to dispose waste while those who cannot travel to these public dumping containers burn their wastes or throw it into the Densu River (which also serves as water source for domestic use). Majority of the people rely on the use of few public toilets facilities which are mostly badly kept. Over (60%) of inhabitants in the Nsawam and Adoagyiri do not have access to decent toilet facilities in their homes. (Ministry of Health/Ghana Health service report, 2012)

4.7 Conclusion

This chapter describes the study area. The chapter gave an overview of the Nsawam Adoagyiri Municipality in terms of its political administration, location, natural environment, economic activities and infrastructural development. It went further to focus on the study area itself (Nsawam and Adoagyiri). It looked at the profile and demographic composition, economic activities, and social amenities in the two communities. The chapter then ended with a conclusion.

From the foregoing description of the study locations, the study area lacks adequate social amenities. This is evidence by the over 60% residents do not have access to decent toilet facilities in their homes and 70% of them use unsafe water sources such as wells, streams and rivers for food preparation and other domestic chores. Also, the fact most people in these communities still rely on using public dumping or burning of their wastes imply that street food vending is carried out under insufficient social amenities. And as noted by WHO (1996), lack of social amenities tend to contribute to poor hygienic and safety practices among food vendors.
CHAPTER FIVE
DATA ANALYSIS AND DISCUSSION

5.1 Introduction

This chapter covers the analysis and discussion of the data collected from the field. This study set out to examine; the nature of hygiene practices among street food vendors in Nsawam and Adoagyiri, the factors that inform these hygiene practices, the effectiveness of hygiene education among vendors and consumers, and the role played by regulatory institutions to ensure good hygiene practices among street food vendors. Thus, the study sought to answer the following research questions: (i) what are the current hygiene practices among street food vendors in Nsawam and Adoagyiri (ii) what factors inform these practices? (iii) How effective is the enforcement of by-laws and regulations governing street food vending in Nsawam and Adoagyiri? (iv) how effective is hygiene education among street food vendors and consumers in Nsawam and Adoagyiri?

The chapter is divided into five main sections. Section one (5.1) deals with the demographic characteristics of respondents. It covers location of street food vendors, gender, ages, and educational status of the respondents. Section two (5.2) looks at the nature of hygiene practices among street food vendors. The section examines: the hygiene and safety practices during food preparation and selling, methods of serving food, vendors waste disposal methods and nature of waste bins. Section three (5.3) focuses on factors that influence the nature of hygiene practices among street food vendors in Nsawam and Adoagyiri. Section four (5.4) of the chapter focuses on the role played by regulatory institutions in promoting street food hygiene and safety in Nsawam and Adoagyiri Municipality. Section five (5.5) examines the nature and effectiveness of hygiene education among vendors and consumers. The chapter finally ends with a brief summary of key field findings and a conclusion.
5.1.1 Background Characteristics of Respondents

The study sampled a total of 72 respondents categorized under three units of analysis namely street food vendors, Street food consumers, and regulatory institutions of street food. The participants were made up of 50 street vendors (69% of total respondents), 20 street food consumers (28 % of total respondents) and representatives of 2 regulatory institutions, the Environmental Health Unit and the Municipal Health Directorate (3 % of total respondents). Given the purpose of this study, street food vendors and consumers in Nsawam and Adoagyiri were the main units of analysis. The Environmental Health Director and Disease Control Officer were key contact persons who provided in-depth information on the subject in the Municipality. Table 5.1 provides summary of respondent’s category.

<table>
<thead>
<tr>
<th>Category of Respondents</th>
<th>Share of Total Respondents</th>
<th>Percentage of Total Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street Food Vendors</td>
<td>50</td>
<td>69.0</td>
</tr>
<tr>
<td>Street Food Consumers</td>
<td>20</td>
<td>28.0</td>
</tr>
<tr>
<td>Reps of regulatory institutions</td>
<td>2</td>
<td>3.0</td>
</tr>
<tr>
<td>Total</td>
<td>72</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Source: Field Data, 2013**

5.1.2 Location of Street Food Vendors

Table 5.2 shows the major locations of street vendors in Nsawam and Adoagyiri. From the Table, only 2 percent of the vendors were located around church premises, while majority (98%) of the vendors were located around four major areas: lorry parks (22%), market area (26%), hospital area (22%) and along road sides (28%). Most of these vendors carry out their activities under temporary structures in these locations and had no access to clean water or toilet facilities near their vending sites. The absence of toilet facilities and water imply that
vendors may not be able to observe proper hygiene practices such as regular hand washing with soap. This finding is in conformity with that of Rheinlander (2006) who reported that most street food vendors in Kumasi operated without access to clean water or toilet facilities near their vending sites.

Table 5.2: Location of Street food Vendors

<table>
<thead>
<tr>
<th>Location Type</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lorry Park/Station</td>
<td>11</td>
<td>22.0</td>
</tr>
<tr>
<td>church/mosque premises</td>
<td>1</td>
<td>2.0</td>
</tr>
<tr>
<td>Market Area</td>
<td>13</td>
<td>26.0</td>
</tr>
<tr>
<td>Hospital area</td>
<td>11</td>
<td>22.0</td>
</tr>
<tr>
<td>Roadside</td>
<td>14</td>
<td>28.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Field Data, 2013

5.1.3 Gender of Respondents

Gender is an important factor often considered in many social science researches as it is a basis for assigning roles for males and females in many societies. In this study, collecting data on the gender of respondents gave an indication of the kind of people (whether male or female) are engage in street vending in Nsawam and Adoagyiri. Out of the total respondents interviewed, 79% were females whilst 21% were males. Among the vendors as shown in Table 5.3, majority of them 49 (98%) out of the 50 respondents were females. This finding corresponds with findings of earlier studies of the street food sector such as (FAO, 2012; WHO, 1996; Annan-Prah et al, 2011) which revealed that the sector is dominated by women in West Africa. This implies that in Ghana street food vending is still considered a female activity and therefore men prefer their wives to undertake it instead of doing it themselves. Among street food consumers interviewed, 60% were males and 40 % females. This finding
suggests that more males than females consume street vended food in Nsawam and Adoagyiri. This may be due to fact that most men are unable to cook and may also spend more time out of home due to work. Also, in typical Ghanaian homes women often cook and manage the homes with men serving as breadwinners. The two institutional representatives were both males.

Table 5.3: Gender of Respondents

<table>
<thead>
<tr>
<th>Categories of Respondents</th>
<th>Gender</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male %</td>
<td>Female %</td>
<td>Total</td>
<td>Male %</td>
<td>Female %</td>
</tr>
<tr>
<td>Street Food Vendors</td>
<td>1 (2%)</td>
<td>49 (98%)</td>
<td>50 (100%)</td>
<td>1 (2%)</td>
<td>49 (98%)</td>
</tr>
<tr>
<td>Street Food Consumers</td>
<td>12 (60%)</td>
<td>8 (40%)</td>
<td>20 (100%)</td>
<td>12 (60%)</td>
<td>8 (40%)</td>
</tr>
<tr>
<td>Institutional Representatives</td>
<td>2 (100%)</td>
<td>-</td>
<td>2 (100%)</td>
<td>2 (100%)</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Field Data, 2013

5.1.4 Ages of Respondents

The findings presented in Table 5.4 shows that majority of the vendors (84%) were within the ages of 20-49 years, whiles 8% each were between 10-19 years and 50-59 years respectively.

This finding shows that the youth predominate in street food vending at Nsawam and Adoagyiri. The finding therefore differs from that of Anan-Prah et al. in their 2011 study which found that street food vending was undertaken mainly by middle age women in Cape Coast in the Central Region of Ghana. The predominance of youth in street food vending at Nsawam and Adoagyiri is a reflection of the importance attached to street food vending in recent times. Many youth see the sector as lucrative and are therefore turning their attention towards it for employment and income generation.
Among consumers, 55% were within the age group of 20-29 years, 30% in the 30-39 age group and 10% between 40-49 age group. This finding shows that street food is consumed by different groups of people. The finding therefore confirms recent studies in the sector by FAO (2012) which reported that in West Africa, consumers of street food cut across a variety of social backgrounds and income groups. It also confirms the increasing importance attached to street food.

**Table 5.4: Ages of Respondents**

**Vendors**

<table>
<thead>
<tr>
<th>Ages</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-19</td>
<td>4</td>
<td>8.0</td>
</tr>
<tr>
<td>20-29</td>
<td>14</td>
<td>28.0</td>
</tr>
<tr>
<td>30-39</td>
<td>13</td>
<td>26.0</td>
</tr>
<tr>
<td>40-49</td>
<td>15</td>
<td>30.0</td>
</tr>
<tr>
<td>50-59</td>
<td>4</td>
<td>8.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

**Consumers**

<table>
<thead>
<tr>
<th>Ages</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-19</td>
<td>1</td>
<td>5.0</td>
</tr>
<tr>
<td>20-29</td>
<td>11</td>
<td>55.0</td>
</tr>
<tr>
<td>30-39</td>
<td>6</td>
<td>30.0</td>
</tr>
<tr>
<td>40-49</td>
<td>2</td>
<td>10.0</td>
</tr>
<tr>
<td>50-59</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

**Source: Field Data, 2013**

**5.1.5 Educational Status of Respondents**

Education plays an important role in society. It shapes people’s perception and behavioral pattern as well as acts as a means of transferring both formal and informal knowledge onto
members of society. Data on the educational status of respondents as presented in Table 5.5, shows that 56% of the vendors had Junior High education, 24% had Primary education, 14% had Secondary education, and only 3(6%) had no formal education. Given the fact that more than half of the vendors (70%) had Junior High education and above, this finding tend to differ from previous works such as WHO (1996) and Annan-Prah et al, (2011) which suggested that most street food vendors in developing countries have no formal education. The finding suggests that street food business is now seen as a viable source of employment and not necessarily a business for the uneducated as observed by some earlier researchers (Muinde and Kuira, 2005; Annan-Prah et. al, 2011; WHO, 1996). Findings on the educational background of street food consumers revealed that majority (70%) of them had higher education (30% secondary education and 40% Tertiary). Only 10% had primary education. This finding confirms FAO (2012) study which found that people with different socio-economic and educational backgrounds patronize street foods in developing countries, Ghana included.
Table 5.5: Educational background of Respondents (Vendors & Consumers)

<table>
<thead>
<tr>
<th>Vendors</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior High education</td>
<td>28</td>
<td>56.0</td>
</tr>
<tr>
<td>Primary education</td>
<td>12</td>
<td>24.0</td>
</tr>
<tr>
<td>Senior High Education</td>
<td>7</td>
<td>14.0</td>
</tr>
<tr>
<td>No formal education</td>
<td>3</td>
<td>6.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>50</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Consumers</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary education</td>
<td>2</td>
<td>10.0</td>
</tr>
<tr>
<td>Junior High education</td>
<td>4</td>
<td>20.0</td>
</tr>
<tr>
<td>Senior High education</td>
<td>6</td>
<td>30.0</td>
</tr>
<tr>
<td>Poly/Vocational education</td>
<td>4</td>
<td>20.0</td>
</tr>
<tr>
<td>Tertiary education</td>
<td>4</td>
<td>20.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>20</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Field Data, 2013

5.1.6 Business Ownership

During the time of the field survey, it was found that 74% of vending sites were operated by the owners themselves while 26% were operated by support staff (14% operated by employees and 12% by family relatives). Table 5.6 provides details on ownership status of vendors. This finding shows that activities of street food vendors create employment for some people in society.
Table 5.6: Business Status of Vendor

<table>
<thead>
<tr>
<th>Ownership status</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business owner</td>
<td>37</td>
<td>74.0</td>
</tr>
<tr>
<td>Employee</td>
<td>7</td>
<td>14.0</td>
</tr>
<tr>
<td>Family relative(paid/unpaid)</td>
<td>6</td>
<td>12.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Field Data, 2013

5.2. Nature of Hygiene Practices among Street Food Vendors

This section seeks to find out the nature of hygiene practices and safety measures put in place by vendors during food preparation or in the course of selling it. FAO (2009) observed that food contamination can occur during food preparation stage where contaminants can be introduced accidentally. It can also occur through improper handling of cooked food during selling. The section therefore explores issues regarding: hygiene and safety practices during food preparation and selling, methods of serving food, vendors’ waste disposal methods and nature of waste bins, as well as management of leftover foods, and cleaning of dishes and utensils.

5.2.1 Hygiene Practices during Cooking

Street food vendors are expected to put in place hygienic and safety practices during food preparation in order to avoid contamination. The study sought to find out the various hygienic practices adopted by vendors during food preparation. Responses from the field as presented in Table 5.7 indicate that most vendors do not put in adequate hygienic practices to prevent food from contamination during cooking. The data shows while 62% of respondents wash their hands and food stuff before cooking, a significant number (38%) of the respondents do not wash their hands, utensils and food stuff before cooking. Also, the responses show that 52% of vendors do not cover their food during cooking, and 60% do not sweep the cooking
environment, bath or covers their hair. It was also found out that only 4% of the respondents resorted to sterilizing meat and fish before frying. These findings indicate that hygienic practices such as sterilizing meat and fish with salt before frying/ cooking, sweeping of the cooking surroundings, bathing and covering of hair, as well as proper covering of food during cooking are very low among vendors. The findings imply that majority of street foods in Nsawam and Adoagyiri are predisposed to contamination. According to FAO (2009) poor hygienic practices at any stage of the food chain can lead to the introduction, growth and survival of harmful bacteria that will render food unsafe. Contamination of street food can occur through poor personal hygiene such as lack of washing hands with soap after visiting toilets, poor surroundings and improper cooking processes.

Table 5.7: Hygienic and safety practices during cooking

<table>
<thead>
<tr>
<th>Safety Practices</th>
<th>Users</th>
<th>Non-users</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%</td>
</tr>
<tr>
<td>Wash hands, utensils and food stuff before cooking</td>
<td>31</td>
<td>62</td>
</tr>
<tr>
<td>Use pipe borne water and cover food during cooking</td>
<td>24</td>
<td>48</td>
</tr>
<tr>
<td>Sweep cooking environment, bath and cover hair</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>Sterilize meat and fish before frying</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

Source: Field Data, 2013

5.2.2 Hygiene Practices during Selling Food

Improper handling of cooked food by vendors and/or their assistants has been identified as one of the major contributors to food contamination (Mensah et al., 2002, Muide and Kuira, 2005, WHO, 1996). Thus understanding the hygiene practices adopted by vendors during food sale was considered important in this study. Analysis of data from the field reveals that
there is poor hygienic and safety practice among street food vendors in Nsawam and Adoagyiri during selling. According to the field results as presented in Table 5.8, whiles covering of food during sale was high among vendors (76%), majority of the vendors did not observe other forms of hygienic and safety practices. The data shows that 64% of vendors do not wash their hands before serving customers, 82% do not keep food in protective glass sieve to prevent flies and dust from getting in contact with it. Majority of the respondents (86%) serve food with bare hands instead of a pair of fork or a ladle and same bare hands were used in receiving money from customers and giving back change to them. This finding is in conformity with previous studies such as Rheinländer (2006), Janie and Marie (2010). There is therefore the need for more education and sensitization on hygienic practices among vendors during selling. Also, effective monitoring is required from the Environmental Health Unit of the District Assembly in order to deal with vendors who violate rules on hygiene observance during food sale.

Table 5.8: Hygienic and safety practices during selling food

<table>
<thead>
<tr>
<th>Safety Practices</th>
<th>Users</th>
<th></th>
<th>Non-users</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%</td>
<td>Frequency</td>
</tr>
<tr>
<td>Cover food during selling</td>
<td>38</td>
<td>76</td>
<td>12</td>
</tr>
<tr>
<td>Wash hands before serving</td>
<td>18</td>
<td>36</td>
<td>32</td>
</tr>
<tr>
<td>Food is kept in protective glass sieve</td>
<td>9</td>
<td>18</td>
<td>41</td>
</tr>
<tr>
<td>Reheat food to keep it hot during selling</td>
<td>6</td>
<td>12</td>
<td>44</td>
</tr>
<tr>
<td>Serve with fork or ladle</td>
<td>7</td>
<td>14</td>
<td>43</td>
</tr>
</tbody>
</table>

**Source:** Field Data, 2013
5.2.3 Vendors Access to Waste Bins and Nature of Waste Bins

Food vendors generate all kinds of waste during food preparation and sale. If not properly managed, this waste can contaminate food being prepared for sale. As such it is recommended that food vendors should have well-kept waste bins where they can keep their waste to be collected by waste management services or to be properly disposed of (WHO, 1996). The findings from the field as represented in Table 5.9 shows that 42% of the respondents had no waste bins at their vending sites. These people rely on public bins at central collection point located far away from them. However, 58% of vendors had some form of waste bins. Among vendors who had waste bins, 41.4% were uncovered bins while 58.6% were covered. Uncovered bins attract flies, which can visit the food being sold and contaminate it. This finding confirms with that of Annan-Prah et al (2011) in their study of street vended food in the central region of Ghana.

Table 5.9: Food vendor’s access to dust bins at vending premises and nature of bins

<table>
<thead>
<tr>
<th>Item</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food vendors with access to dust/rubbish bins</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>29</td>
<td>58.0</td>
</tr>
<tr>
<td>No</td>
<td>21</td>
<td>42.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td><strong>Nature of Dust/waste bins</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Covered bin</td>
<td>17</td>
<td>58.6</td>
</tr>
<tr>
<td>Uncovered bin</td>
<td>12</td>
<td>41.4</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Field Data, 2013
During the time of the survey, various kinds of waste and polythene bags were seen lying around the stalls of some vendors especially among those vendors in the market area. Plate1 shows a vending site at the entrance to the Nsawam market.

Plate 1: Surroundings of a food vending site at the Nsawam market

Source: Field Data, 2013

5.2.4 Reheating of food during sale

During selling food, WHO (1996) recommends that the food should be kept warm enough within certain temperatures in order to ensure that microbes do not grow in them. Ready-to-eat foods intended for continuous serving should be protected from environmental contamination and kept at the following holding temperatures:

a) Food served hot.....60°C or above;

b) Food served cold......7°C or below

c) Food served frozen.....18 °C

When vendors were asked about their perception regarding reheating of food during selling; 90% of them considered reheating to be important whiles 10% of the respondents did not consider it important at all. Those who regarded reheating to be important also mentioned
that it helps to kill germs and prevent food from going bad. Table 5.10 presents responses of respondents. Though knowledge of reheating is very high among respondents, during the time of this survey, it was observed that most vendors did not have cooking facilities at their vending sites to heat their food. Only those who sell beans had fire under the pot.

Table 5.10: Vendor’s Perception of Reheating Food during Sale

<table>
<thead>
<tr>
<th>Is reheating of food important</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>45</td>
<td>90.0</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>10.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Field Data, 2013

5.3. Factors Influencing the Nature of Hygiene Practices among Street Food Vendors in Nsawam and Adoagyiri.

Various factors influence hygiene practices among street food vendors. The literature reviewed cited factors such as vendor’s ignorance of good hygienic practices, low levels of formal education among vendors, inadequate monitoring and supervision of vendors’ activities; as factors contributing to poor hygiene practices. As indicated in the conceptual framework in chapter two (section 2), good hygienic practices among street vendors require the coordinated effort of food vendors, the general public/consumers and institutional bodies mandated to regulate street food vending.

This section presents the various factors which contribute to improper hygienic and safety practices among street food vendors in Nsawam and Adoagyiri.

5.3.1 Vendors’ Food Preparation Skills and Knowledge Prior to Starting Business

Formal training in catering exposes food vendors to hygienic food preparation methods, good handling practices during selling of food, as well as good management of leftovers. Such
trainings help vendors appreciate their role in food contamination and therefore they are able to put in place appropriate hygienic and safety measures in order to avoid food contamination. This study sought to find out whether vendors had some level of formal training on food preparation before starting their business.

The responses from the field presented in Table 5.11 show that out of the 50 people interviewed, 44(88%) had no formal knowledge or training on preparation other than what they learnt from their parents before starting the business. Only 6 (12%) of the respondents mentioned that they went through some form of vocational course on catering prior to starting the business. This finding is in conformity with earlier studies including those of Rheinländer (2006), Annan-Prah et al. (2011), WHO (1996) and Muide and Kuira (2005), which found that most people involved in street food vending had no formal knowledge on food preparation and handling, a situation they observed to negatively affect the level of proper hygiene practices among food vendors. This lack of formal knowledge and training may contribute to neglect of very important hygienic practices.

Table 5.11: Vendors knowledge of cooking skills prior to starting business

<table>
<thead>
<tr>
<th>Formal training prior to starting business</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>44</td>
<td>88.0</td>
</tr>
<tr>
<td>Yes</td>
<td>6</td>
<td>12.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Field Data, 2013

The results of a cross tabulation of vendors’ knowledge of cooking skills prior to starting business and their practice of hand washing with soap during serving food shows that there is no relationship between vendors prior formal knowledge of cooking and hand washing with soap. The result shows that four (4) out of the six(6) respondents who have had prior training
in food preparation and handling did not wash their hands with soap during selling. Also sixteen (16) respondents out of the forty-four (44) without prior knowledge in preparation and handling indicated they wash their hands with soap during selling. This means that having prior knowledge of cooking alone does not necessarily lead to good hygienic practices. As indicated on the conceptual framework in chapter, the activities of street food vendors need monitoring and supervision from regulatory bodies to ensure that they observe good hygienic practices. Also, vendors need good social amenities such as water, electricity, toilet facilities and proper waste collection services to make hygiene practice more realistic.

Table 5.12: Cross Tabulation of Vendors Cooking Knowledge and Hand Washing

<table>
<thead>
<tr>
<th>Vendors knowledge of cooking</th>
<th>wash hands before serving customers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Before starting this business did you go through catering course</td>
<td>Yes</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>32</td>
</tr>
</tbody>
</table>

Source: Field Data, 2013

5.3.2 Vendor’s Knowledge/ Skills Acquisition in the course of Vending

Apart from undergoing formal training on proper food preparation methods, proper food handling, food safety and proper food storage methods prior to undertaking food vending, it is also believed that vendors can acquire these skills and knowledge through attending workshops and training/capacity building sessions in the course of undertaking their businesses. This study therefore sought to find out whether these trainings were available for street food vendors in Nsawam and Adoagyiri. Findings from the field revealed that even though such trainings were organized occasionally, only few vendors attended them. Out of the 50 respondents interviewed 13(26%) of them have ever attended training while majority of the vendors 37(74%) mentioned that they have never participated in any such training
session or workshop. Among reasons given for non-attendance were lack of awareness about training sessions, lack of time to attend and high costs of training.

Through an in-depth interview with the Nsawam Municipal Environmental Health Director, he noted that his unit have had serious difficulty in mobilizing vendors for training workshops on food hygiene and food safety. He mentioned that most of the food vendors complained about high opportunity cost of attending such training workshop.

“My brother, it’s been very difficult for the women to leave their work and come and attend such meeting or training. They complain that when they come for such meetings they forfeit their daily sales and yet they are not given any allowance and so they go back empty handed and unable to feed their children for that day. I think the best way would have been to give them some sitting or training allowance”.

This finding suggests a lack of effective communication between food vendors and regulatory authorities in Nsawam and Adoagyiri. It also suggests a need for regulatory authorities to be more resourced in order to adopt other forms of educating and reaching out to vendors including social marketing (visiting vendors at their stalls and educating them on undesirable/unhygienic practices which need to be avoided), which will be more effective than trying to bring them together at one location for training.

Table 5.13: Attendance of Workshop/ Training on Food Preparation, Food Safety/Hygiene

<table>
<thead>
<tr>
<th>Attendance of workshops</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>37</td>
<td>74.0</td>
</tr>
<tr>
<td>Yes</td>
<td>13</td>
<td>26.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Field Data, 2013
5.3.3 Untrained Nature of Support Staff

Support staffs assist with various aspects of street food vending such as food preparation, selling, cleaning of dishes, etc. They therefore play a significant role in the street food business. However, most of these staffs tend not to have formal training in food handling and other food safety issues. Out of 13 support staffs interviewed during field survey for this study, none of them had a health certificate as recommended by the Municipal Environmental Health Directorate for people selling street food. Also, none of them had formal training in food preparation and handling skills. Reasons given by some vendors for this phenomenon (support staffs not having health certificates) included the fact that Environmental Officers only inspect the health certificates of owners of vending sites but not that of support staff. Also, some owners of vending sites complained that because support staffs are hired to work for daily wages, spending money to get health certificates for them is not worth it since they can stop the work at any time, and when this happens the vendor loses. This finding implies that there is the need for Environmental Health Directorate to focus their attention on all people involved in street food vending and not just the owners of the businesses.

5.3.4 Poor Infrastructure and Social Amenities

Poor social access to amenities such as portable water, toilet facilities at vending locations in Nsawam and Adoagyiri (as mentioned in chapter four above), were identified by vendors as factors affecting their hygiene practices. Also, vendors’ inability to access permanent land/places to put up vending stalls encouraged some of them to cite their businesses at unauthorized places. During the field survey, some of the food vendors complained that because they do not have permanent places to put their stalls, it becomes difficult to even cook at the vending sites or store their foods properly. A vendor near the Densu River on the Adoagyiri road had this to say regarding maintaining her site;
“Not that we can’t make this place neat, the thing is that you can spend your money here and tomorrow the authorities or even the land owner will sack you”.

Plate 2: Fried yam with fish vendor site in Adoagyiri

Plate 3: Gari & Beans vendor site in Adoagyiri

Source: Field Data, 2013
5.3.5 Poor Monitoring and Supervision of Vendors Activities

One other important factor which contributes to improper hygienic practices as identified in section 5.2 is poor monitoring and regulation of the activities of street food vendors in Nsawam and Adoagyiri. During field survey, some vendors mentioned that they have never been visited for inspection of their activities. Also, it was found that poor enforcement of rules regarding hygienic codes of practice such as; regular blood screening of respondents, hand washing with soap, and covering of food with protective glass sieves during selling; created room for the high rate of unhygienic practices observed among street food vendors in Nsawam and Adoagyiri.

5.4. Role of Regulatory Institutions in Enforcing By-Laws and Regulations Governing Street Vending Sector in Nsawam and Adoagyiri

The control and regulation of street food activities in Ghana rest with the Ministry of Local Government and Rural Development. In each region, the Metropolitan, Municipal or District Assemblies are responsible for licensing, issuing of permits and health certificates as well as awareness creation and consumer education on the hazards associated with unhealthy or unhygienic street food. This important activity is carried out by the Municipal/District Environmental Health Directorate in conjunction with the Municipal/District Health Service as well as Food and Drugs Board. The Environmental Health Directorate is expected to educate and build the capacity of street food vendors on issues such as good hygienic food preparation and handling, proper waste disposal, personal hygiene (ISSER, 2002). These institutions are expected to carry out regular monitory and supervision to ensure that activities of street food vendors are within accepted standards (WHO, 1996). They are also expected to arrest and prosecute food vendors who refuse to comply with hygienic and safety standards despite repeated warning. This section sought to assess the extent to which
regulatory institutions carry out their duties in order to ensure that street vended food within the Nsawam and Adoagyiri area are hygienic and healthy.

5.4.1 Health Screening of Vendors Prior to Selling Food

The Municipal Environmental Health Directorate is expected to ensure that prior to selling food, food vendors undergo a thorough medical screening that involves analysis of their faeces, urine, blood sample, and sputum before a health certificate is issued to them which declare them fit to prepare and sell food to consumers. The purpose of this is to ensure that vendors are free of any contagious diseases and this exercise is expected to be done on annual basis (for renewal of certificates and permits). This study therefore sought to find out whether food vendors went through this provision before selling food to the public. Data from the field indicates that while majority of vendors (66%) went through health-screening prior to operating their businesses, a significant proportion of them did not. 34% of vendors started cooking and selling food to the public without undergoing health screening. This means that vendors with contagious diseases could be selling food to the public. The finding therefore confirms the safety concerns raised by some researchers regarding street vended food (WHO 1996, Muinde and Kuria, 2005). This finding suggests a weak enforcement of rules governing the activities of street food vendors in Nsawam and Adoagyiri.

5.4.2 Renewal of Vendors Health Certificates

The Environmental Health Department is also expected to ensure that food vendors who have undergone health screening and declared fit to prepare and sell food to the public are issued with health certificates renew these certificates annually. This study sought to find out whether vendors had valid health certificates or not. Responses from vendors as presented in Table 5.15 indicate that at the time of this survey, thirty-nine (78%) of the vendors had valid health certificates. However, eleven (22%) of them did not have valid health certificates.

---

2 Information provided by Nsawam Adoagyiri Municipal Health Director
Among vendors without valid health certificates, 6 mentioned they had applied for renewal and were waiting for their certificates while the remaining 5 respondents were yet to apply for it. The finding show there is poor supervision and monitoring of vendors activities in Nsawam and Adoagyiri and this may also contribute to some of the improper hygienic practices as identified in section 5.2.

**Table 5.14: Vendor’s Health Screening Prior to Starting Business**

<table>
<thead>
<tr>
<th>Vendor’s health screening prior to business</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>33</td>
<td>66.0</td>
</tr>
<tr>
<td>No</td>
<td>17</td>
<td>34.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Renewal of health certificate</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>39</td>
<td>78.0</td>
</tr>
<tr>
<td>No</td>
<td>11</td>
<td>22.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Source: Field Data, 2013**

**5.4.3 Inspection of Vendor’s Activities by Environmental Officers**

The Environmental Health Department is also expected to carry out regular inspection of the activities of street food vendors. This is to ensure that vendors comply with the required hygienic and safety measures in carrying out their businesses. WHO (1996) noted that regular inspection of the activities of street food vendors by regulatory authorities can contribute to the enhancement of the safety and hygienic levels of street vended foods. On the question of regular inspection of the activities of vendors in Nsawam and Adoagyiri, data from the as shown in Table 5.15 below indicates that 88% of vendors mentioned that they have been visited by representatives of the Municipal Environmental Health unit for inspection and
control purposes. Six vendors (12%) however indicated that they have not been visited at all within the last 12 months for inspection. This group of people included new entrants to the business and some old vendors located at the outskirts of the main town. During an in-depth interview with the Municipal Environmental Health Director, he mentioned the difficulty his department faces in reaching out to food vendors in some parts of Nsawam and Adoagyiri due to non-availability of means of transportation for his unit. This, he noted affect the work of his officers,

“*Lazy officers might be tempted to concentrate on only areas within walking distances*”.

On the frequency of visit by inspectors, 46% of the respondents mentioned that they are visited at on weekly basis, 36% of respondents mentioned been visited about 2-3 times monthly while 6% indicated yearly visits by inspectors.

**Table 5.15: Inspection of Vendor’s Activities during Last 12 Months**

<table>
<thead>
<tr>
<th>Ever been visited</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>44</td>
<td>88.0</td>
</tr>
<tr>
<td>No</td>
<td>6</td>
<td>12.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

**Frequency of inspection**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once weekly</td>
<td>15</td>
<td>34.0</td>
</tr>
<tr>
<td>Several times weekly</td>
<td>8</td>
<td>18.0</td>
</tr>
<tr>
<td>About 2-3 times monthly</td>
<td>18</td>
<td>41.0</td>
</tr>
<tr>
<td>Yearly</td>
<td>3</td>
<td>7.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>44</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

**Source:** Field Data, 2013
5.4.4 Punishment and Prosecution of Offenders

The Environmental Health departments are mandated under the Metropolitan, Municipal and District Assembly by-laws to arrest and prosecute offenders for improper hygienic practices. Various forms of punishments exist for offenders including demolition of vending sites, fines, arrest, trial and prosecution at the district and municipal courts. However, this regulation is not strictly enforced in Nsawam and Adoagyiri due to several reasons.

Through an interview conducted with the Nsawam Adoagyiri Municipal Environmental Health Director, he mentioned that though they are mandated to carry out arrests and prosecution of offenders, it is hardly done. He identified a number of reasons for non-compliant with this directive. Among the major factors mentioned were; poor working logistics and under-resourcing of his unit by the assembly and lack of collaborations from other departments such as the District Police unit and court officials. He mentioned that his department did not have a vehicle to move around for inspection and that when they had to even arrest an offender, a taxi is hired to pick up the person and the costs borne personally by him since attempts to recover such money can take months. Again, he noted that when it comes to arresting an offender, the police demand he gives them money before they actually do it.

“As we talk now, am having about eight bench warrants to arrest some vendors and the police have to help us make these arrests, but here is the case you will go to them and they are expecting you to come out with something before they help you, knowing that it is their duty”

He noted that due to these challenges, his outfit is not able to carry out its mandate as provided under the by-laws.
5.5 Nature of Hygiene and Food Safety Education among Street Food Vendors and Consumers

This section deals with assessing the effectiveness of hygiene and food safety education among street food vendors and consumers in Nsawam and Adoagyiri. Effective education on the risks associated with consuming contaminated street food and ways of avoiding such contamination helps build the capacity of vendors on hygienic practices and also empower consumers to know the right thing and demand for it (WHO, 1996).

5.5.1 Sensitization of Vendors on Hygiene and Food Safety

Health inspectors as well as environmental health officials, in addition to inspecting the activities of street vendors, are also expected to educate them on good hygienic practices such as; proper cooking, proper handling of cooked food, storage of leftovers, and proper waste disposal practices. This will enable vendors to be empowered and well-resourced with the requisite knowledge and skills essential for ensuring hygienic food preparation and food safety (WHO, 1996; FAO, 2009).

Responses from field indicate that street food vendors in Nsawam and Adoagyiri have benefited from some form of food safety and hygiene education. According to data gathered from the field as presented in Table 5.1, while 54% of respondents reported having been sensitized on hygiene, sanitation, and food safety issues by either an environmental health officer, general health, or an NGO worker; 46% of the respondents said that they haven’t had any form of education. This finding reveals that more needs to be done on educating/sensitizing street food vendors during inspection periods in order to increase their knowledge and awareness in order to promote good practices among them. Also, most vendors were aware that holding money and serving food with same bare hands could lead to food contamination. 92% of the vendors interviewed agreed that handling money with bare
hands and at the same time serving food can leads to food contamination, 6% however disagreed and 2% were uncertain.

Despite this high level of awareness, it was observed during field data collection that some vendors were collecting money and using their bare hands in serving food. This therefore indicates there is the need to closely monitor the activities of vendors to ensure compliance.

Table 5.16: Sensitization of Vendors on Hygiene and Food Safety

<table>
<thead>
<tr>
<th>Have you ever been sensitized on hygiene &amp; food safety</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>27</td>
<td>54.0</td>
</tr>
<tr>
<td>No</td>
<td>23</td>
<td>46.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Handling money and serving can cause contamination

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>42</td>
<td>84.0</td>
</tr>
<tr>
<td>Somehow Agree</td>
<td>4</td>
<td>8.0</td>
</tr>
<tr>
<td>Neither Agree Nor Disagree</td>
<td>1</td>
<td>2.0</td>
</tr>
<tr>
<td>Somehow Disagree</td>
<td>1</td>
<td>2.0</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>2</td>
<td>4.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Field Data, 2013

5.5.2 Consumer Awareness

Sensitizing consumers on the hazards associated with eating contaminated street food or food prepared and served under poor hygienic conditions is considered very essential as it enables
the consumer to make right choices (WHO, 1996). This section seeks to find out hygiene awareness among consumers and factors that influence their choice of vendors when buying food.

Data from the field as shown on Table 5.17 revealed that most consumers in Nsawam and Adoagyiri are aware of some hygiene and food safety issues and do take various hygienic considerations into place before buying food from vendors. On question of factors that determine the choice of vendor to buy from, 45% of respondents mentioned cleanliness of the selling environment, 30% mentioned personal neatness and appearance of the seller, 20% of respondents mentioned neat display of food items. Similarly, majority of the respondents 50% consider safety as most important priority when buying food, 35% consider perceived nutritional quality of the food, and 15% consider the cost or affordability of the food

Table 5.17: Factors Consumers Consider When Selecting Vendor/Food Type to Buy

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal neatness and appearance of seller</td>
<td>6</td>
<td>30.0</td>
</tr>
<tr>
<td>Cleanliness of selling environment</td>
<td>9</td>
<td>45.0</td>
</tr>
<tr>
<td>Neat display of food items</td>
<td>4</td>
<td>20.0</td>
</tr>
<tr>
<td>Others</td>
<td>1</td>
<td>5.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Factors influencing consumers’ choice of food item to buy

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of the food</td>
<td>3</td>
<td>15.0</td>
</tr>
<tr>
<td>Nutritional quality of food</td>
<td>7</td>
<td>35.0</td>
</tr>
<tr>
<td>Safety of the food</td>
<td>10</td>
<td>50.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

**Source:** Field data, 2013
5.5.3 Conclusion

This chapter involved field data analysis and discussion of findings. The chapter is divided into five sections. Section one (5.1) looked at the background characteristics of respondents, section two (5.2) focused the nature of hygiene practices among street food vendors in Nsawam and Adoagyiri, while section three (5.3) examine the various factors that contribute to improper hygienic practice among vendors. Section four (5.4) concentrated on the role played regulatory institutions in promoting good hygiene among vendors and the last section (5.5) looked the nature and effectiveness of hygiene and food safety education among vendors and consumers.

Results from the analysis indicate that majority of street food vendors in Nsawam and Adoagyiri have formal education (94%) and that street food business is female dominated in Nsawam and Adoagyiri. The study found out that poor hygienic and safety practices exist among street food vendors in Nsawam and Adoagyiri during food preparation and sale. Findings revealed that, about 38% of vendors do not wash their hands, utensils and food stuff before cooking, 52% of vendors do not cover their food and 60% do not sweep the cooking environment, bath or covers their hair during cooking. It was also found that, during selling, vendors do not adhere to good hygienic practices. For instance, the study found that 64% of vendors do not wash their hands before serving customers, 82% do not keep food in protective glass sieve to prevent flies, dust, etc, from getting in contact with it, and 86% of vendors do not also serve with fork or ladle. It was also found that a lot of vendors were selling without waste bins to properly keep their waste. Several factors were identified to contribute to these improper hygienic and safety practices. Among these factors were; most vendors 44(88%) had no formal knowledge or training on preparation before starting the business, untrained support staff who lacked cooking and proper food hand skills, poor infrastructural and social amenities such as lack of portable water and toilet facilities for
vendors to work with, and poor/ineffective monitoring, control and enforcement of rules and regulations on street food vending by regulatory authorities. Thus poor institutional monitoring and regulation of vendors contributed to improper hygienic practices among vendors in Nsawam and Adoagyiri.
CHAPTER SIX

SUMMARY, RECOMMENDATIONS AND CONCLUSIONS

6.1 Introduction

This chapter presents the study’s objectives and summary of key findings, recommendations and conclusions drawn based on these findings. The objectives of this study were to; examine the nature of hygiene practices among street food vendors in Nsawam and Adoagyiri; examine the factors that inform these hygiene practices as well as examine the role played by regulatory institutions to ensure good hygienic practices among street food vendors. The study adopted the mixed method research approach and a total of 72 respondents were sampled and interviewed using the purposive sampling method.

6.2 Study Objectives and Summary of Key Findings

The first objective of this study was to examine the nature of hygiene practices among street food vendors in Nsawam and Adoagyiri. The results of the study showed that there are poor hygienic and safety practices among street food vendors in Nsawam and Adoagyiri during food preparation and sale. The data shows that about 38% of the respondents did not wash their hands, utensils and food stuff before cooking. Also, 52% of vendors did not cover their food during cooking, and 60% did not sweep the cooking environment or bath before cooking. It was also found that, during selling vendors did not adhere to good hygienic practices. About 64% of vendors do not wash their hands before serving customers, 82% did not keep food in protective glass sieves to prevent flies, and dust, from getting in contact with it, and 86% of vendors did not also serve with fork or ladle. This negligence of hygiene and safety measures during food preparation and sale can lead food contamination and therefore put the consumer at risk.

The second objective was to examine the factors which inform the nature of these hygiene practices. The study results revealed that the following factors contributed to the
poor hygienic practices observed among street food vendors in Nsawam and Adoagyiri; lack of formal knowledge/training in food safety, handling and cooking skills among both vendors and their support staffs, (about 88% of the respondents and their support staff had no formal knowledge or training on safe food preparation and handling before starting the business), poor and inadequate infrastructural and social amenities such as portable and toilet facilities, ineffective enforcement of rules and regulations governing street food vending by local authorities.

The third objective of this study was to examine the effectiveness of hygiene education among vendors and consumers. Findings from the study indicated that hygiene and food safety education was somehow effective at Nsawam and Adoagyiri among both consumers and vendors. About 54% of the vendors reported having been sensitized on hygiene, sanitation and food safety issues by either an environmental health officer or NGO worker. However, about 46% of the respondents reported not benefiting from any form of hygiene and food safety education. This finding reveals that more needs to be done on educating/sensitizing street food vendors on hygiene and food safety issues during inspection periods in order to increase their knowledge and awareness. Street food consumers also show high knowledge of hygiene and food safety issues. The results showed that majority of the respondents, 50% considered food safety as most important factor when buying food, 35% considered the perceived nutritional quality of the food, and 15% consider the cost or affordability of the food.

The fourth objective was to examine the role played Regulatory Institutions in ensuring good hygienic and safety practices among street food vendors. The results indicated that there is ineffective monitoring and control as well as enforcement of rules and regulations governing the activities of street food vendors by local authorities at Nsawam and Adoagyiri. This study found that some vendors operated without going through health screening, and
that there is poor enforcement of rules governing street vending due to lack collaboration among local departments/units such within the municipality and also due to poor working logistics. The Municipal Environmental department mentioned inadequate support and collaboration from of support from institution such as the police force, the Municipal Health Directorate and the Assembly itself, as a serious factor which affected their work.

6.2 Recommendations

This study clearly established that there exist poor hygienic and safety practices among street food vendors at both the preparation and selling stages in Nsawam and Adoagyiri. Therefore to reduce the risk of food contamination and food borne diseases, the following recommendations are offered:

✔ Provide training on hygiene and food safety for food vendors and support staff.

There is the need for the Municipal Assembly and NGOs to provide capacity building/training on food hygiene and food safety issues for vendors and their support staff. This will help increase the knowledge of food vendors who started cooking and selling food to the general public without much formal knowledge basic hygiene and food safety issues. Additionally, the Assembly should provide sensitization and education for street food consumers, vendors and the general population on hygiene practices such as hand washing with soap before eating.

✔ District Assembly to establish food vending sites

There is the need for Local government authorities to establish food vending sites with good social amenities and infrastructure such as pipe borne water, modern toilet facilities, waste collection services and electricity in their various jurisdictions. This will ensure that when vendors are given training on proper hygienic and food safety practices they will be able to
apply them to their work. It will also enable Local government authorities to maximize revenue mobilization from vendors.

✔ **District Assembly to provide training and logistics for regulatory departments**

The local authorities also need to provide capacity building for staff of Environmental Health Department and other units tasked with regulating the street food vending in order for them to carry out their functions effectively. The department also needs to be resourced with the necessary logistics to enable them function effectively.

✔ **Encourage collaboration between institutions at local levels**

Finally, there is the need to foster more collaboration among institutions at the local level in order to promote effective monitoring and regulation of the street food sector in Ghana. This will ensure that street food sold to the consumer meets best industry standards. There is also the need to revise old bye-laws to reflect current situations.

**6.3 Conclusion**

This study set out to examine; the nature of hygiene practices among street food vendors in Nsawam and Adoagyiri, the factors that inform these hygiene practices, the effectiveness of hygiene education among vendors and consumers, and the roles played by regulatory institutions to ensure good hygienic and safety practices among street food vendors. The study adopted the mixed methods research approach by integrating both qualitative and quantitative techniques of data collection and analysis. A total of 72 respondents (50 street food vendors, 20 street food consumers and two regulatory institutions) were sampled from Nsawam and Adoagyiri in the Easter Region of Ghana.

Findings of the study revealed that street food business in Nsawam and Adoagyiri is female dominated and most vendors have formal education, 70% of the vendors had Junior High School education and above. Despite the high level of formal education among vendors, the
study found that only 6 (12%) of them had formal knowledge on food safety, proper food handling and cooking. Thus majority of the vendors started their businesses with informal knowledge they have acquired from parents and previous experiences. The study also found out that poor hygienic and safety practices exists among street food vendors in Nsawam and Adoagyiri during food preparation and sale. Among the factors accounting for improper hygienic and safety practices include lack of formal knowledge/training in food safety, proper food handling, and cooking skills among vendors and their support staff, poor access to infrastructural and social amenities including pipe borne water, good toilet facility, waste collection services and electricity at vending sites, and poor monitoring and ineffective enforcement of rules and regulations governing street food business by local authorities in Nsawam and Adoagyiri. Based on these findings, the study recommended that in order to improve the safety and hygiene of street foods, the following recommendations should be considered; local government authorities should establish food vending sites with good social amenities and infrastructure such as pipe borne water, modern toilet facilities, waste collection services and electricity in their various jurisdictions; provides capacity building/training on food hygiene and food safety issues for vendors and their support staff, provide sensitization and education for street food consumers, vendors and the general population on hygiene practices such as hand washing with soap before eating; train and resourced departments/units in charge of regulating street food business. Finally, there is the need for local authorities to foster collaborations among the various units tasked to regulate the street food sector in order to promote effective street monitoring and regulation of the sector in Ghana.
REFERENCES


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APPENDIX 1: SURVEY QUESTIONNAIRE

Institute of Statistical, Social and Economic Research (ISSER), University of Ghana, Legon

Ma Development Studies

Topic: Examining the Hygiene Practices among Street Food Vendors in Nsawam

This study is being conducted by Mr. Godfred Tabanye Wuliyeng, a student of Development Studies at the Institute of Statistical, Social and Economic Research (ISSER), University of Ghana, Legon. The study seeks to examine the hygiene practices adopted by street food vendors to ensure street food safety in Nsawam and Adoagyire Township. Any information collected from you will be treated confidentially.

Contact Address of Respondent:

Location
Town
Mobile No. of Respondent

Q 1. Type of Vendor

Stationary Vendor 1
Mobile Vendor 2

Q 2. Location of Business

Lorry park/station 1
Church/Mosque premises 2
Market Area 3
School premises 4
Other(specify) 5

Q 3. Gender

Female
Male
Q4. What is your age?

Q5. Marital status: which of the following applies to you?
   - Married
   - Unmarried
   - Divorced/separated
   - Widow/widower

Q6. What is your highest level of education completed?
   - No formal education
   - Primary complete
   - Primary incomplete
   - JSS/JHS complete
   - JSS/JHS incomplete
   - SSS/SHS complete/incomplete
   - Vocational/Catering
   - Other (specify)…………………………..

Q7. How many employees does this business have currently?
   - No. of Employees

Q8. Which of the following applies to you regarding this business?
   - Business owner
   - Employee
   - Apprentice
   - Family relative (paid/unpaid)

(INTVIEWER: DO NOT ASK, OBSERVE AND ANSWER Q9 and Q10)

Q9. Is the business sited close to a dumping site?
   - Yes 1
   - No 2
Q10. Is the vending point sited near an open gutter(s)?

Yes 1
No 2

KNOWLEDGE ON FOOD SAFETY, HYGIENE AND SANITATION

Q11. How long have you been doing this business/selling food?

Less than 3 months
4-6 months
1-2 years
3-5 years
6-10 years
Above 10 years

Q12. Before starting this business, did you go through formal training on food preparation or catering course?

Yes (if yes, ans. Q13 and Q14)
No (if no, skip to Q18)

Q13. If yes, from which institution did you acquire your training?

Q14. What was the qualification obtained?

No certificate awarded
Certificate of participation from Assembly, organization
Certificate
Diploma
NVTI Grade (I or II)
Other----------------

Q15. Have you ever attended any training/ workshop on food safety/ hygiene since you started this business?

Yes
No( if no skip to Q17)
Q16. State briefly what the training was about

........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

Q17. You said that you have never attended any training/workshop on food hygiene or food safety, which of the following best describe your reasons?

None availability of such trainings
I do not have enough time to attend such programs
Cost of attending such trainings is high
Other
(specify)................................................................................................................................

FOOD PREPARATION AND HANDLING

Q18. Where do you normally prepare your food?

Prepared at home and transported here for sale
Prepared here at the vending site
Prepare it/some here when the ones brought from home get finished

Q19. The food handler can cause food contamination during food preparation or sale. To what extent do you agree or disagree with this statement?

Strongly agree
Somehow agree
Neither agrees nor disagree
Somehow disagree
Strongly disagree

Q20. During food preparation, what measures are put in place to ensure its safety?

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Q21. How do you control your cooked food from getting contaminated?

………………………………………………………………………………………………………………
………………………………………………………………………………………………………………
………………………………………………………………………………………………………………
………………………………………………………………………………………………………………

Q22. What is the cause of diarrhoea among children?

Contaminated water

Contaminated food

Dirty hands/ eating without washing the hands

Poor sanitation

Jealous relatives

Others.........................

Q23. Do you sometimes get food leftovers (unsold foods including stews, meat, fish etc)?

Yes

No

Q24. (If yes ask)When you get leftovers, how do you manage/ preserve them?

Stored in refrigerator/freezer to be use the next day

Poured into a container and cover to be use the next day

Poured into container and leave open to be use the next day

Eat leftovers

Throw it away

Other (specify)..................................................................................................................

Q25. How often do you reheat your food or stew during the day?

Do not reheat food at all

Always

Once

2-4 times
(Interviewer: Observe where dishes are washed/cleaned and answer Q26)

Q26. Are dishes/bowls washed in soapy water?
   Yes
   No

Q27. It said that washing of bowls/plate/cups in soapy water at least twice before rinsing them reduces the spread of germs. To what extent do you agree or disagree with this statement?
   Strongly agree
   Somehow agree
   Neither agree nor disagree
   Somehow disagree
   Strongly disagree

Q28. Holding/handling of money/currency with bare hands (collecting or giving out change to customers) at the same serving food with bare hands increases the risks of food contamination. To what extent do you agree or disagree with this statement?
   Strongly agree
   Somehow agree
   Neither agree nor disagree
   Somehow disagree
   Strongly disagree

PERSONAL HYGIENE

Q29. How important is hand washing after visiting the toilet/urinary to you?
   Not important
   Somehow important
   Very important
   Don’t know
Q30. On the average, how many times do wash your hands while serving, selling or handling food?

Never

Once a day

2-4 times daily

More 4 times daily

Anytime it is necessary to do so

Q31. (Ask if respondent answers never): what is your main reason for not washing your hands during selling or handling food

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…………………………………………………………………………………………………
…………………………………………………………………………………………………
…………………………………………………………………………………………………

SOURCES OF WATER

Q32. What is your main source of water for?

A. Cooking

pipe borne water

well

River

Tanker service

Other.........................

B. washing/ cleaning of utensils and dishes

pipe borne water

well

River

Tanker service

Other
Q33. How important is the use of clean water (such pipe borne water, treated water from a plant) in your cooking?

Very important
Important
Neither important nor unimportant
Unimportant
Unimportant at all

Q34. Does access to clean water constitute a challenge to your business activities?

Yes
No

Q35. If yes; do you consider it as a minor or a major challenge?

Minor challenge
Major challenge.

(Interviewer: observes and answer the following questions: Q40- Q43)

Q36a. Does vendor have access to dust/rubbish bin?

Yes
No

Q36b. If yes, is dust bin covered or uncovered?

Covered bin
Uncovered bin

Q37. Are food handlers/ vendors at this stand wearing an apron?

Yes
No

Q38. Are food sellers at this stand wearing head cover?

Yes
No
Q39. Is food served with pair of tongs/fork/spoon or with bare hands?

Food served with pair of tongs/fork/spoon

Food served with bare hands

EXTERNAL CONTROL MECHANISM

Q40. Before you started selling here, were required by the Assembly to go through a health screening?

Yes

No

Q41. Do have a health certificate from the Assembly, Clinic or hospital which declares you healthy to sell food?

Yes

No

Q42. Have you ever renewed your health certificate?

Yes

No

Q43a. If yes: When was the last time you renewed it?

Less 6 months ago

6-12 months ago

1 -2 years

More than 2 years ago.

Q44b. If never renewed; why haven’t you renewed your health certificate

No money/ cost of renewal is high

Cumborsome procedure/limited time

Authorities don’t check

Don’t know renewal date

Other-----------------------------
Q45. Has an environmental officer or sanitary inspector visited your business for any inspection during the last 12 months?

Yes
No

Q46. If yes, how often do they visit?

Once a week
2-3 times monthly
Once a month
2-5 times yearly
Once in a year

Q47. Has any environmental officer/sanitary inspector or health worker visited your business to educate you on food safety/hygiene?

Yes
No

Q48. If yes, when was the last time someone like that visited your business? Provide month and year.

    MM:    YY:

Q49. What are the two most important challenges that affect hygienic practices in this area?

Q50. In your opinion, how do you think these challenges can be addressed?

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General comments:

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                           .......................................................... ..........................................................
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APPENDIX 2: CONSUMER QUESTIONNAIRE

University of Ghana, Legon

Institute of Statistical, Social and Economic Research (ISSER),

Ma Development Studies

Topic: Examining the Hygiene Practices among Street Food Vendors in Nsawam and Adoagyiri

This study is being conducted by Mr. Godfred Tabanye Wuliyeng, an MA student in Development Studies at the Institute of Statistical, Social and Economic Research (ISSER), University of Ghana, Legon. The study seeks to examine the hygiene practices adopted by street food vendors to ensure street food safety. Any information collected from you will be treated confidentially as it is used for only academic purposes.

Q1. Gender of Respondent

Female

Male

Q2. What is your age?

Q3. Marital status:

Married

Single

Living together

Divorced/separated

Widow/widower

Q4. What is your highest level of education completed?

No formal education

Primary

JSS/JHS

SSS/SHS

Poly/Vocational/ Technical
University Graduate
Post University
Others---------

Q5. Occupational status

Business owner/ self employed
Professional (e.g. lawyer, Teacher, etc.)
Skilled worker
Unskilled worker (Traders, Apprentices etc.)

Q6. When buying food, which of the following factors determine your choice of seller/vendor?

Personal neatness and appearance of seller
Cleanliness of selling environment
Neat display of food items
Others(specify)…………………………

Q7. In buying food outside the home, which of the following do you consider most important?

Cost of the food
Nutritional quality of the food
Safety of the food
Others (specify)……

Q8. What do you understand by the term food hygiene?

Q9. What are some of the things that can make food unhygienic or unsafe for consumption?


Q10. The food handler can cause food contamination during food preparation or sale. To what extent do you agree or disagree with this statement?

Strongly agree
Somehow agree
Neither agrees nor disagrees
Somehow disagree
Strongly disagree

Q11. Holding/handling of money one’s with bare hands (collecting or giving out change to customers) at the same serving food with bare hands increases the risks of introducing germs into the food. To what extent do you agree or disagree with this statement?

Strongly agree
Somehow agree
Neither agrees nor disagrees
Somehow disagree
Strongly disagree

Q12. Eating unhygienic food or food prepared or sole under poor sanitation can cause diseases such as cholera and diarrhea. To what extent do you agree or disagree with this statement?

Strongly agree
Somehow agree
Neither agrees nor disagrees
Somehow disagree
Strongly disagree

Q13. Proper washing of bowls/plate/cups, (for instance, washing in soapy water at least twice before rinsing them) can reduce the spread of germs. To what extent do you agree or disagree with this statement?

Strongly agree
Somehow agree
Neither agrees nor disagrees
Somehow disagree
Strongly disagree

Q14. In your opinion, is reheating of food during its sale important?
Yes
No

Q15. In your opinion, is hand washing after visiting the toilet/urinary important?
Yes
No

Q16. What suggestions do have for improving street food hygiene and safety?
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........................................................................................................................................
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Thanks once again for your time.
APPENDIX 3: INTERVIEW GUIDE

University of University, Legon
Institute of Statistical, Social and Economic Research (ISSER)

Interview Guide

Introduction

Good morning sir/madam, my name is Godfred Tabanye Wuliyeng, a Master’s student at the Institute of Statistical, Social and Economic Research (ISSER), University of Ghana, Legon.

As part of my programme, I am writing a dissertation on the topic: Examining the Hygiene Practices of Street Food Vendors in Nsawam and Adoagyiri. This guide is designed to help me assess the role of regulatory institutions in the promotion and maintenance of hygiene practices among street food vendors in Nsawam and Adoagyiri.

Any information collected from you will be used solely for academic purposes and as such it will be treated with the utmost confidentiality. Thank you for participating.

Before I start, I will like to seek your permission to record this discussion so that I can play it back to enable me write my dissertation when I get back.

Can you please introduce yourself for the purpose of this discussion, your name and rank or position?

How long have been serving in this capacity here?

What is the nature of street food hygiene in this area? How different is it from other districts?

How important is street food hygiene and safety to you?

What roles, as an institution are you expected to play in the maintenance of street food hygiene and safety?

Presently, how many staff does your department have to enable you carry out your assigned responsibilities?

What are the challenges you face in carrying out these responsibilities?

How can these challenges be solved?