ENSIGN GLOBAL UNIVERSITY, KPONG

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ASSESSMENT OF HYGIENIC PRACTICES AMONG STREET FOOD VENDORS IN LA DADEKOTOPON MUNICIPALITY IN THE GREATER ACCRA REGION OF GHANA

BY

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DECLARATION AND CERTIFICATION

I, Edinam Maureen Sedo, hereby declare that this submission is my own work towards the Master's Degree in Public Health and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the college, except where due acknowledgement has been made in the text.

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DEDICATION

This work is dedicated to the Almighty God, my entire family (the Sedo Family) and the great people of La Dade-Kotopon Municipality. Thank you for the immense support and God bless you abundantly.

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First and foremost, I give thanks to Almighty God for granting me life, strength, and wisdom throughout this academic journey. Without His divine guidance and grace, the successful completion of this work would not have been possible.

I am deeply grateful to my supervisor, Dr. Edward K. Sutherland, for his invaluable guidance, constructive feedback, and patience which greatly shaped the direction of this thesis. His mentorship has been instrumental to both my academic and professional growth.

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LIST OF ABBREVIATIONS

Abbreviation	Meaning
WHO	World Health Organization
FAO	Food and Agriculture Organization of the United Nations
FAO/WHO	Codex Alimentarius collaborators (FAO/WHO)
FDA	Food and Drugs Authority (Ghana)
GHS	Ghana Health Service
GSS	Ghana Statistical Service
LaDMA	La Dade-Kotopon Municipal Assembly
AMA	Accra Metropolitan Assembly
MMDAs	Metropolitan, Municipal and District Assemblies
SDGs	Sustainable Development Goals
WASH	Water, Sanitation and Hygiene
JMP	(WHO/UNICEF) Joint Monitoring Programme
SPSS	Statistical Package for the Social Sciences
CDC	Centers for Disease Control and Prevention
CIDRAP	Center for Infectious Disease Research and Policy
EPA	Environmental Protection Agency (Ghana)
ILO	International Labour Organization
GDP	Gross Domestic Product
UNICEF	United Nations Children's Fund
UN Women	United Nations Entity for Gender Equality and the Empowerment of Women
EU	European Union (mentioned re: safety limits)
LI	Legislative Instrument (e.g., LI 2133)
HCAIs	Healthcare-Associated Infections

ABSTRACT

Background: Street food is a vital source of nutrition and income, especially in developing countries, where it feeds millions daily. However, despite its importance, it poses significant food safety risks. Globally, unsafe food causes over 600 million illnesses and 420,000 deaths each year. In Africa, issues like poor hygiene, weak regulation, and limited vendor training contribute to frequent outbreaks of foodborne diseases, including cholera and aflatoxin contamination.

In Ghana, street food is part of everyday urban life and a key economic activity, particularly for women. Yet, many vendors lack adequate knowledge of food safety, and infrastructure challenges persist. While regulatory bodies exist, enforcement is often inconsistent. Experts recommend practical interventions such as vendor education, hygiene training, and improved waste management to reduce risks and promote safer street food practices. This study explores food hygiene practices among street food vendors in urban Ghana, with a focus on the La Dade-Kotopon Municipality. It aims to highlight the key challenges vendors face and how they manage food safety. The insights gained shall help shape practical solutions, such as training and policy recommendations, to improve hygiene and protect public health.

Research Methodology: A cross-sectional design with a analytical approach will be employed for this study. Data will be collected from both structured questionnaires and direct field observations. This will be systematically analyzed using Statistical Package for the Social Sciences (SPSS) version 26 and Microsoft Excel. These tools will facilitate efficient data coding, cleaning, and statistical analysis.

Results: The study surveyed 352 street food vendors in La Dade-Kotopon Municipality. The majority were female (97.2%) and aged 35–44 years (40.6%). Findings indicated generally high knowledge of food hygiene among 53% of participants. A large proportion of vendors (over 80%) prepared food in open or poorly sheltered spaces, and 56.3% inspected ingredients mainly for visible spoilage rather than using standard quality checks. Vendor type and years of experience were significantly associated with both knowledge and practice ($\chi^2 = 3.91$, $p = 0.048$; $\chi^2 = 22.31$, $p < 0.001$). Knowledge also declined with longer years of vending, from 49.0% among those vending for 1–5 years to 13.6% among those with >10 years of experience. Other demographic factors such as education level, age, and marital status showed no statistically significant association with food hygiene outcomes ($p > 0.05$).

Conclusion: The results demonstrate that while knowledge of hygiene among street food vendors is high, its application in daily practice remains inadequate, exposing consumers to potential health risks. The persistence of unsafe practices highlights the need for continuous training programs, improved access to safe water and sanitation facilities, and stronger regulatory enforcement by municipal authorities. Strengthening vendor capacity and institutional oversight will not only reduce the burden of foodborne diseases but also enhance consumer safety and support the economic sustainability of street food vending in urban Ghana.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Street food, typically described as ready-to-eat snacks or meals prepared and sold by vendors in public spaces, plays a central role in urban food culture around the world. Especially in developing countries, these affordable and accessible food options are a dietary staple for millions (Salamandane, Malfeito-Ferreira and Brito, 2023).

The Food and Agriculture Organization estimates that approximately 2.5 billion people consume street food every day. Despite their economic and nutritional value, street foods are often linked with food safety concerns, which can have severe public health consequences (FAO, 2020).

The global burden of foodborne diseases is significant. According to the World Health Organization, foodborne diseases cause an estimated 420,000 deaths globally each year, of which about 125,000 occur among children under five. This demonstrates that food safety is a global issue, affecting both developing and developed nations (WHO, 2023).

The Centres for Disease Control and Prevention estimates that 48 million people suffer from foodborne illnesses annually, resulting in 128,000 hospitalizations and 3,000 deaths (CDC, 2023). Norovirus is the most common cause, while Salmonella is the leading cause of death related to foodborne diseases. Similarly, Germany has seen a rise in such illnesses, with the Robert Koch Institute reporting Campylobacter and Salmonella as the main culprits often linked to meat, eggs, and dairy products (Whitworth, 2024).

Street food is deeply embedded in urban life but is also associated with hygiene concerns and weak regulatory oversight. A cross-country study found that majority of street food vendors in Africa operate in unsanitary conditions, often due to lack of training, resources, or enforcement mechanisms (Johnson & Lee, 2021). These conditions contribute significantly to the spread of foodborne illnesses.

In Nigeria, for instance, foodborne diseases continue to be a major challenge. Lagos was the most affected, with children under five suffering disproportionately (Reuters, 2024). Broader estimates suggest over 200,000 annual deaths in Nigeria due to various foodborne pathogens (SpringerLink, 2024).

Kenya has had its share of crises, including a notable aflatoxin outbreak in 2004, which prompted government-led food safety campaigns. These efforts include promoting adherence to international food safety standards and public education (Capital FM, 2024). Yet, a 2019 study revealed that 80% of vendors still do not meet basic hygiene standards (Mugoya et al., 2019), showing that implementation gaps remain.

Uganda's Ministry of Health reports about 1.3 million cases of foodborne illnesses annually, accounting for 14% of all reported diseases. Aflatoxin contamination in maize remains a significant problem, with up to 65% of maize samples exceeding acceptable safety levels. This has not only posed health risks but has also led to an estimated $7.48 million in economic losses, cutting export revenues by 45% (Monitor, 2024). Additionally, a concerning 82% of fruits and vegetables sampled in cities like Kampala were found to have unsafe levels of chemical residues (Monitor, 2024).

Street food is not only a daily dietary source but also a key part of Ghana's informal economy. Popular dishes like jollof rice, banku, and kelewele are sold in almost every urban centre. This sector is especially important for women, 87% of Ghanaian women in the informal sector

engage in street food vending, according to UN Women (2021), making it a lifeline for many families.

However, food safety concerns are prominent. Research indicates that while many vendors are aware of hygiene standards, about 50% have only a basic understanding of food safety protocols (Kim et al., 2020). This limited knowledge can increase the risk of contamination, especially in areas with inadequate infrastructure.

According to Nguyen & Zhang (2022), there is a growing demand for hygienic food options among urban residents, suggesting an opportunity for health education to make a real impact. However, environmental and regulatory barriers remain. A 2024 review found that bacterial contaminants like E. coli are common, while aflatoxins in maize and spices sometimes exceed both national and EU safety limits (Ahiabor et al., 2024). Infrastructure issues such as lack of access to clean water, proper waste disposal, and shelter further heighten the risk of food contamination (Adaku et al., 2024).

Though Ghana has regulations in place through institutions like the Food and Drugs Authority (FDA), enforcement is uneven. An FAO survey revealed that 40% of vendors in Accra had never been visited by a food inspector (FAO, 2023). There have been notable interventions, including vendor training programs led by local authorities and international partners (FAO, 2023), suggesting that progress, while slow, is achievable. Past outbreaks underscore the public health risks associated with poor hygiene practices among vendors. In Ghana's Eastern Region, a 2015 outbreak in a Senior High School affected 68 students, with Clostridium perfringens and Salmonella identified as causes due to contaminated water used in food preparation (Ameme et al., 2016). Similarly, an outbreak in Ga East Municipality was linked to poorly stored rice and groundnut soup consumed by schoolchildren (Malm et al., 2015).

These examples highlight how street food-related illnesses can swiftly impact communities, especially in areas where monitoring and emergency response systems are weak.

Improving food safety in street food settings is not just beneficial, it is essential. As Patel et al. (2023) argue, vendor education and public awareness are among the most effective strategies to reduce risks. Programs focusing on basic hygiene, safe storage, and proper cooking techniques can significantly improve food quality and public trust.

One widely recommended approach is the Hazard Analysis and Critical Control Point (HACCP) system, a preventive framework that identifies and controls potential food hazards. While widely adopted in formal food industries, its implementation among informal vendors remains limited. Kothari et al. (2020) suggest that introducing HACCP principles even in simplified form can greatly enhance food safety among small-scale vendors.

Street food remains an essential aspect of food security, urban culture, and economic survival for many around the world especially in Africa. Yet, the public health risks it poses due to poor hygiene, limited regulation, and environmental challenges cannot be ignored. Countries like Ghana, Nigeria, Kenya, and Uganda showcase both the potential and pitfalls of this industry.

Addressing the issue requires a holistic and collaborative approach. This includes government-led regulations, consistent vendor training, improved infrastructure, and active community engagement. By investing in these areas, stakeholders can support a vibrant, safe, and sustainable street food culture: one that nourishes without harming, empowers without endangering, and thrives without compromising public health.

1.2 Problem Statement

Street food vending is a vital aspect of urban food systems, particularly in developing regions, where it provides affordable and accessible food options. In Ghan, for instance, street food accounts for about 60% of meals consumed daily, highlighting its importance in urban diets

(Ghana Statistical Service, 2021). However, the lack of proper hygienic practices among street food vendors poses significant public health risks, including foodborne illnesses and contamination. According to the World Health Organization (WHO), foodborne and waterborne diseases account for an estimated 600 million cases of illness and 420,000 deaths each year globally (WHO, 2020). According to the World Health Organization (2015), unsafe food causes over 200 diseases, resulting in approximately 600 million illnesses and 420,000 deaths each year. Street-vended foods, have been identified as a major source of foodborne outbreaks, especially in developing countries where food safety systems remain weak.

In La Dade-Kotopon Municipality, the increasing popularity of street food has not been matched by adequate regulatory oversight or vendor training in food safety. Studies indicate that over 50% of street food vendors in Ghana lack sufficient knowledge of food hygiene practices, which is critical in preventing foodborne diseases (Akyeh et al., 2021). Additionally, many vendors operate without appropriate permits or health inspections, further exacerbating the risks associated with street food consumption (NOURCITY, 2002). This gap raises serious concerns about the safety and quality of food being offered to consumers, particularly among vulnerable populations such as children, the elderly, and low-income families who rely heavily on these food sources.

Recent research across sub-Saharan Africa reinforces the scale and persistence of these challenges. The World Health Organization (2023) estimates that unsafe food contributes to over 600 million cases of illness and 420,000 deaths annually worldwide, with Africa experiencing the highest per capita burden. Studies in Ghana and neighbouring countries reveal that many street food vendors lack adequate food safety knowledge and training. For example, Onyango et al. (2025) reported that 93% of vendors in Kenya had never received formal hygiene education, while Pereira et al. (2021) found that only 14% of vending sites in South Africa met acceptable hygiene standards. Similarly, Klutse and Sampson (2025) observed

persistent hygiene lapses among vendors in Ghana's Volta Region despite awareness campaigns, indicating that knowledge does not always translate into safe practices. These findings, supported by recent regional reviews (Cudjoe et al., 2022; Koumassa et al., 2025; Adaku et al., 2024), highlight the widespread nature of unsafe food-handling behaviours and underscore the urgency of strengthening food safety regulation, infrastructure, and vendor education in urban Ghana.

Moreover, the socio-economic factors that drive street food vending often lead to a cycle of poor hygiene practices, as vendors may prioritize profit over safety. Limited access to clean water, inadequate facilities for food preparation and storage, and insufficient enforcement of health regulations contribute to this issue. Therefore, there is an urgent need to assess the hygienic practices of street food vendors in the La Dade-Kotopon area, identify the prevalent challenges they face, and provide actionable recommendations for improving food safety standards to protect public health. This study aims to throw light on these issues and advocate for enhanced training, regulatory measures, and community engagement to foster a healthier street food environment.

1.3 Rationale of Study

Despite its socio-economic benefits, street food vending poses significant public health challenges. The informal nature of the sector often leads to inadequate adherence to food safety standards, resulting in the risk of foodborne illnesses. Studies have shown that street food vendors often operate under conditions that expose consumers to foodborne diseases. For instance, a study in the Sagnarigu Municipality revealed that 98.9% of vendors handled money with bare hands while serving food, and 95.2% did not wear face masks (Issahaku et al., 2024). Additionally, the proximity of vending sites to open gutters and the lack of proper waste disposal systems further exacerbate the risk of food contamination (Issahaku et al., 2024).

The Ghana Food and Drugs Authority (FDA) has recognized the importance of regulating the street food sector to ensure food safety. In 2022, the FDA launched the Street Food Vending Permit (SFVP) initiative to regulate street food vendors and ensure they meet basic hygiene requirements (GNA, 2022). However, compliance remains low, with data showing that only 1,079 food service estalishments across the nation have been issued the FDA's Food Hygiene Permits (GNA, 2022). This indicates a significant gap in regulatory compliance, necessitating further efforts to enforce food safety standards among street food vendors.

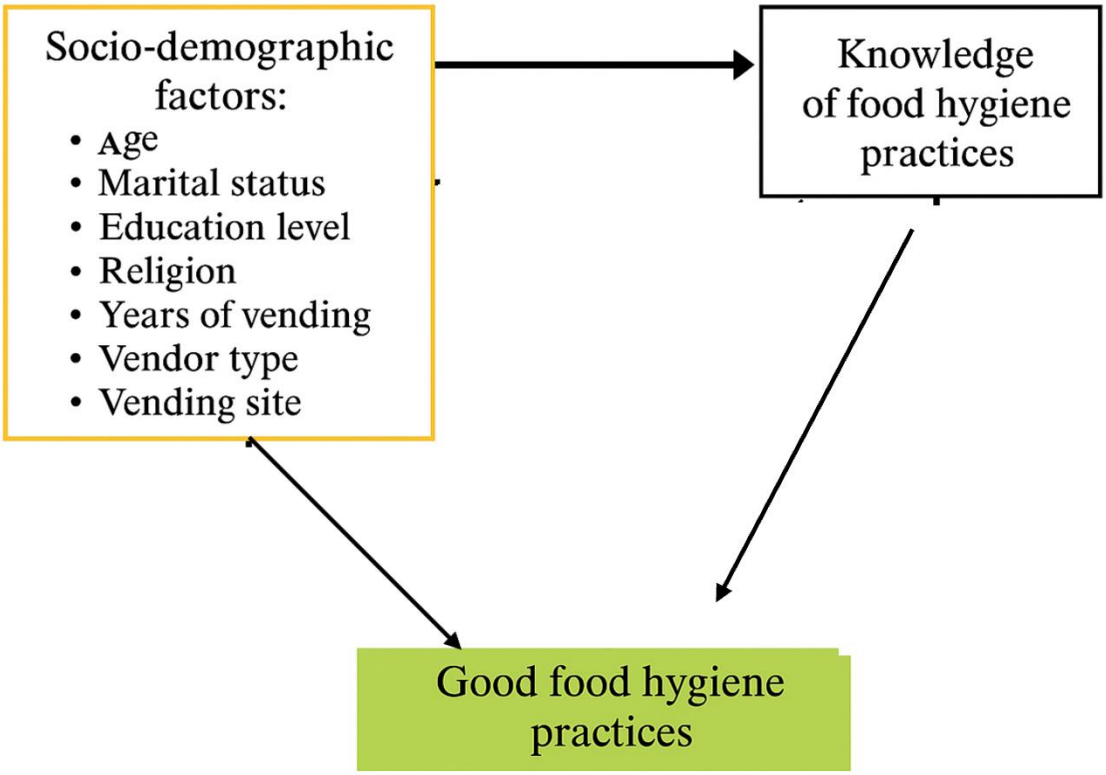
This study aims to contribute to the academic literature on food hygiene practices among street food vendors, particularly in the context of urban Ghana. By focusing on the La Dade-Kotopon Municipality, the study will provide insights into the specific challenges and practices within this municipality. The findings will inform the development of targeted interventions, including training programs and policy recommendations, to improve food safety practices among street food vendors. Additionally, the study will serve as a reference for future research on food hygiene in similar urban settings.

La Dade-Kotopon Municipality is a densely populated area in the Greater Accra Region, characterized by a vibrant street food sector. The municipality's urbanization and high street food patronage make it a pertinent focus for assessing hygienic practices among street food vendors. Despite the prevalence of street food vending, there is a paucity of research specifically examining food hygiene practices within this municipality. By focusing on La Dade-Kotopon, this study addresses a critical gap in the literature and provides data that can inform local policy and regulatory frameworks.

The rationale outlined above aligns with the study's general objective of assessing the hygienic practices of street food vendors in La Dade-Kotopon Municipality. The specific objectives are directly informed by the identified public health concerns, knowledge gaps, and regulatory

challenges. By addressing these objectives, the study aims to provide comprehensive insights into the factors influencing food hygiene practices among street food vendors in the municipality.

1.4 Conceptual Framework



(Modified from Alhassan, 2021)

The conceptual framework for this study was aligned with the statistical analysis undertaken. The dependent variable was the level of knowledge and food hygiene practices among street food vendors, categorised as good or poor using a mean cut-off. The independent variables included socio-demographic factors such as age, sex, marital status, religion, education level, years of vending, type of vendor (hawker or stationary), and location of vending site.

Vendors' socio-economic conditions, such as education and income, influence their ability and willingness to adopt safe practices. Their knowledge of food hygiene is also critical, as awareness of contamination risks strongly affects compliance with hygiene standards. The regulatory environment contributes through health inspections, permits, and by-laws, although weak enforcement can leave significant gaps. Similarly, the sanitation of the vending environment, including access to clean water and waste disposal, determines how feasible and sustainable safe practices are.

Other influences include vendors' personal behaviour, such as consistency in applying hygiene rules or handling money while serving. Institutional support, through training and regular monitoring, further strengthens adherence to safe practices. Finally, consumer preferences and expectations shape vendor behaviour, as demand for hygienic food can motivate compliance.

Therefore, hygienic practices are determined by a combination of personal, environmental, institutional, and consumer-related factors. Their interaction provides a holistic understanding of food safety in the municipality and identifies key areas for public health interventions.

1.5 Research Questions

1. What is the level of knowledge of food hygiene among street food vendors in the La Dade-Kotopon Municipality?
2. What hygienic practices are employed by street food vendors during food preparation and service?
3. What factors influence knowledge and food hygiene practice among food street vendors?

1.6 General Objective

To assess the hygienic practices of street food vendors in La Dade Kotopon Municipality in the Greater Accra Region of Ghana.

1.7 Specific Objectives

1. To determine the level of knowledge of food hygiene among street food vendors in the La Dade-Kotopon Municipality.

   To evaluate the hygienic practices employed by street food vendors during food preparation and service.
2. To examine the factors influencing Knowledge and food hygiene practice among food street vendors.

1.8 Profile of Study Area

The La Dade-Kotopon Municipality (LaDMA) is one of the metropolitan, municipal, and district assemblies (MMDAs) located in the southern part of the Greater Accra Region of Ghana. It was established in 2012 by Legislative Instrument (LI) 2133, following its separation from the Accra Metropolitan Assembly as part of the government's broader decentralization agenda aimed at bringing governance and development closer to local communities (Ghana Statistical Service [GSS], 2021).

Geographically, LaDMA is bounded to the south by the Gulf of Guinea, to the north by the Ayawaso West Municipality, to the west by the Korle Klottey Municipality, and to the east by the Ledzokuku Municipality. Its administrative capital, La, is a coastal town situated approximately 10 kilometres east of Accra's central business district. Covering a land area of about 36.6 square kilometres, LaDMA may be one of the smaller municipalities in the region, but its strategic location and dense urban settlement make it socio-economically significant (GSS, 2021).

According to the 2021 Population and Housing Census, the municipality has an estimated population of 153,237, with females accounting for a slightly higher percentage (52.1%) than males (47.9%) (GSS, 2021). The demographic profile of the municipality reveals a youthful and active population, with many residents engaged in informal sector activities such as petty trading, artisanal work, and notably, street food vending. This informal economic structure highlights the importance of understanding hygiene practices, especially in food-related businesses.

In recognition of these challenges, LaDMA has implemented a range of public health interventions, including health education campaigns, hygiene training for food vendors, and routine inspections by Environmental Health Officers. While these initiatives have had some impact, enforcement remains inconsistent due to logistical challenges and limited capacity for regular monitoring (LaDMA, 2023).

Administratively, LaDMA is divided into two zonal councils and contains ten electoral areas: Ako-Adjei, Abafum/Kowe/Abese, New Kayano, New Lakpanaa, Tse-Addo/Mantiase, Adiembra, Adobetor, Labone, Cantonments, and Burma Camp. These areas collectively host a wide variety of food vendors, offering both traditional and modern foods. Urban migration and population growth have driven up the demand for convenient meals, resulting in a surge in food production and an expanding array of street food options (Thakur and Singh, 2018).

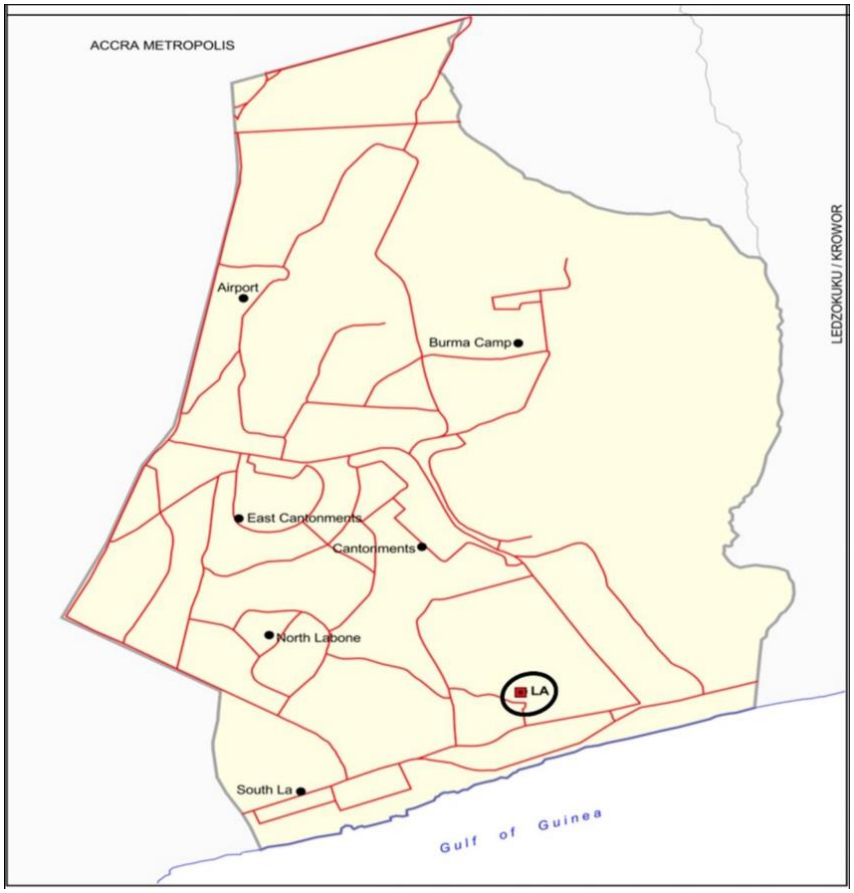


Figure 1.1 Municipal Map of La-Dadekotopon

Source: Municipal Map of La-Dadekotopon showing study area (LA) | Download Scientific Diagram

1.9 Scope of the Study

This study focuses on assessing food hygiene knowledge and practices among street food vendors within the La Dade-Kotopon Municipal Assembly (LaDMA) in the Greater Accra Region of Ghana. It specifically examines vendors engaged in the preparation and sale of ready-to-eat foods such as cooked rice, stews, fried foods, and beverages commonly sold in markets, along roadsides, and near schools and offices. The scope covers both stationary and mobile (hawking) vendors who operate under the jurisdiction of LaDMA, excluding formal restaurants, institutional canteens, and vendors outside the municipality.

The investigation explores how vendors' socio-demographic and economic characteristics such as age, education, marital status, religion, years of experience, and type of vending activity affect their hygiene knowledge and food-handling behaviour. It also assesses environmental and infrastructural conditions at vending sites, including water availability, waste disposal, and adherence to municipal health regulations. By linking individual behaviour with the broader regulatory and sanitary environment, the study provides a holistic understanding of the challenges undermining safe street food practices.

Furthermore, the research delves into institutional efforts by the LaDMA Environmental Health Department, local health inspectors, and public education units to enforce hygiene by-laws and promote compliance. It highlights the gaps in inspection frequency, training coverage, and enforcement mechanisms that contribute to recurring sanitation issues in the informal food sector.

The findings are expected to guide public-health authorities, municipal planners, and policy makers in designing targeted interventions to enhance the safety and sustainability of street food vending in urban Ghana.

1.10 Organization of Report

This thesis is organized into six chapters that build a complete picture of hygienic practices among street food vendors in the La Dade Kotopon Municipality. Chapter One introduces the study, presenting the background, problem statement, rationale, conceptual framework, research objectives, questions, profile of the study area, and scope. Chapter Two reviews the literature on street food vending, hygiene and safety practices, and the role of institutional regulations, showing how this study fits into existing knowledge. Chapter Three explains the methodology, including the research design, study population, sampling, data collection, analysis, and ethical considerations. Chapter Four presents the findings, starting with

respondents' background information and then moving to results on the key study variables. Chapter Five discusses these findings, linking them to the research questions and existing literature, and highlighting what they mean for food safety and public health. Finally, Chapter Six draws' conclusions and offers recommendations targeted at policymakers, municipal authorities, and food vendors, while also pointing to areas for future research.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter provides a comprehensive review of literature on hygienic practices among street food vendors, drawing on expert perspectives, empirical studies, and institutional reports. It begins by examining the concept of hygiene and its relevance to food safety, followed by definitions and characteristics of street food. Perspectives on street food vending are explored, highlighting its cultural, social, and economic significance alongside the public health challenges it presents.

It also reviews vendors' knowledge and adherence to food hygiene standards, the safety of street-vended foods, and the hygienic conditions of food handling and vending sites. In addition, it considers the economic importance of street food vending and the regulatory role of institutions responsible for ensuring food safety. Finally, the chapter discusses the relationship between food safety, hygiene, and the Sustainable Development Goals (SDGs), while identifying gaps in existing knowledge that justify the present study in the La Dade-Kotopon Municipality.

2.2 Concept of Hygiene

Hygiene is a fundamental determinant of health, encompassing practices, behaviours, and environmental conditions that preserve well-being and prevent the spread of disease. It is not limited to cleanliness alone but extends to systems and practices that interrupt pathogen transmission (Lai and Kaur, 2020). The World Health Organization (WHO) defines hygiene as practices that help maintain health and prevent the spread of diseases, while the WHO/UNICEF Joint Monitoring Programme (JMP) monitors hygiene through access to basic handwashing

facilities with soap and water, highlighting its central role in public health (WHO/UNICEF JMP, 2023).

Hygiene spans multiple interconnected domains spanning from personal hygiene which includes handwashing, oral care, menstrual hygiene, and bathing, critical for individual protection from infection (IntechOpen, 2018), food hygiene which involves safe handling, storage, and preparation of food to prevent contamination and foodborne illness (WHO, 20210, environmental hygiene which relates to sanitation, clean water, and waste management to reduce environmental exposures and institutional hygiene which also encompasses hygiene practices in schools, workplaces, and healthcare facilities that protect individuals and communities.

Deficits in hygiene remain leading contributors to disease burden. Poor hand hygiene is linked to diarrheal diseases, respiratory infections, and healthcare-associated infections (HCAIs) (Akinsulie *et al.,* 2024). Globally, inadequate WASH contributes to 829,000 preventable diarrhoeal deaths each year, including 297,000 among children under five (WHO, 2021). Handwashing with soap alone can reduce diarrheal disease by up to 30%, preventing nearly one million deaths annually (CDC, 2024).

In Sub-Saharan Africa, inadequate WASH in healthcare has been linked to 2.6 billion healthcare-associated infections and 277,160 deaths, representing a substantial financial burden equivalent to 2.5–10.9% of national healthcare budgets and 0.4–2.9% of GDP (CIDRAP, 2023).

Ghana mirrors these challenges, where sanitation-related diseases continue to impose high costs. According to the World Bank, poor sanitation costs Ghana approximately GHC 420 million annually (≈US$290 million), or 1.6% of GDP, largely due to premature deaths and healthcare costs (World Bank, 2012). Around 5 million Ghanaians still practice open

defecation, and unsafe sanitation is linked to 19% of under-five deaths in the country (Issahaku & Wumbei, 2020). Beyond health, poor hygiene disrupts livelihoods: for example, inadequate sanitation in Tema New Town Market led to lower patronage, reduced income, and frequent absenteeism due to illness (Baffoe, 2015).

Globally, poor hygiene undermines progress towards the Sustainable Development Goals (SDGs), particularly SDG 3 (Good Health and Wellbeing) and SDG 6 (Clean Water and Sanitation). UN-Water estimates that inadequate WASH contributes to around 1,000 preventable under-five deaths daily and costs up to 5% of GDP in affected countries (UN-Water, 2023). Conversely, investments in basic hygiene infrastructure are cost-effective. Providing WASH in healthcare facilities could save billions annually by preventing infections at a cost of less than US$1 per person (CIDRAP, 2023).Addressing hygiene challenges requires more than infrastructure, it also involves promoting sustained behaviour change. Programs such as Unilever's *Lifebuoy "Help a Child Reach 5"* campaign have demonstrated success in increasing soap use and reducing illness through social marketing and partnerships with UNICEF (The Guardian, 2014). Technological solutions like the Sato Tap, a water-efficient handwashing device requiring as little as 100 ml of water, have expanded hygiene access in resource-constrained areas (The Guardian, 2024)

2.3 Definition of Street Food

Street food is an integral part of food systems in many low- and middle-income countries, serving as both a livelihood for vendors and a primary source of affordable meals for millions of urban dwellers. The Food and Agriculture Organization (FAO) defines street foods as *"ready-to-eat foods and beverages prepared and/or sold by vendors, especially on streets and other similar public places"* (FAO, 2016). These foods are typically sold from stalls, carts,

kiosks, or other temporary structures located in high-traffic areas such as markets, transport terminals, schools, and workplaces.

Street food has several defining features such as accessibility and affordability implying that street foods are generally inexpensive and available close to where people live and work, making them essential to food security in urban areas (Akinsulie *et al.,* 2024), cultural diversity which reflects local traditions, tastes, and food habits, preserving culinary heritage while adapting to urban consumer needs, informality which means that the street food sector is mostly informal, often operating outside formal regulatory frameworks, which complicates monitoring and enforcement of hygiene standards (FAO, 2016) and high dependency on hygiene practices because food is often prepared and sold in outdoor or semi-permanent setups, the hygienic practices of vendors and the sanitary conditions of the environment directly affect safety (WHO, 1996).

In Ghana, street food is a cornerstone of urban life, providing affordable meals to students, workers, and traders. A study by Osei et al. (2021) highlighted that in Accra, 70% of households consume street food regularly, underscoring its role in food security. Common Ghanaian Street foods include kenkey with fish, waakye, kelewele, fried yam, and grilled meat. While these foods contribute to nutritional diversity and employment opportunities, they are often prepared in environments with limited access to clean water, sanitation, and waste disposal facilities, raising public health concerns (Lai and Kaur, 2020).

The Public Health Act of Ghana (Act 851 of 2012) recognizes the importance of food safety in the informal sector, mandating local authorities to regulate street food vending. Despite this, enforcement remains inconsistent due to resource constraints, lack of vendor training, and cultural acceptance of informal practices. Street food plays a dual role. Positively, it provides livelihoods, preserves cultural heritage, ensures dietary diversity, and increases urban food

access (FAO, 2016). On the other hand, if poorly handled, street foods become vehicles for foodborne illnesses such as diarrhoea, cholera, typhoid fever, and food poisoning. Thus, while street foods remain socially and economically indispensable, their safety and hygienic preparation are crucial to public health.

2.4 Perspectives on Street Food Vending

Street food vending is a global phenomenon embedded in urban economies, culture, and food systems. It is viewed through varied lenses, that is, economic, social, cultural, and regulatory, depending on context. This section presents perspectives at global, African/regional, and Ghanaian levels.

Street food vending plays a crucial role in ensuring food security and urban food access, particularly in low- and middle-income countries (LMICs). However, these foods also present significant food-safety risks due to weak regulation and inadequate infrastructure (Bassitou Koumassa et al., 2025).

Economically, street food vending is a vital informal sector activity. It offers employment to marginalized groups, especially women and migrants, with minimal start-up capital requirements. Socially, it provides sustainable livelihoods while also being a safety net against unemployment and poverty in urban centres. Culturally, street foods preserve traditional recipes and represent identity, memory, and heritage, while simultaneously adapting to new consumer demands (Jaffee et al., 2019).

Yet, challenges persist inadequate hygiene, poor access to potable water, waste disposal issues, and weak enforcement of food safety standards. These are compounded by the informality of vending, which often operates outside regulatory oversight (WHO, 2018). Thus, international perspectives call for inclusive urban planning, vendor training, and risk-based regulation rather than punitive bans.

Across Africa, street food vending is a key component of the informal urban economy. Studies from Nigeria, Kenya, South Africa, and Ethiopia consistently highlight its importance for low-income consumers and women's empowerment. In Nigeria, street-vended foods remain a vital source of affordable nutrition for low- and middle-income households, forming an essential part of daily diets in many urban communities (Mazi, Onyeaka and Akegbe, 2023).

From a gendered lens, the African street food economy is heavily feminized. Women constitute the majority of vendors, gaining financial autonomy, household decision-making power, and enhanced social status (Adeosun, Oosterveer and Greene, 2023). In West Africa, dishes such as *suya* (Nigeria), *fufu* (Ghana), and *attieke* (Côte d'Ivoire) illustrate how street food connects tradition with modern consumption habits, sustaining both cultural identity and inter-ethnic exchange.

Foodborne illnesses linked to poor hygiene, inadequate sanitation, and weak cold-chain storage remain major public-health threats in African cities. For example, recent outbreaks of Cholera in Mozambique and Nigeria have been driven in part by broken WASH (water, sanitation and hygiene) systems, unhygienic street food practices and informal food channels (Asantewaa et al., 2024; WHO, 2023)

In Kenya, for instance, the Street Vendors Bill No. 7 of 2021 formalizes the role of street vendors by providing licensing frameworks, designated vending zones and vendor-associations, while South Africa has also introduced regulatory reforms to integrate informal food vendors into micro-licensing schemes and cooperative structures (Government of Kenya, 2021; George, 2022).

Ghana's street food vending is deeply entrenched in urban life. It is estimated that over 80% of Ghanaians regularly consume street foods, making them indispensable to daily diets (FAO, 2016). Economically, the trade sustains livelihoods for thousands of urban poor. A study in

Accra revealed that migrants entering vending often moved from extreme poverty to modest incomes raising their monthly earnings from less than GH₵50 to over GH₵200 (The Conversation, 2025).

Women dominate the trade comprising 80–90% of vendors most aged 25–45, often without access to formal credit (FAO, 2016). Vending offers financial independence and enhances women's agency in household decision-making. Research further indicates that informal vending fosters social identity and empowerment, challenging stereotypes of marginalization (Overå, 2016).

Culturally, Ghanaian street foods, such as *Hausa koko*, *waakye*, *kenkey*, and *kelewele*, serve not only as affordable and convenient meals but also as vehicles of cultural exchange. These foods, once ethnic specialties, have become national icons, symbolizing the blending of culinary traditions across ethnic boundaries (SCIRP, 2015).

Some consumer perceptions show that trust in street-food vendors often derives from neatness, presentation, and familiarity rather than formal hygiene certification. Recent studies in Ghana reveal that many consumers equate cleanliness in appearance and food display with safety, even when regulatory inspections or certification are lacking (Adaku et al., 2024). Despite the importance of the sector, enforcement of vendor registration, health certification, and licensing remains weak, constrained by bureaucratic delays, limited literacy among vendors, and inadequate institutional capacity (Adaku et al., 2024; Mazi, Onyeaka and Akegbe, 2023).

obally, street food vending is recognized as a crucial livelihood strategy and cultural practice, but it is equally a site of food safety risk. African experiences underscore its feminized nature, centrality in urban food security, and persistent challenges of infrastructure and regulation. Ghana reflects these broader patterns while offering a unique case where street food vending embodies both cultural heritage and economic survival. The Ghanaian experience demonstrates

how national policy can learn from regional successes by balancing regulation with inclusion, ensuring that livelihoods are protected while consumers are safeguarded.

2.5 Food Hygiene Knowledge and Practices

Food hygiene knowledge and practices are critical for safeguarding public health, especially within the informal food sector where street food vending thrives. According to the World Health Organization (WHO, 2020), food hygiene encompasses conditions and measures necessary to ensure the safety of food from production to consumption. These include maintaining cleanliness, preventing contamination, cooking food thoroughly, and using safe water and raw materials. Inadequate food hygiene practices have been linked to foodborne illnesses, which affect approximately 600 million people globally each year, with street food contributing significantly to outbreaks in low- and middle-income countries (WHO, 2020).

Evidence suggests that many street food vendors lack adequate training and awareness of proper hygiene practices. The WHO (2020) highlights that the most common lapses among food vendors include improper storage, cross-contamination, and insufficient handwashing. In India, an intervention program in Kanpur that provided vendors with training and hygiene kits significantly improved their practices, such as the consistent use of aprons, head coverings, and cleaner food storage techniques (Times of India, 2025). These findings underscore the importance of targeted training and capacity-building in improving hygiene practices.

In many African contexts, food hygiene knowledge among street vendors remains inadequate. For instance, a recent study in Kiambu County, Kenya, revealed that up to 93% of vendors had never received formal food hygiene training, and only 40% were aware that street food could transmit pathogens (Onyango et al., 2025). This underscores the persistent gaps in food safety education and highlights the urgent need for capacity-building interventions targeting informal food handlers across the region. Similarly, research in South Africa's Zululand District revealed

that 77% of street food vendors had no food safety training, 76% demonstrated low safety knowledge, and only 14% of vending sites complied with acceptable hygiene standards (Pereira et al., 2021). These findings indicate that poor knowledge, coupled with infrastructural limitations, significantly undermines safe food handling practices in the region.

Studies have reported mixed levels of food hygiene knowledge and practices among street food vendors in Ghana. For example, Salifu, Muktar and Alhassan (2025) found that while vendors in Tamale Metropolis demonstrated basic knowledge of handwashing and ingredient inspection, very few adhered to protective practices such as wearing gloves or aprons. Similarly, Klutse and Sampson (2025) observed variability in food hygiene knowledge in the Volta Region, with many vendors exhibiting inconsistent hygienic behaviours despite awareness campaigns.

Other Ghanaian studies point to more concerning gaps. Nortey et al. (2024), in Sekondi-Takoradi, reported generally poor knowledge, attitudes, and practices among street food vendors, while Amedewonu (2020) observed that in Ayensuano District, 77% of vendors had no formal food hygiene training, and over half handled food with bare hands. In Sagnarigu Municipality, Issahaku, Adoma and Sidiqque (2020) documented widespread non-compliance, with 90% of vendors not using aprons, 95.2% not wearing face masks, and the majority operating close to open drains. Moreover, a large-scale study in Northern Ghana found that more than half of vendors did not use gloves, and predictors of good hygiene included education level, knowledge of safety practices, and possession of medical or business certification (Atuobi-Yeboah et al., 2023).

obal, regional, and Ghanaian evidence highlights the critical role of food hygiene knowledge in shaping safe practices among street food vendors. While awareness of basic hygiene principles is increasing, actual practice remains inconsistent, often due to a lack of training,

regulatory oversight, and infrastructural support. Addressing these challenges requires structured education programs, effective monitoring, and strong institutional frameworks to ensure that vendors adopt and sustain safe food handling behaviours.

2.6 Food Safety and Hygiene of Street Food Vending

Street food vending plays a crucial role in providing accessible and affordable meals to millions of people worldwide, particularly in urban and peri-urban areas. However, concerns about the safety and hygiene of street-vended foods remain significant due to the informal nature of the sector, limited regulation, and infrastructural challenges.

Food safety in street food vending is undermined by multiple constraints, including inadequate facilities, poor personal hygiene, cross-contamination, and improper food storage conditions. Recent studies across Africa, Asia, and Latin America indicate that street foods are often prepared in environments lacking access to safe water, refrigeration, and effective waste management systems (WHO, 2023; Bassitou Koumassa et al., 2025). Similarly, research shows that many vendors operate close to open drains and waste sites, heightening the risk of contamination. Nevertheless, street foods continue to thrive because of their affordability, convenience, and deep cultural significance.

Food safety and hygiene challenges in street food vending are well documented across Africa. A recent cross-sectional study in Nigeria found that over half of street food vendors did not wash food before cooking, and a significant number operated without formal hygiene training, contributing to unhygienic food-handling practices (Mazi, Onyeaka & Akegbe, 2023). In South Africa, research by Hill et al. (2019) found that while vendors were aware of some food safety measures, economic constraints and lack of infrastructure limited their ability to consistently implement hygienic practices. Furthermore, a study in Kenya by Onyango et al. (2025)

revealed that over 90% of street vendors had no formal training on food safety, and many were unaware of the link between unsafe food and

Street food vending is highly popular in Ghana, with a large portion of the urban population relying on it for daily meals. However, several studies have raised concerns about safety and hygiene practices. Mensah et al. (2002) highlighted that foodborne pathogens such as *Salmonella* and *E. coli* are frequently isolated from street-vended foods in Accra, indicating poor handling and storage practices. More recent studies suggest that although some vendors are aware of basic hygiene measures, such as handwashing and covering food, actual practices remain inconsistent. For instance, Nortey et al. (2024) reported that most vendors in Sekondi-Takoradi lacked adequate training, leading to unsafe practices such as using untreated water for cooking and operating close to open drains. Similarly, Issahaku, Adoma and Sidiqque (2020) found that many vendors in Sagnarigu Municipality did not use protective clothing such as aprons or gloves, raising food safety risks.

Overall, the food safety and hygiene of street food vending remain a public health challenge across the globe, particularly in low- and middle-income countries such as Ghana. While street food provides economic and nutritional benefits, the lack of adequate infrastructure, training, and regulation often compromises safety. Addressing these issues requires a coordinated effort that combines vendor training, stricter enforcement of hygiene regulations, and investment in basic facilities such as clean water, sanitation, and waste management.

2.7 Food Handling and Hygienic Practices among Street Food Vendors

Food handling and hygienic practices are essential determinants of the safety and quality of street-vended foods. Proper practices such as safe storage, hygienic preparation, appropriate cooking temperatures, and personal hygiene of food handlers play a crucial role in minimizing the risk of foodborne illnesses. However, evidence suggests that many street food vendors,

particularly in low- and middle-income countries, face significant challenges in adhering to these standards due to limited infrastructure, lack of training, and inadequate regulatory oversight.

Improper food handling is a major driver of foodborne diseases. The World Health Organization highlights that unsafe practices such as leaving prepared food at ambient temperature, inadequate cooking and cleaning, and cross-contamination significantly contribute to the global burden of foodborne illness. More recent evidence from street-food settings in low- and middle-income countries reveals that many vendors concurrently handle money and food, neglect proper hand-washing, operate with contaminated utensils and poor sanitation infrastructure, thus elevating the risk of pathogen transmission (Adaku et al., 2024; Koumassa et al., 2025).

In Nigeria, Chukuezi (2010) reported that most vendors lacked knowledge about basic hygienic practices such as proper handwashing, covering food, and using protective clothing. Similarly, in South Africa, Lues et al. (2006) observed that street vendors frequently reused cooking oil multiple times and stored cooked food at unsafe temperatures, practices that encourage microbial growth. A regional review by FAO (2016) also highlighted that poor handling practices, such as washing utensils with unclean water and improper waste disposal, are widespread among African street vendors, further heightening the risk of contamination. Street food handling and hygienic practices are of particular concern given the large proportion of urban populations who rely on these vendors for daily meals. Research in the Tamale Metropolis of Ghana found that although many street-food vendors reported good knowledge about food safety, only a minority used protective gear, and actual hygiene practices were inconsistent (Salifu, Muktar & Alhassan, 2025). More recent studies suggest that while some vendors have improved knowledge of food hygiene, actual practices remain inconsistent. For instance, Addo-Tham et al. (2020) reported that vendors in Cape Coast frequently handled food

with bare hands, stored cooked and raw food together, and had limited access to proper handwashing facilities. Similarly, Nortey et al. (2024) noted that most vendors did not consistently use protective clothing such as gloves and aprons, while some failed to cover food during display, exposing it to flies and dust.

Overall, poor food handling and hygiene practices remain a major contributor to food safety risks in street-vended foods globally and in Ghana. Although awareness about food hygiene is increasing, the translation of knowledge into practice is still limited due to infrastructural, economic, and regulatory barriers. Addressing these gaps requires a multifaceted approach that includes training vendors in proper handling practices, improving access to water and sanitation infrastructure, and strengthening enforcement of food safety regulations.

2.8 Economic Importance of Street Food Vending

Street food vending constitutes a critical component of the informal economy, offering both livelihood opportunities and affordable meals to millions of people. With its low entry barriers, the sector enables individuals with limited education or start-up capital to engage in income-generating activities, thus contributing significantly to household welfare and urban food systems (FAO, 2016). For many urban dwellers, particularly in low- and middle-income contexts, street food vending represents both a survival strategy and a convenient source of daily sustenance.

This informal economy accounts for over 60% of employment, with food vending making up a substantial portion of urban informal work (ILO, 2018). In rapidly urbanizing economies, this role is particularly visible. Street-based businesses alone employ about 24% of the labor force (World Bank, 2021), illustrating their central role in national economic structures.

The sector is also gendered, with women dominating street food vending across different contexts. FAO surveys in Accra revealed that more than 90% of 8,000–10,000 vendors were

women, typically working long hours around 10 hours a day, six days a week to sustain their livelihoods (FAO, 2016a). This makes the industry particularly important for women's economic empowerment, especially in settings where formal employment opportunities are scarce (Steyn et al., 2014). Similar findings have been reported in South Africa and Nigeria, where women vendors provide essential income that supports household needs such as health care and education, while consumers benefit from low-cost and accessible meals (Omemu and Aderoju, 2008; Steyn et al., 2014).

Tens of thousands are employed in this trade, with women forming the majority (Mensah et al., 2002; Addo-Tham et al., 2020; Nortey et al., 2024). Although many vendors operate informally and outside regulatory structures, their activities generate consistent daily cash flows that are vital for poverty alleviation and household security (Modern Ghana, 2013). A field survey in Accra found that 57% of vendors reported paying no permit fees, but that vendors with higher education or kiosks were more likely to be registered and compliant (ResearchGate, 2016). Despite modest profits often between GHC 1 and GHC 50 per day (ResearchGate, 2022) many vendors perceive street food vending as preferable to unemployment or riskier alternatives, thereby highlighting its stabilizing role in urban economies.

Beyond direct employment, the sector stimulates wider economic linkages. Vendors often rely on local agriculture for raw materials, generating demand that benefits farmers, transporters, and packaging suppliers. This multiplier effect strengthens urban-rural economic ties while ensuring the steady flow of affordable meals to diverse clientele, including students, traders, and formal sector workers (Nortey et al., 2024). Thus, street food vending supports livelihoods, sustains local economies, and contributes to food security in rapidly urbanizing environments.

While its economic and social contributions are undeniable, the benefits of street food vending need to be balanced with investments in food hygiene and safety, as poor handling practices

can pose public health risks (Addo-Tham et al., 2020). Policymakers therefore face the dual challenge of recognizing street food vending as an essential livelihood strategy while promoting gradual formalization and food safety improvements to maximize its potential for inclusive and sustainable urban development.

2.9 Institutional Regulations on Food Vending

Institutional regulations on food vending are central to protecting public health while recognizing the socio-economic contributions of street food. Although the sector provides livelihoods and accessible meals for millions, poor oversight and limited adherence to hygiene standards present ongoing risks of foodborne diseases (WHO, 2020).

At the international level, the *Codex Alimentarius* developed by the Food and Agriculture Organization (FAO) and the World Health Organization (WHO) sets gudelines on food hygiene and safety practices, intended to guide national authorities in regulating both formal and informal food systems (FAO/WHO, 2019). These frameworks emphasize hazard prevention, food handling, and monitoring systems, and they have been adapted in Ghana through national legislation.

Ghana's regulatory authority is grounded in the Public Health Act (Act 851 of 2012), which provides a legal framework for food safety. The Food and Drugs Authority (FDA) is mandated to oversee standards, while Metropolitan, Municipal, and District Assemblies (MMDAs) are responsible for licensing, monitoring, and enforcing sanitation by-laws among food vendors (Mensah et al., 2013). Vendors are also required to obtain medical certificates and undergo periodic health screenings as a condition for licensing.

Despite this framework, enforcement is uneven. Studies have shown that many food vendors operate without licenses or medical clearance, citing costs, bureaucratic barriers, or lack of awareness of the requirements (Addo-Tham et al., 2020). Regulatory activities are often

constrained by insufficient personnel and logistical resources, making it difficult for authorities to conduct regular inspections (Osei-Tutu et al., 2018).

In La Dade-Kotopon Municipality, food vending is widespread across markets, schools, and transport terminals. The LaDMA Environmental Health Department collaborates with the FDA to inspect and license vendors. However, limited human and financial resources restrict the frequency and effectiveness of monitoring. While some vendors comply with requirements such as possessing health certificates and participating in FDA-led food safety training, many operate without regulation. A 2022 LaDMA report noted that vendors expressed concerns about inspection processes being punitive rather than supportive, with costs and delays in securing licenses serving as major disincentives (LaDMA, 2022).

A comparison between the La Dade-Kotopon Municipal Assembly (LaDMA) and the Accra Metropolitan Assembly (AMA) highlights the uneven capacity for enforcement across local authorities. As the capital's largest municipality, AMA possesses greater administrative and financial resources and has introduced innovative regulatory initiatives—such as vendor associations that work in partnership with municipal officers to strengthen compliance and hygiene monitoring. For instance, periodic health screenings are organized in bulk, reducing costs and time for vendors (Osei-Tutu et al., 2018). However, even within AMA, enforcement struggles with scale, as the number of vendors far exceeds inspection capacity.

This comparison highlights that while AMA's larger resource base has allowed for more structured enforcement mechanisms, municipalities like LaDMA remain constrained by capacity gaps, creating uneven implementation of food safety regulations within Greater Accra. Strengthening community-level engagement, decentralizing vendor training, and reducing bureaucratic barriers could improve compliance across both contexts.

2.10 Food Safety and Hygiene and Sustainable Development Goals (SDGs)

Food safety and hygiene are integral to achieving sustainable development, particularly in countries where street food vending plays a major role in daily nutrition and livelihoods. The Sustainable Development Goals (SDGs), adopted in 2015, emphasize reducing poverty, hunger, and health inequalities, with food safety intersecting directly with these objectives.

Unsafe food remains a critical public health challenge. The World Health Organization (2015) reports that contaminated food causes 600 million illnesses and 420,000 deaths globally each year, with children under five carrying 40% of the burden. For Ghana, diarrhoeal diseases remain among the leading causes of outpatient morbidity, often linked to food and water contamination (Ghana Health Service, 2020). This underscores the relevance of SDG 3 (Good Health and Well-being), where food hygiene practices among vendors directly impact population health.

Street food vending is also linked to SDG 1 (No Poverty) and SDG 2 (Zero Hunger), since the sector provides both affordable meals for low-income households and employment opportunities for vendors, particularly women. However, studies in Accra and Kumasi have shown that poor food handling practices and inadequate access to safe water compromise the nutritional and economic benefits of street food (Monney et al., 2014; FAO, 2016). Thus, strengthening food hygiene is essential for ensuring that the sector contributes positively to food security and poverty reduction.

Food hygiene intersects further with SDG 6 (Clean Water and Sanitation). Many vendors in Ghana operate in environments with limited access to potable water and poor sanitation facilities, making it difficult to comply with hygiene standards. This situation not only increases risks of foodborne diseases but also highlights the need for integrated interventions that connect

food safety with improved WASH (Water, Sanitation, and Hygiene) infrastructure (UNICEF/WHO, 2021).

Lastly, foodborne diseases carry economic implications, reducing workforce productivity and creating avoidable healthcare costs, which directly affects progress toward SDG 8 (Decent Work and Economic Growth). In Ghana, outbreaks of foodborne illness have occasionally led to temporary closures of food vending sites, negatively affecting both livelihoods and consumer trust (Adaku et al., 2024. Ensuring that food safety and hygiene are embedded into regulatory systems, public health strategies, and urban planning is therefore vital for advancing multiple SDGs simultaneously.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Research Methods and Design (Study methods and design)

An analytical cross-sectional design with a quantitative approach was employed for this study. This design was chosen because it allowed data to be collected at a specific point in time, which provided a snapshot of current food hygiene practices, knowledge, and conditions among street food vendors in LaDMA. Cross-sectional studies are particularly useful in public health research for assessing the prevalence of certain behaviours or conditions within a given population (Levin, 2006).

3.2 Data Collection Techniques and Tools

Data was collected using a structured questionnaire administered through face-to-face interviews. During the process, the interviewer read out each question while the respondent provided their answers. The questionnaire was adapted from Alhassan (2021), who conducted a similar study among street food vendors in the Sagnarigu Municipality of the Northern Region of Ghana. It consisted entirely of close-ended questions and took an average of fifteen minutes to complete.

The tool was divided into four sections covering socio-demographic details, food handlers' knowledge on food hygiene practices, food hygiene practices, institutional set-up governing safe practices of food vendors and an observation checklist. The demographic section gathered basic background information, while the remaining sections explored participants' knowledge, attitudes, and practices regarding hygienic street food vending and its compliance measures.

The questionnaire was designed in simple English to ensure clarity and quick responses from participants. It was also translated in the local parlance of participants who struggled with basic English to deepen understanding and improve quality of data.

3.3 Study Population

The focus of this study was on street food vendors operating within the La Dade-Kotopon Municipality (LaDMA). This population included individuals or groups who prepared and sold ready-to-eat meals from either temporary stands or more fixed locations such as roadside stalls, kiosks, or tables. These vendors often work in informal environments but play a crucial role in the urban food system, providing accessible and affordable meals while also contributing significantly to employment and livelihoods in the municipality (FAO, 2019).

3.4 Inclusion Criteria

To be eligible for participation in the study, vendors must meet the following criteria:

- Be actively operating within LaDMA.
- Have been selling cooked food for at least six months prior to the study.
- Be willing to give informed consent to participate in the research.

3.5 Exclusion Criteria

The following groups will be excluded from the study:

- Temporary or seasonal vendors who are not consistently available at their vending locations.
- Individuals who decline to participate in the study.
- Formal food establishments (e.g., restaurants or hotels)

3.6 Study Variables

The following are the variables that were investigated in the study:

1. Dependent variables – Level of knowledge on food hygiene, hygienic practices employed, compliance with regulatory requirements and examining sanitary conditions of street food vendors.

2. Independent variables – Respondents' characteristics (age, sex, religious affiliation, marital status, educational level, area of vending site, type of food sold, type of vendor and period involved in street food vending).

3.7 Sampling

3.7.1 Sample size

The sample of a study is a section of the population that is drawn to make inferences or projections to the general population. This sample size was calculated based on previous research on the proportion of individuals with low food safety knowledge of 70.4% (Nortey et al., 2024)

The sample size was calculated using Cochran's formula as shown below:

$$n = \frac{Z^2 \times pq}{e^2}$$

Where,

n = sample size (Cochran, 1977)

Z = the z-score that corresponds with 95% confidence interval which is 1.96

p = Proportion of people with low food safety knowledge is 70.4% which is equal to 0.704

q = Proportion of with high food safety knowledge will be 1-0.704 = 0.296

e = Margin of error set at 5% (0.05)

Therefore,

$$n = \frac{(1.96)^2 \times (0.704 \times 0.3)}{(0.05)^2} \cong 320$$

A non-response rate of 10 % resulting in about 32 respondents were added to the minimum sample size to get 352 participants. Therefore, 352 participants were used in this research as the sample size.

3.7.2 Sampling technique

This study involved a multistage sampling approach:

- First, purposive sampling was employed to select LaDMA as the study area, based on its urban setting, high concentration of street food vendors, and relevance to public health concerns in the Greater Accra Region.
- Next, stratified sampling was applied to ensure balanced representation across different types of street food vendors and geographical locations within the municipality. The Municipality was segregated into seven (7) zones or strata: mainly, La-Maami, Airport, Burma Camp, South La, Tse-Addo. Cantonment and Labone.
- Finally, simple random sampling was used to select respondents from each stratum.

3.8 Pre-testing

To ensure the clarity and effectiveness of the questionnaire, a pretest was conducted in the Ledzokuku-Krowor Municipal Assembly (LEKMA). LEKMA was chosen because it shares

similar characteristics with LaDMA in terms of demographics, urban setup, and the presence of street food vending activities.

The pretesting phase helped identify any ambiguities or difficulties respondents faced in understanding the questions. Based on the feedback, necessary adjustments were made to improve the clarity and relevance of the questionnaire. Data collected during the pretesting phase was included in the main analysis.

3.9 Data Handling

All completed questionnaires were carefully reviewed to ensure accuracy and completeness prior to data entry into Kobo Toolbox. The original questionnaire responses served as the primary source data. Data cleaning and management were undertaken by the principal investigator to maintain data quality and integrity. Electronic copies of the dataset were securely stored on an external drive, while the hardcopy questionnaires were safely preserved under lock and key.

3.10 Data Analysis

Data collected from the field was cleaned, coded, and analyzed using STATA version 18. Data cleaning involved checking for missing values, inconsistencies, and outliers to ensure accuracy and completeness. Variables were appropriately labeled, and categorical responses were numerically coded to facilitate analysis.

Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize respondents' socio-demographic characteristics and the main study variables. Graphical tools, including bar charts and pie charts, were also used to enhance data visualization.

Two major composite indices were developed from multiple questionnaire items: Food Hygiene Knowledge and Food Hygiene Practice. Each composite was constructed from a set of dichotomous questions reflecting correct or desirable food hygiene behaviors and beliefs.

For both indices, each correct or desirable response was assigned a score of '1', while incorrect or "don't know" responses were scored as '0', The total score for each respondent was obtained by summing all item scores.

The mean score of the sample distribution was then used as a cut-off point for classification. Respondents scoring equal to or above the mean were categorized as having "high knowledge" or "good hygienic practice," while those scoring below the mean were classified as "low knowledge" or "poor hygienic practice.

This approach allowed for standardized classification and comparability with similar studies conducted in Ghana and elsewhere (e.g., Alhassan, 2021; Nortey et al., 2024).

nferential statistics were employed to explore associations and predictors of hygienic knowledge and practices among street food vendors.

The Chi-square test (χ^2) was used to assess associations between categorical variables such as vendor type, educational level, years of experience, and hygiene classification (good or poor).

Binary Logistic Regression analysis was conducted to identify statistically significant predictors of good hygienic practices after adjusting for potential confounders such as age, level of education, training received, and duration in vending. Variables with a p-value ≤ 0.20 in the bivariate analysis were included in the multivariable model. Adjusted Odds Ratios (AORs) with 95% Confidence Intervals (CIs) were calculated to estimate the strength of association between independent variables and outcomes.

3.11 Ethical Consideration

Ethical approval was sought from the Ethics Review Committee of the Ensign College of Public Health and administrative approval given by La Dade-Kotopon Municipal Assembly to carry out the study within the area. A verbal and written assent was also obtained from the study participants explaining the purpose of the study. Likewise, confidentiality and anonymity of the study was assured. During the administration of questionnaires, participants who decided at some point not to partake in the exercise had the liberty to do so. Information provided by participants on the questionnaires were handled with strict confidentiality with their names or personal identification information not to be published in any report. Participants were made to understand that there was no compensation whatsoever for individuals who decided to participate in the study.

3.12 Limitations of Study

1. Some participants were reluctant to provide accurate information out of concern that they might be identified and face legal consequences.
2. articipants were likely to give socially desirable responses as they might be aware of what the interviewer is expecting.

3.13 Assumptions

1. e study assumed that socio-economic characteristics such as educational status would directly affect knowledge on food hygiene practices.

   The study assumed that participants had some level of knowledge on food hygiene practices and were expected to demonstrate good behaviour of food handling and preparation as shown in the general conceptual framework.

CHAPTER FOUR

4.0 RESULTS

4.1 Demographic Characteristics

The study surveyed a total of 352 food vendors. Most respondents were aged between 35–44 years (40.6%), followed by those aged 25–34 years (35.2%). Only a small proportion of vendors were under 24 years (3.1%) or above 65 years (0.9%).

Females dominated the food vending business, accounting for 97.2% of the sample, while males represented only 2.8%. With respect to education, most respondents had attained secondary or high school education (59.4%), followed by those with primary or elementary education (34.1%). A small minority had no formal education (1.7%) or non-formal training (3.1%), while only 1.7% had progressed to college or university level.

Christianity was the predominant religion among respondents (92.1%), with a smaller proportion identifying with Islam (7.1%) and less than 1% practicing African traditional religion. Marital status distribution revealed that nearly two-thirds were married (62.7%), while 22.5% had never married. Widowed respondents accounted for 8.1%, separated 4.6%, and divorced 2%.

Food vending patterns showed that yam-based meals (15.9%), banku (16.5%), waakye (15.3%), and kenkey (14.1%) were the most common items sold. Smaller proportions specialised in porridge or cereals (12.2%), soups and mixed local dishes (11%), beans (8.9%), snacks and pastries (4.6%), and pasta/noodles (1.5%).

In terms of location, vendors were distributed across several communities, with the largest share operating in La (30.1%) and Tse Addo (19.6%). Other notable clusters were found at

Cantonments (14.2%), the Airport area (13.1%), and Burma Camp (12.8%). Smaller concentrations of vendors were observed in Labone (9.2%).

The majority of vendors (97.4%) were stationary, operating from fixed locations, while a small minority (2.6%) worked as hawkers. In terms of years of experience, about 43.2% of respondents had been in food vending for 1–5 years, and a similar proportion (42.9%) had worked for 6–10 years. Only 12.5% had more than 11 years of experience, while a small fraction (1.4%) were relatively new with less than one year in the business.

Table 4.1 Demographic Characteristics

Variable	Category	Frequency n	Percentage (%)
Age (years)	18–24	11	3.12
	25–34	124	35.23
	35–44	143	40.62
	45–54	56	15.91
	55–64	15	4.26
	65+	3	0.85
	Total	**352**	**100.0**
Sex	Female	342	97.16
	Male	10	2.84
	Total	**352**	**100.0**
Education	College/University	6	1.70
	No formal education	6	1.70
	Primary/Elementary	120	34.09
	Secondary/High	209	59.38
	Non-formal	11	3.12
	Total	**352**	**100.0**
Religion	African tradition	3	0.85
	Christianity	324	92.05
	Islam	25	7.10
	Total	**352**	**100.0**
Marital Status	Separated	16	4.62
	Divorced	7	2.02
	Married	222	62.72
	Never married	79	22.54
	Widowed	28	8.09
	Total	**352**	**100.0**
Food Group	Banku	58	16.51
	Beans	31	8.87
	Kenkey	50	14.07
	Pasta/Noodles	5	1.53

Variable	Category	Frequency n	Percentage (%)
	Porridge/Cereal	43	12.23
	Snacks/Grilled/Pastry	16	4.59
	Soups/Mixed local	39	11.01
	Waakye	54	15.29
	Yam-based	56	15.90
	Total	**352**	**100.0**
Location	Airport	46	13.07
	Burma Camp	45	12.78
	Cantonments	50	14.20
	La	107	30.11
	Labone	35	9.94
	Tse Addo	69	19.60
	Total	**352**	**100.0**
Vendor Type	Hawker	9	2.56
	Stationary	343	97.44
	Total	**352**	**100.0**
Years in Vending (years)	Less than 1	5	1.42
	1–5	152	43.18
	6–10	151	42.90
	Above 11	44	12.50
	Total	**352**	**100.0**

4.2 Knowledge of Food Hygiene Among Street Food Vendors in The La Dade-Kotopon Municipality

The results showed generally high levels of knowledge on food hygiene and safety among food vendors. A large majority (89.5%) strongly agreed that fresh meat and fish always have microbes on their surface, while only a small minority either disagreed (2.8%) or did not know (1.4%). Similarly, 59.9% strongly agreed and 21% agreed that canned foods may harbour harmful microbes, though a small proportion (7.7%) strongly disagreed.

Awareness that apparently healthy individuals can transmit germs to food was also high, with 80.4% strongly agreeing and 15.1% agreeing. The majority further recognised raw vegetables as risky: 78.4% strongly agreed and 20.7% agreed that lettuce and other raw vegetables could

contain harmful microbes. In line with this, most respondents (54%) strongly agreed and 45.2% agreed that vegetables should be disinfected with salt or vinegar before use.

Regarding cooked foods, 68.8% strongly agreed and 21.9% agreed that hot foods do not contain microbes, although a few disagreed (0.6%) or strongly disagreed (2.8%). A similar pattern was observed for the belief that food prepared too long in advance provides time for microbial growth, with nearly 60% strongly agreeing and 39.5% agreeing.

Knowledge of foodborne disease transmission was mixed. While 82.1% strongly agreed and 14.8% agreed that cholera can be spread through food, only about half strongly agreed (51.4%) that diseases such as HIV, hepatitis B, and tuberculosis can also be transmitted this way. A notable 25% of respondents indicated uncertainty on this issue.

Respondents demonstrated strong awareness of cross-contamination risks. Over 70% strongly agreed that food preparation surfaces can contaminate food, while 18.5% agreed. Similarly, nearly all respondents recognised the importance of cleaning cutting boards, with 55.7% strongly agreeing and 44% agreeing that soap and water can reduce harmful microbes.

About personal hygiene, 50.9% strongly agreed and 33.8% agreed that food should not be prepared with a wound on the hand, even if covered, though 5.1% strongly disagreed. Almost all respondents acknowledged the importance of handwashing, with 53.4% strongly agreeing and 46% agreeing that hands should be washed after sneezing or blowing the nose.

Finally, when asked about the food hygiene and safety component specifically related to cooking food, 60.2% of respondents gave correct responses compared to 39.8% who did not.

Table 4.2 Knowledge of Food Hygiene Among Street Food Vendors in The La Dade-Kotopon Municipality

Variable	Category	Frequency n	Percentage (%)
Fresh meat/fish always has microbes on the surface	Agree	16	4.55
	Disagree	10	2.84
	Don't know	5	1.42
	Strongly agree	315	89.49
	Strongly disagree	6	1.70
	Total	**352**	**100.0**
Canned foods may have harmful microbes	Agree	74	21.02
	Disagree	9	2.56
	Don't know	31	8.81
	Strongly agree	211	59.94
	Strongly disagree	27	7.67
	Total	**352**	**100.0**
Healthy people can cause illness by carrying germs to food	Agree	53	15.06
	Disagree	7	1.99
	Don't know	5	1.42
	Strongly agree	283	80.40
	Strongly disagree	4	1.14
	Total	**352**	**100.0**
Lettuce and other raw vegetables have harmful microbes	Agree	73	20.74
	Disagree	1	0.28
	Don't know	1	0.28
	Strongly agree	276	78.41
	Strongly disagree	1	0.28
	Total	**352**	**100.0**
Vegetables should be disinfected before use (salt/vinegar)	Agree	159	45.17
	Don't know	3	0.85
	Strongly agree	190	53.98
	Total	**352**	**100.0**
Cooked foods do not have microbes (hot)	Agree	77	21.88
	Disagree	2	0.57
	Don't know	21	5.97

	Strongly agree	242	68.75
	Strongly disagree	10	2.84
	Total	**352**	**100.0**
Foods prepared too long in advance give microbes time	Agree	139	39.49
	Don't know	3	0.85
	Strongly agree	210	59.66
	Total	**352**	**100.0**
Diseases such as HIV, Hep B and TB can be spread through food	Agree	34	9.66
	Disagree	25	7.10
	Don't know	88	25.00
	Strongly agree	181	51.42
	Strongly disagree	24	6.82
	Total	**352**	**100.0**
Cholera can be spread through food	Agree	52	14.77
	Disagree	2	0.57
	Don't know	6	1.70
	Strongly agree	289	82.10
	Strongly disagree	3	0.85
	Total	**352**	**100.0**
Food preparation surfaces can contaminate foods	Agree	65	18.47
	Disagree	7	1.99
	Don't know	16	4.55
	Strongly agree	248	70.45
	Strongly disagree	16	4.55
	Total	**352**	**100.0**
Soap and water can reduce harmful microbes on cutting boards	Agree	155	44.03
	Strongly agree	196	55.68
	Strongly disagree	1	0.28
	Total	**352**	**100.0**
You cannot prepare food with wound on hand even if covered	Agree	119	33.81
	Disagree	25	7.10
	Don't know	11	3.12
	Strongly agree	179	50.85

	Strongly disagree	18	5.11
	Total	**352**	**100.0**
Hands should be washed after sneezing or blowing nose	Agree	162	46.02
	Don't know	1	0.28
	Strongly agree	188	53.41
	Strongly disagree	1	0.28
	Total	**352**	**100.0**
Food hygiene & safety component: Cooking food thoroughly	No	152	43.18
	Yes	200	56.82
	Total	**352**	**100.0**
Food hygiene & safety component (protective measures)	No	21	5.97
	Yes	331	94.03
	Total	**352**	**100.0**
Food hygiene & safety (safe handling)	No	251	71.31
	Yes	101	28.69
	Total	**352**	**100.0**
Food hygiene & safety (proper storage)	No	140	39.77
	Yes	212	60.23
	Total	**352**	**100.0**

4.2.1 Overall Knowledge Level

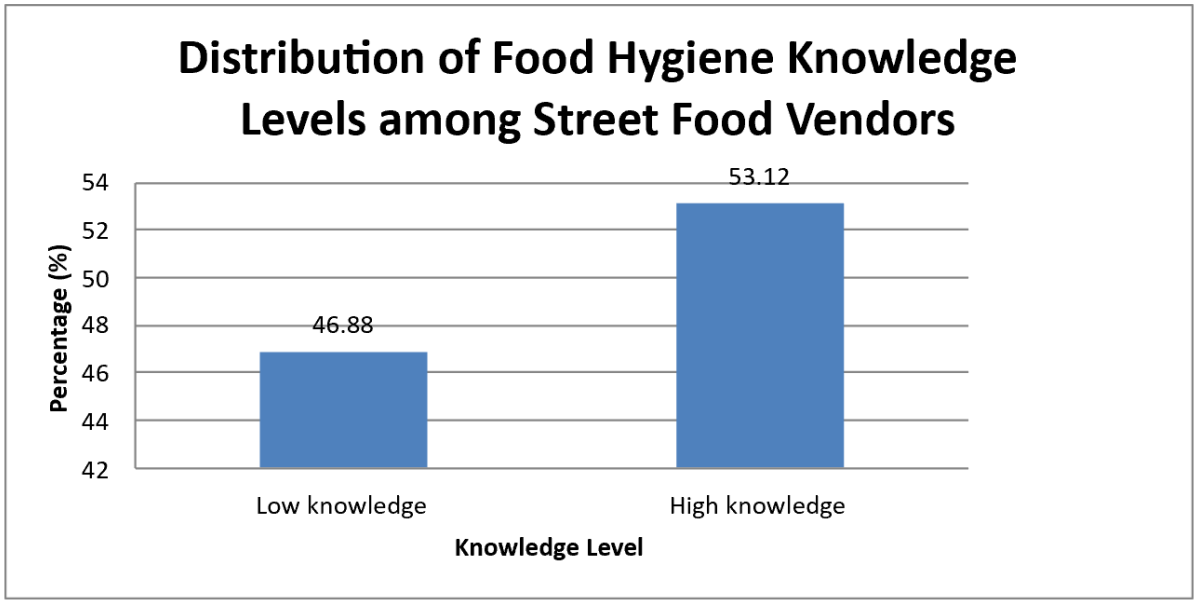


Figure 4.2 Knowledge Distribution

Figure 2 illustrates the distribution of food hygiene knowledge levels among street food vendors in the La Dade-Kotopon Municipality. As shown, slightly more than half of the respondents (53.12%) demonstrated high knowledge of food hygiene, while 46.88% exhibited low knowledge.

4.3 Hygienic Practices Employed by Street Food Vendors During Food Preparation and Service

The results of the descriptive analysis provide useful insights into the hygienic practices of food vendors in La Dade-Kotopon Municipality. Regarding the choice of vending site, the findings show that most vendors decide on location primarily based on customer access, with closeness to customers (82.9%) and customer convenience (54.8%) emerging as the most important factors. Although considerations such as proximity to home (46.0%), lower competition (31.8%) and serving a specific group (26.9%) also played a role, relatively fewer vendors based their choice on cheaper rent (10.8%), space availability (5.7%) or official demarcation (5.4%).

When asked about what attracts customers, majority of vendors (87.8%) believed that affordability was the strongest pull factor, followed using clean food containers (69.6%) and the provision of fast service (62.8%). Taste of food (40.1%) and friendliness of staff (31.0%) were acknowledged to be relevant, though not as important. Interestingly, only 0.6% indicated that the cleanliness of the environment attracted customers.

The acquisition of food preparation knowledge was found to be overwhelmingly informal. More than three-quarters of vendors (76.1%) had learnt food preparation from relatives, while 21.0% were self-taught. Only a small minority received training from catering schools (2.0%) or other structured sources.

In relation to the selection of foodstuffs, cost (65.3%) was reported as the main consideration, ahead of quality (25.6%) and quantity (8.8%). Physical inspection of ingredients was mostly directed at visible signs of spoilage, with 56.3% of vendors checking for rotten parts and 40.3% looking for worms. Few reported checking tenderness (2.0%) or color changes (0.9%). This indicates that assessment of food quality is often limited to obvious signs of contamination, while more subtle indicators are largely overlooked.

Food preparation was found to take place in both vending and home environments, with 33.2% preparing food at the selling site in open spaces, 32.9% at home in open spaces, 20.5% at home in enclosed kitchens and 13.4% at the selling site in enclosed kitchens. 68.8% of vendors described their food preparation areas as very clean and organized, and 31.3% as moderately clean.

With respect to food handling, most vendors (87.8%) prepared the food themselves, while only 3.4% relied on formally trained cooks. Keeping food warm was achieved mainly through enclosed ice chests (34.7%), saucepans with lids (26.4%) and plastic cases (21.0%), with a small proportion reheating food using microwaves (1.1%).

Serving practices also showed mixed levels of hygiene. While 22.4% used clean utensils only, the majority (64.2%) admitted to using both utensils and bare hands, and 13.1% served food mostly with bare hands. On hand hygiene, almost all vendors reported washing their hands before preparing or serving food, and 98.3% indicated that they usually dried their hands with clean towels.

Access to safe water was found to be almost universal, with 99.4% of vendors using tap water for food preparation. Cleaning practices were also reported positively, with 98.9% indicating that they cleaned their vending area after every shift or day. Only a handful admitted to cleaningless frequently.

The sanitary conditions of the vending environment were assessed using an observation checklist. The findings revealed several critical aspects of environmental hygiene and food handling behaviors at vending sites. More than half of the vendors (55.4%) were observed selling food near open gutters, creating potential risks of contamination. By contrast, only a very small proportion operated close to refuse dumps (0.6%) or public toilets (1.4%), although these remain high-risk conditions despite their rarity.

Littering around selling points was minimal, with 93.2% of vending sites free from litter, while 6.8% had visible litter. Most sites (91.2%) lacked open dustbins, and 5.7% of vendors were observed with flies making direct contact with food.

Personal hygiene practices also varied. The majority (92.1%) of vendors had their hair covered, but apron use was almost non-existent (0.3%). More than half (54.6%) were seen touching food with bare hands, and a few (5.4%) handled food and money with the same hands. Behavioral observations indicated that 30.1% of vendors conversed while serving food, and 22.7% were chewing gum or sticks during service, practices that compromise food safety.

Food storage methods were diverse. Over half of the vendors (52.8%) stored prepared food in glass screen cases, and 28.1% used ice chests, which are relatively safe methods. Less hygienic approaches such as open bowls (11.4%) and plain rubber sacks (5.4%) were also noted, while very few vendors used combined methods or flytrap sieve cases.

In summary, the observation checklist highlighted that although some sanitary practices such as hair covering and proper food storage were followed, lapses were common. The absence of apron use, widespread touching of food with bare hands, and the location of vending near open gutters represent significant risks to food safety.

Table 4.3 Hygienic Practices Employed by Street Food Vendors During Food Preparation and Service

Variable	Category	Frequency	Percent
Choice of site	Closeness to home	162	46.02
	Only place demarcated	19	5.4
	Cluster of food sellers	54	15.34
	Closeness to customers	292	82.95
	Customer convenience	193	54.83
	Space large enough	20	5.68
	Lower rent cost	38	10.8
	Lower competition	112	31.82
	Serve specific group	95	26.99
Attracts customers	Clean environment	2	0.57
	Taste of food	141	40.06
	Affordable price	309	87.78
	Fast service	221	62.78
	Friendly staff	109	30.97
	Clean food containers	245	69.6
	Other	83	23.58
Source of food prep knowledge	From relatives	268	76.14
	Self-taught	74	21.02
	Catering school	7	1.99
Checks before buying foodstuffs	Cost	230	65.34
	Quality	90	25.57

	Quantity	31	8.81
Look for when buying foodstuffs	Rotten parts	198	56.25
	Worms	142	40.34
	Tender parts	7	1.99
	Colour	3	0.85
Where food is prepared	At selling place (open space)	117	33.24
	At home (open space)	116	32.95
	At home (enclosed kitchen)	72	20.45
	At selling place (enclosed kitchen)	47	13.35
Condition of food prep area	Very clean and organised	242	68.75
	Moderately clean	110	31.25
Who prepares the food	Seller	309	87.78
	Home-schooled cooks	25	7.1
	Formally trained cooks	18	5.3
How food is kept warm	Enclosed ice chest	122	34.66
	Saucepan with lids	93	26.42
	Plastic cases	74	21.02
	Always on Fire/ Doesn't need to be warmed	59	16.76
	Microwave	4	1.14
How food is served	With both utensils & hands	226	64.2
	With clean utensils only	79	22.44
	Mostly bare hands	46	13.07

Wash hands before preparing/serving	Yes	351	99.99
	No	1	0.001
How hands are dried	Clean towel	345	98.01
	I don't dry my hands	4	1.14
	Clothes/Apron	2	0.57
	Air dry	1	0.28
Type of water used	Tap water	350	99.43
	Borehole	2	0.57
Frequency of cleaning vending area	After every shift/day	348	98.86
	Twice a week	2	0.57
	Rarely	1	0.28
Observation Checklist			
Variable	**Category**	**Frequency**	**Percent**
Food sold near open gutters	Yes	195	55.4
	No	157	44.6
Food sold close to refuse dump	No	350	99.43
	Yes	2	0.57
Food sold close to public toilets	No	347	98.58
	Yes	5	1.42
Litter around selling points	No	328	93.18
	Yes	24	6.82
Availability of open dustbins	No	321	91.19
	Yes	31	8.81

Flies making direct contact with food	No	332	94.32
	Yes	20	5.68
Hair covered	Yes	324	92.05
	No	28	7.95
Vendor wears apron	No	351	99.72
	Yes	1	0.28
Touching food with bare hands	Yes	192	54.55
	No	160	45.45
Handling food and money with same hands	No	333	94.6
	Yes	19	5.4
Conversing while serving food	No	246	69.89
	Yes	106	30.11
Chewing gum/sticks while serving	No	272	77.27
	Yes	80	22.73
Storage of prepared foods	Glass screen case	186	52.84
	Ice chest	99	28.12
	Open bowl	40	11.36
	Plain rubber sack	19	5.4
	Glass screen case	6	1.7
	Flytrap sieve case	1	0.28
	Open bowl	1	0.28

4.3.1 Overall Hygiene Practices

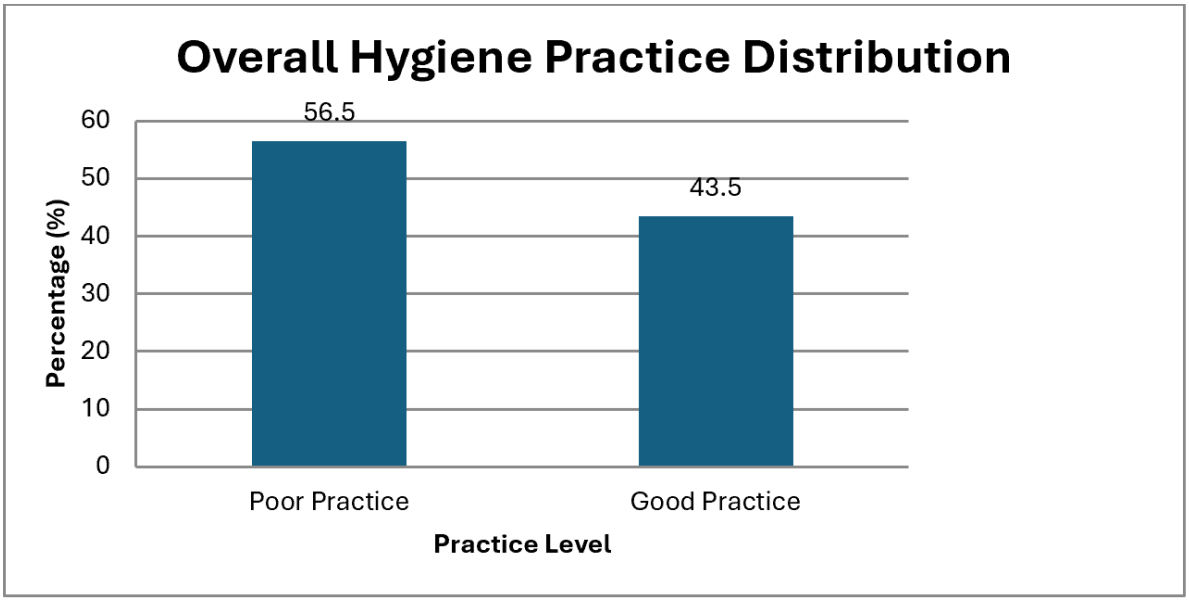


Figure 4.3 Overall Hygiene Practice

Figure 3 illustrates the distribution of food hygiene practice levels among street food vendors in the La Dade-Kotopon Municipality. As shown, slightly more than half of the respondents (56.5%) demonstrated poor hygiene practices, while the remaining (43.5%) exhibited good hygiene practices.

4.4 Factors Influencing Knowledge and Food Hygiene Practice Among Food Street Vendors

4.4.1 Association Between Knowledge and Socio-Demographic Characteristics

The chi-square analysis explored how socio-demographic characteristics of food vendors were associated with their level of food hygiene knowledge. Overall, the results showed that most demographic factors such as age, sex, education, religion, and marital status were not significantly associated with knowledge levels, while vendor type and years of vending showed significant associations.

Age group did not demonstrate a statistically significant relationship with knowledge (χ^2 = 2.77, p = 0.735). Although knowledge levels varied slightly, with younger vendors (18–24

years) recording 45.5% high knowledge and older groups such as 55–64 years reporting only 26.7%, these differences were not large enough to be significant. Similarly, sex was not a significant factor ($\chi^2 = 0.94$, $p = 0.331$), even though half of the male vendors showed high knowledge compared to 35.1% of females.

Education level also showed no significant association with knowledge ($\chi^2 = 4.86$, $p = 0.302$). Vendors with primary education had the highest proportion of high knowledge (42.5%), while those with secondary education or higher recorded 31.6%. Interestingly, 50% of those with tertiary education achieved high knowledge, but the sample size was very small ($n = 6$). Religion followed the same trend, with no significant effect on knowledge ($\chi^2 = 2.45$, $p = 0.293$). While 44% of Muslim vendors demonstrated high knowledge compared to 35.2% among Christians, these differences were not statistically significant.

In contrast, vendor type was significantly associated with knowledge ($\chi^2 = 3.91$, $p = 0.048$). Among hawkers, two-thirds (66.7%) displayed high knowledge compared to only 34.7% of stationary vendors. This finding suggests that mobility in vending may be linked to increased exposure to food safety practices.

Years of vending experience was also highly significant ($\chi^2 = 22.31$, $p = 0.000$). Almost half (49%) of those who had vended for 1–5 years had high knowledge, but this declined sharply to 29.1% among those with 6–10 years of experience and further to 13.6% among vendors with over 10 years of experience. This pattern indicates that longer years in vending did not necessarily translate into better food hygiene knowledge, suggesting potential gaps in ongoing training and reinforcement of best practices.

Marital status showed some variation but did not reach statistical significance ($\chi^2 = 8.38$, $p = 0.079$). Vendors who were separated recorded the highest proportion of high knowledge

(68.8%), while divorced and married respondents showed lower proportions at 28.6% and 33.6% respectively.

In summary, the results indicate that while age, sex, education, religion, and marital status did not significantly influence food hygiene knowledge, vendor type and years of vending were important factors. Hawkers demonstrated higher levels of knowledge compared to stationary vendors, and knowledge tended to decline with more years of vending experience.

Table 4.4 Association Between Knowledge and Socio-Demographic Characteristics

Variable	Category	Low Knowledge n (%)	High Knowledge n (%)	Total n (%)	χ^2	p-value
Age group	18–24	6 (54.5)	5 (45.5)	11 (100.0)		
	25–34	82 (66.1)	42 (33.9)	124 (100.0)		
	35–44	93 (65.0)	50 (35.0)	143 (100.0)		
	45–54	34 (60.7)	22 (39.3)	56 (100.0)		
	55–64	11 (73.3)	4 (26.7)	15 (100.0)		
	65+	1 (33.3)	2 (66.7)	3 (100.0)	2.7715	0.735
Sex	Female	222 (64.9)	120 (35.1)	342 (100.0)		
	Male	5 (50.0)	5 (50.0)	10 (100.0)	0.9435	0.331
Education	No formal	4 (66.7)	2 (33.3)	6 (100.0)		
	Primary	69 (57.5)	51 (42.5)	120 (100.0)		
	Secondary+	143 (68.4)	66 (31.6)	209 (100.0)		
	College/tertiary	3 (50.0)	3 (50.0)	6 (100.0)		
	Non-formal	8 (72.7)	3 (27.3)	11 (100.0)	4.8590	0.302

Religion	African Traditional	3 (100.0)	0 (0.0)	3 (100.0)		
	Christian	210 (64.8)	114 (35.2)	324 (100.0)		
	Islam	14 (56.0)	11 (44.0)	25 (100.0)	2.4537	0.293
Vendor type	Hawker	3 (33.3)	6 (66.7)	9 (100.0)		
	Stationary	224 (65.3)	119 (34.7)	343 (100.0)	3.9148	**0.048***
Years vending	1–5 years	79 (51.0)	73 (49.0)	152 (100.0)		
	6–10 years	107 (70.9)	44 (29.1)	151 (100.0)		
	<1 year	3 (60.0)	2 (40.0)	5 (100.0)		
	>10 years	38 (86.4)	6 (13.6)	44 (100.0)	22.3109	**0.000***
Marital status	Separated	5 (31.3)	11 (68.8)	16 (100.0)		
	Divorced	5 (71.4)	2 (28.6)	7 (100.0)		
	Married	144 (66.4)	73 (33.6)	217 (100.0)		
	Never married	52 (66.7)	26 (33.3)	78 (100.0)		
	Widowed	18 (64.3)	10 (35.7)	28 (100.0)	8.3772	0.079

4.4.2 Multivariable Logistic Regression of Socio-Demographic Factors Influencing Knowledge

The multivariable logistic regression identified marital status, years of vending, and location as significant independent predictors of knowledge among vendors.

Marital status was strongly associated with knowledge. Compared to single vendors, those who were married had significantly lower odds of good knowledge (AOR=0.107, 95% CI: 0.029–0.543, p=0.007). Likewise, those who had never married also had reduced odds (AOR=0.072, 95% CI: 0.012–0.436, p=0.004). Divorced and widowed respondents did not differ significantly from the reference group.

Years of vending experience showed a clear trend. Vendors with 6–10 years of experience were significantly less likely to have good knowledge compared to those vending for only 1–5 years (AOR=0.322, 95% CI: 0.178–0.581, p<0.001). Similarly, vendors with 11 years or more of experience had much lower odds (AOR=0.077, 95% CI: 0.023–0.246, p<0.001). Vendors with less than one year of experience did not differ significantly from the reference group.

Location of vending was also significant in one site. Vendors at Labone were less likely to have good knowledge compared to those at the 37 Hospital reference point (AOR=0.121, 95% CI: 0.028–0.526, p=0.005). Other sites such as Burma Camp, Cantonments, South La, and Tse Addo were not significantly different.

Table 4.5 Multivariable Logistic Regression of Socio-Demographic Factors Influencing Knowledge

Variable	COR OR (95% CI)	p-value	AOR OR (95% CI)	p-value
Age group (Ref = 65+)				
25–34	0.519 (0.131 – 2.052)	0.350	0.332 (0.065 – 1.708)	0.187
35–44	0.331 (0.084 – 1.297)	0.112	0.205 (0.036 – 1.163)	0.073
45–54	0.403 (0.097 – 1.678)	0.212	0.471 (0.071 – 3.112)	0.434
55–64	0.429 (0.081 – 2.277)	0.320	0.252 (0.027 – 2.390)	0.230
65+	1.0 (Ref)	—	1.0 (Ref)	—
Sex (Ref = Female)				

Male	3.642 (0.762 – 17.402)	0.105	2.707 (0.435 – 16.845)	0.286
Education (Ref = Tertiary)				
No formal education	0.400 (0.026 – 6.176)	0.512	0.973 (0.022 – 43.713)	0.989
Primary/elementary	0.236 (0.027 – 2.084)	0.194	0.441 (0.043 – 4.498)	0.489
Secondary	0.206 (0.023 – 1.792)	0.152	0.294 (0.031 – 2.815)	0.288
Non-formal	0.350 (0.029 – 4.153)	0.406	1.010 (0.058 – 17.540)	0.994
Religion (Ref = African tradition)				
Christianity	0.754 (0.329 – 1.729)	0.505	1.276 (0.440 – 3.694)	0.654
Islam	0.416 (0.402 – 1.541)	0.132	0.992 (0.078 – 2.803)	0.431
Marital status (Ref = Single)				
Divorced	0.057 (0.006 – 0.521)	0.011 *	0.082 (0.006 – 1.122)	0.061
Married	0.131 (0.029 – 0.592)	0.008 *	0.107 (0.029 – 0.543)	0.007 *
Never married	0.195 (0.041 – 0.916)	0.038 *	0.072 (0.012 – 0.436)	0.004 *
Widowed	0.257 (0.048 – 1.368)	0.111	0.462 (0.068 – 3.124)	0.428
Vendor type (Ref = Mobile)				
Stationary	0.316 (0.065 – 1.541)	0.154	0.292 (0.048 – 1.803)	0.185
Years vending (Ref = 1–5 yrs)				
6–10 years	0.438 (0.275 – 0.696)	0.000 *	0.322 (0.178 – 0.581)	0.000 *
<1 year	0.780 (0.126 – 4.816)	0.789	0.408 (0.051 – 3.270)	0.399
≥11 years	0.269 (0.133 – 0.546)	0.000 *	0.077 (0.023 – 0.246)	0.000 *

Location (Ref = Fish)				
Burma Camp	0.615 (0.268 – 1.413)	0.252	0.572 (0.210 – 1.555)	0.273
Cantonments	0.672 (0.292 – 1.544)	0.349	0.667 (0.264 – 1.682)	0.390
South La	0.621 (0.282 – 1.364)	0.235	0.554 (0.195 – 1.575)	0.268
Labone	0.321 (0.102 – 1.010)	0.052	0.121 (0.028 – 0.526)	0.005 *
Tse Addo	0.864 (0.465 – 2.148)	1.000	0.864 (0.364 – 2.049)	0.740
37 Hospital	1.0 (Ref)	—	1.0 (Ref)	—

4.4.3 Association Between Hygiene Practices and Socio-Demographic Characteristics

The chi-square analysis examined the relationship between socio-demographic characteristics of food vendors and their food hygiene practices. The results indicate that education, years of vending, and location were significantly associated with hygiene practice, while other demographic factors such as age, sex, religion, vendor type, and marital status were not statistically significant.

ge group was not significantly related to practice ($\chi^2 = 9.91$, $p = 0.078$). Vendors aged 55–64 years and those aged 65 years and above recorded the highest proportions of good practice (66.7% and 100% respectively), compared to only 38.5% among those aged 35–44 years. Although there were visible differences in proportions, these did not reach statistical significance.

Sex was also not a significant factor ($\chi^2 = 2.31$, $p = 0.129$). Female vendors recorded 44.1% good practice compared to 20% among males. Despite the higher proportion among females, the difference was not statistically meaningful.

Education level showed a trend towards significance ($\chi^2 = 7.97$, $p = 0.093$). Vendors with college or university education demonstrated the highest level of good practice (66.7%), followed by those with non-formal education (54.5%). By contrast, only 34.2% of those with primary/elementary education and 33.3% of those with no formal education reported good practices.

Vendor type did not show a significant association ($\chi^2 = 2.02$, $p = 0.155$). While 66.7% of hawkers reported good practice compared to 42.9% of stationary vendors, the difference was not statistically significant.

Religion was also not significantly associated with practice ($\chi^2 = 3.22$, $p = 0.200$). Good practice was reported among 66.7% of those identifying with African traditional religion, 44.4% of Christians, and 28% of Muslims.

Years of vending experience, however, showed a statistically significant association with hygiene practices ($\chi^2 = 10.37$, $p = 0.016$). Vendors with less than one year of experience had 60% good practice, and those with 1–5 years recorded 52.6%. By comparison, only 36.4% of those with 6–10 years and 34.1% of those with more than 10 years reported good practice.

Location was also significantly associated with hygiene practice ($\chi^2 = 31.00$, $p = 0.001$). Good practice was most prevalent among vendors in Labone (56.7%), Tse Addo (52.2%), and Airport (50.0%). In contrast, vendors in La recorded the lowest level of good practice (32.1%).

Table 4.6 Association Between Hygiene Practices and Socio-Demographic Characteristics

Variable	Category	Poor Practice n (%)	Good Practice n (%)	Total n (%)	χ^2	p-value
Age group	18–24	5 (45.5)	6 (54.5)	11 (100.0)	**9.9087**	**0.078**
	25–34	67 (54.0)	57 (46.0)	124 (100.0)		
	35–44	88 (61.5)	55 (38.5)	143 (100.0)		
	45–54	34 (60.7)	22 (39.3)	56 (100.0)		

	55–64	5 (33.3)	10 (66.7)	15 (100.0)		
	65+	0 (0.0)	3 (100.0)	3 (100.0)		
Sex	Female	191 (55.9)	151 (44.1)	342 (100.0)	**2.3064**	**0.129**
	Male	8 (80.0)	2 (20.0)	10 (100.0)		
Education	College/University	2 (33.3)	4 (66.7)	6 (100.0)	**7.9699**	**0.093**
	No formal education	4 (66.7)	2 (33.3)	6 (100.0)		
	Primary/elementary	79 (65.8)	41 (34.2)	120 (100.0)		
	High/Secondary school	109 (52.2)	100 (47.8)	209 (100.0)		
	Non-formal	5 (45.5)	6 (54.5)	11 (100.0)		
Vendor type	Hawker	3 (33.3)	6 (66.7)	9 (100.0)	**2.0232**	**0.155**
	Stationary	196 (57.1)	147 (42.9)	343 (100.0)		
Religion	African tradition	1 (33.3)	2 (66.7)	3 (100.0)	**3.2169**	**0.200**
	Christianity	180 (55.6)	144 (44.4)	324 (100.0)		
	Islam	18 (72.0)	7 (28.0)	25 (100.0)		
Years of vending	Less than 1 year	2 (40.0)	3 (60.0)	5 (100.0)	**10.3738**	**0.016***
	1–5 years	72 (47.4)	80 (52.6)	152 (100.0)		
	6–10 years	96 (63.6)	55 (36.4)	151 (100.0)		
	11+ years	29 (65.9)	15 (34.1)	44 (100.0)		
Location (collapsed)	Airport	23 (50.0)	23 (50.0)	46 (100.0)	**31.0037**	**0.001**
	Burma Camp	27 (60.0)	18 (40.0)	45 (100.0)		
	Cantonments	26 (57.8)	19 (42.2)	45 (100.0)		
	Fish	1 (100.0)	0 (0.0)	1 (100.0)		
	La	74 (67.9)	35 (32.1)	109 (100.0)		
	Labone	13 (43.3)	17 (56.7)	30 (100.0)		
	Tse Addo	33 (47.8)	36 (52.2)	69 (100.0)		
	37 Hospital	2 (40.0)	3 (60.0)	5 (100.0)		

4.4.4 Multivariable Logistic Regression of Socio-Demographic Factors Influencing Practice

The multivariable logistic regression revealed that age, vending location, and years of vending were the significant socio-demographic predictors of practice among vendors, after controlling for other factors.

Age showed one significant category. Vendors aged 55–64 years were more likely to have good practice compared to those aged 65 years and above (AOR=11.49, 95% CI: 1.17–113.20,p=0.036). Other age groups did not show significant associations.

Location of vending emerged as an important determinant of food hygiene practice. Vendors operating at Burma Camp were significantly less likely to demonstrate good hygiene practice compared to the vendors in La. (AOR = 0.37, 95% CI: 0.14–0.96, p = 0.041).

Years of vending also demonstrated significance. Vendors with 6–10 years of experience were less likely to have good practice compared to those with 1–5 years of vending (AOR=0.47, 95% CI: 0.26–0.84, p=0.011). Those with less than one year or more than 11 years of experience did not differ significantly from the reference group after adjustment.

Table 4.7 Multivariable Logistic Regression of Socio-Demographic Factors Influencing Practice

Variable	Category	COR (95% CI)	p-value	AOR (95% CI)	p-value
Age group	25–34	0.71 (0.21 – 2.45)	0.586	1.40 (0.30 – 6.63)	0.670
	35–44	0.52 (0.15 – 1.79)	0.300	1.50 (0.29 – 7.82)	0.627
	45–54	0.54 (0.15 – 1.98)	0.353	2.57 (0.42 – 15.60)	0.305
	55–64	1.67 (0.34 – 8.26)	0.532	11.49 (1.17 – 113.20)	0.036*
	65+ (ref)	1.00	—	1.00	—
Sex	Male	0.32 (0.07 – 1.51)	0.149	0.14 (0.01 – 1.50)	0.104
	Female (ref)	1.00	—	1.00	—
Education	No formal education	0.25 (0.02 – 2.76)	0.258	0.45 (0.02 – 11.98)	0.631
	Primary/Elementary	0.26 (0.05 – 1.48)	0.128	0.35 (0.05 – 2.28)	0.271
	High/Secondary	0.46 (0.08 – 2.56)	0.374	0.59 (0.10 – 3.68)	0.567
	Non-formal	0.60 (0.08 – 4.76)	0.629	0.18 (0.02 – 2.10)	0.171
	College/University (ref)	1.00	—	1.00	—
Vendor type	Stationary	0.38 (0.09 – 1.52)	0.170	0.47 (0.09 – 2.59)	0.388

	Hawker (ref)	1.00	—	1.00	—
Religion	Christianity	0.40 (0.04 – 4.46)	0.456	0.27 (0.01 – 13.31)	0.512
	Islam	0.19 (0.02 – 2.50)	0.209	0.06 (0.00 – 3.65)	0.180
	African tradition (ref)	1.00	—	1.00	—
Location	Location (ref = Fish/La Palm/La-Maami combined)	**COR (95% CI)**	**p-value**	**AOR (95% CI)**	**p-value**
	Burma Camp	0.67 (0.29 – 1.53)	0.339	0.37 (0.14 – 0.96)	0.041*
	Cantonments	0.73 (0.32 – 1.67)	0.457	0.61 (0.25 – 1.51)	0.290
	Labone	1.34 (0.58 – 3.09)	0.495	0.97 (0.33 – 2.87)	0.960
	L**a**	0.38 (0.19 – 0.74)	0.005**	0.25 (0.11 – 0.61)	0.002**
	Tse Addo	1.09 (0.52 – 2.30)	0.819	0.73 (0.31 – 1.69)	0.460
	37 Hospital	1.50 (0.23 – 9.83)	0.673	1.93 (0.16 – 22.92)	0.602
	Ref group (L**a**)	1.00	—	1.00	—
Years vending	6–10 years	0.52 (0.33 – 0.82)	0.005**	0.47 (0.26 – 0.84)	0.011*
	Less than 1 year	1.35 (0.22 – 8.31)	0.746	3.68 (0.34 – 39.86)	0.283
	Above 11 years	0.47 (0.23 – 0.94)	0.032*	0.65 (0.25 – 1.69)	0.382
	1–5 years (ref)	1.00	—	1.00	—
Marital status	Divorced	1.65 (0.26 – 10.31)	0.592	0.29 (0.02 – 5.18)	0.398
	Married	1.75 (0.59 – 5.19)	0.317	1.56 (0.48 – 5.12)	0.460
	Never married	2.32 (0.74 – 7.29)	0.151	1.62 (0.41 – 6.37)	0.487
	Widowed	0.73 (0.18 – 2.86)	0.655	0.42 (0.08 – 2.28)	0.315
	Single (ref)	1.00	—	1.00	—

CHAPTER FIVE

5.0 DISCUSSION

5.1 Knowledge of Food Hygiene and Safety among Street Food Vendors

The results demonstrated that most street food vendors possessed a high level of knowledge regarding food hygiene and safety (53.1%). Most respondents recognized that raw meat and fish (89.5%) and vegetables (78.4%) could harbor microbes, and they understood the importance of disinfecting vegetables before use (54.0% strongly agreed; 45.2% agreed), maintaining clean preparation surfaces (70.5%), and washing hands after activities such as sneezing or blowing the nose (99.4%). This aligns with the World Health Organization's framework on food hygiene, which emphasizes the need to maintain cleanliness, prevent contamination, cook food thoroughly, and use safe water and raw materials to minimize the risk of foodborne illness (WHO, 2020).

Nonetheless, specific misconceptions were identified. A considerable proportion of respondents strongly agreed that hot foods do not contain microbes (68.8%), suggesting a lack of clarity about microbial survival and recontamination. Pereira et al. (2021) likewise reported that 68% of vendors in South Africa demonstrated good knowledge but only 47% practiced safe food handling. Another area of uncertainty in this study concerned disease transmission pathways. While most respondents correctly identified cholera as a foodborne disease (82.1%), a minority were either unsure or incorrectly associated diseases such as HIV, hepatitis B, and tuberculosis with food transmission (25.0% "don't know"). Comparable gaps were also noted in Kenya and South Africa, where Onyango et al. (2025) found that vendor knowledge improved from 42% to 71% after hygiene training, yet misconceptions about disease transmission persisted, and Pereira et al. (2021) highlighted similar misunderstandings about cross-contamination and personal hygiene.

When situated within the wider Ghanaian literature, the findings indicate relatively higher levels of knowledge among vendors in this study compared with other regions. In Tamale, Salifu, Muktar and Alhassan (2025) reported that 55% of vendors demonstrated adequate knowledge of hygiene principles but only 49% consistently wore aprons or gloves during food preparation. In the Volta Region, Klutse and Sampson (2025) found that 50% of vendors scored above the mean for knowledge, while just 43% maintained good hygienic practices, and no significant association was observed between knowledge and age or sex. Conversely, Nortey et al. (2024) in Sekondi-Takoradi found that 70.4% of food vendors exhibited low knowledge, and 52.3% demonstrated poor hygiene practices. Similarly, Issahaku, Adoma and Sidiqque (2020) in Sagnarigu reported that only 41.7% of vendors had good knowledge of hygiene, with 38.3% adhering to good practices, underscoring widespread non-compliance with food safety standards.

t the global level, mixed patterns of knowledge have also been reported. A training intervention in Kanpur, India, demonstrated that structured education significantly improved vendor knowledge from 46% to 79% and good practice from 49% to 81% (Times of India, 2025). Conversely, in South Africa and Kenya, researchers have observed inadequate knowledge among most vendors, often linked to a lack of formal training opportunities (Onyango et al., 2025; Pereira et al., 2021). These comparisons reinforce the importance of regular and context-specific training to strengthen vendor competence and promote correct hygiene practices.

Although the general level of knowledge among vendors was high, targeted interventions remain necessary to address persistent misconceptions particularly concerning temperature control and the differentiation between foodborne and non-foodborne diseases. Integrating structured training into regulatory mechanisms such as the Street Food Vending Permit introduced by the Ghana Food and Drugs Authority could ensure that knowledge is not only widespread but also accurate and translated effectively into daily practice (GNA, 2022).

The chi-square analysis further revealed that most socio-demographic variables including age, sex, education, religion, and marital status were not significantly associated with hygiene knowledge. This indicates that knowledge is not necessarily determined by basic demographic factors but may instead be shaped by occupational experience and environmental exposure. Klutse and Sampson (2025) similarly found no significant link between age or sex and hygiene knowledge among vendors in the Volta Region.

Education, often presumed to be a strong determinant, also showed no significant association with knowledge in this study. Vendors with tertiary education (50.0%) recorded the highest proportion of high knowledge, but the small sample size limited statistical power. This aligns with Salifu, Muktar and Alhassan (2025), who observed that education alone did not guarantee higher knowledge scores, as many vendors relied more on experience than formal schooling.

Two factors vendor type and years of vending experience—showed significant associations. Hawkers (66.7%) demonstrated higher knowledge than stationary vendors (34.7%). One possible explanation is that hawkers, due to their mobility and frequent interaction with diverse customer bases, may be more exposed to inspections and public scrutiny, which reinforces awareness of hygiene practices. Supporting this, Issahaku, Adoma and Sidiqque (2020) observed that stationary vendors were more likely to operate near open drains and in unsanitary environments, potentially limiting their uptake of food safety education.

Years of vending experience were also strongly associated with knowledge, but in an unexpected direction, knowledge declined with increasing years of experience: 1–5 years (49.0%), 6–10 years (29.1%), and more than 10 years (13.6%). This pattern suggests that hygiene knowledge acquired early on may deteriorate over time without refresher training. A similar trend was reported by Amedewonu (2020) in Ayensuano District, where vendors with

over ten years of experience demonstrated only 28% good knowledge compared with 46% among those with fewer than five years' experience.

5.2 Hygienic Practices among Street Food Vendors

The descriptive findings revealed that while certain hygienic practices were adhered to, several critical gaps persisted in the preparation and service of street foods. Vendors overwhelmingly chose their selling sites based on proximity to customers (82.9%) and customer convenience (54.8%) rather than on sanitary conditions. This reflects the prioritization of economic survival over public health considerations, a dynamic reported in other Ghanaian settings where location decisions are influenced by market flow and visibility rather than environmental safety (Issahaku et al., 2020; Nortey et al., 2024). The observation that more than half of vendors operated near open gutters (55.4%) underscores this tension, exposing food to significant contamination risks. In Sagnarigu, only 41.7% of vendors demonstrated good hygienic practices, with 58.3% operating near waste drains (Issahaku, Adoma and Sidiqque, 2020), while in Sekondi-Takoradi, 52.3% were rated as having poor hygiene practices and 63.8% worked in unsanitary surroundings (Nortey et al., 2024). Similarly, Amedewonu (2020) reported that 61% of vendors in Ayensuano operated close to open drains and solid waste disposal sites, exposing food to high contamination risk. Customer attraction was perceived to be linked primarily to affordability (87.8%) and container cleanliness (69.6%), with very few vendors citing environmental cleanliness (0.6%) as important. This finding aligns with consumer research in Kumasi, where Mensah et al. (2008) found that 72% of customers prioritised affordability and personal neatness of vendors, while only 28% considered structural sanitation when choosing food sources. Such findings suggest that consumer preferences, rather than regulatory standards, often shape vendor practices, creating a mismatch between what attracts customers and what ensures food safety.

Food preparation knowledge was found to be predominantly informal acquired from relatives (76.1%) or self-learning (21.0%) with only 2.0% of respondents reporting formal training through catering schools or institutional programmes. This reliance on informal learning mirrors findings from other regions of Ghana. In the Volta Region, Klutse and Sampson (2025) reported that 74% of vendors had never received formal training, learning primarily through family apprenticeship. Similarly, in Tamale, Salifu, Muktar and Alhassan (2025) found that 69% of vendors acquired their cooking skills informally, while only 4% had participated in structured hygiene training. This pattern echoes international evidence: in Zululand District, South Africa, Pereira et al. (2021) observed that approximately 75% of vendors had no formal food safety education, which directly correlated with substandard hygiene compliance and poor utensil sanitation.

Observed practices further revealed the gap between knowledge and behaviour. Although nearly all vendors reported handwashing before food handling (99.9%) and covering hair during service (92.1%), apron use (0.3%) was virtually absent, and over half handled food with bare hands (54.6%). Similar trends have been documented across Ghana. In Takoradi, Annan-Prah et al. (2011) reported that only 45% of vendors wore aprons, 52% used hair coverings, and 58% handled ready-to-eat foods without gloves. These findings collectively highlight that while knowledge of hygiene may be widespread, its translation into consistent practice remains weak.

The chi-square analysis revealed that education level, years of vending experience, and location were significantly associated with food hygiene practices, whereas age, sex, religion, vendor type, and marital status were not statistically significant. Although age was not significant, the highest proportions of good practice were observed among vendors aged 55–64 years (66.7%) and those aged 65 years and above (100%). This suggests that older vendors may exercise greater caution in handling food, possibly due to accumulated experience or heightened health

consciousness. Bantie et al. (2023) similarly found in Ethiopia that 63.4% of older vendors demonstrated good hygienic practices compared to 48.1% of younger ones, though the difference was not statistically significant. Conversely, Nortey et al. (2024) reported no significant link between age and hygiene practices, reinforcing that age alone is not a reliable predictor of hygienic behaviour.

Education level showed that vendors with higher education were more likely to demonstrate good hygiene practices, College/University (66.7%), Non-formal (54.5%), and Secondary (47.8%), compared with those with only Primary (34.2%) or no formal education (33.3%). This pattern mirrors findings in Tamale, where Salifu, Muktar and Alhassan (2025) reported that 61% of vendors with post-secondary education practised good hygiene, compared to 38% among those with no formal education. Klutse and Sampson (2025) similarly found that vendors with at least junior high education were twice as likely to maintain good hygiene compared to those without formal schooling (AOR = 2.1, $p = 0.03$).

Years of vending experience emerged as a significant determinant of hygiene practice. Vendors with less than one year of experience (60.0%) or 1–5 years (52.6%) demonstrated higher practice levels than those with 6–10 years (36.4%) or more than 10 years (34.1%). This decline with increasing experience suggests that newer vendors may be more compliant due to recent exposure to public health campaigns or stricter inspections during business start-up, while older vendors tend to rely on established, outdated routines. Amedewonu (2020) reported a similar decline in Ayensuano District, where 46% of vendors with fewer than five years of experience practised good hygiene compared to only 28% among those with over ten years in operation. These findings underscore the need for periodic refresher training to sustain hygiene standards over time.

Location was another significant predictor of hygiene practices. Vendors in Labone (56.7%), Tse Addo (52.2%), and Airport (50.0%) exhibited the highest proportions of good practice, while those in La (32.1%) recorded the lowest. This spatial variation may reflect differences in consumer expectations, infrastructure quality, and inspection frequency across neighbourhoods. Annan-Prah et al. (2011) observed similar disparities in Takoradi, where vendors in central high-income areas maintained better hygiene (65%) compared to those in peripheral settlements (38%). Likewise, Issahaku et al. (2020) noted that vendors operating close to drains or refuse dumps were significantly less likely to maintain hygienic conditions ($p < 0.05$). These comparisons demonstrate that environmental context, particularly the cleanliness of vending surroundings and strength of local inspection systems, plays an important role in shaping vendor behaviour and overall food safety outcomes.

5.3 Factors Influencing Knowledge and Hygiene Practices among Street Food Vendors

The multivariable logistic regression identified marital status, years of vending experience, and location as significant independent predictors of knowledge among vendors. Marital status demonstrated a strong effect: married (33.6%) and never-married (33.3%) vendors were significantly less likely to have good knowledge compared with the reference category in the model (single vendors). Separated (68.8%), divorced (28.6%), and widowed (35.7%) respondents showed varying proportions in the bivariate results. Although marital status is not a commonly cited determinant of food hygiene knowledge, this finding may reflect differences in time commitment and adaptability. Single vendors may be more flexible, more responsive to training, and more likely to interact with inspectors and customers who reinforce food-safety messages. Married vendors, by contrast, may prioritise economic responsibilities or household duties, reducing opportunities to engage in hygiene-related education. Comparable findings were hinted at in Amedewonu (2020), where female married vendors reported lower training

attendance (31%) than unmarried counterparts (47%), though the difference was not statistically significant.

Years of vending experience showed a clear and consistent association with knowledge. Vendors with 6–10 years of experience (29.1%) and those with 11 years or more (13.6%) were significantly less likely to have good knowledge compared with those with 1–5 years (49.0%) in the trade. Amedewonu (2020) similarly found that vendors with over ten years of experience demonstrated only 28% good knowledge compared with 46% among those with fewer than five years. In Kenya, Onyango et al. (2025) documented a comparable decline: vendors with more than eight years in business had a mean knowledge score of 58%, versus 74% among those with fewer than five years, largely due to reduced participation in training. These patterns suggest that knowledge erosion occurs over time in the absence of periodic retraining.Location also emerged as an important predictor of knowledge. Vendors operating in Labone were significantly less likely to demonstrate good knowledge compared with those around the 37 Hospital (AOR = 0.121, 95% CI: 0.028–0.526; p = 0.005). This finding implies that vendors situated near health facilities or central business zones benefit from greater regulatory oversight and exposure to public-health messaging. In contrast, those in peripheral or informal areas may have limited access to such supervision. Annan-Prah et al. (2011) reported similar geographic variation in Takoradi, where vendors located near institutional centres displayed 65% compliance with hygiene guidelines compared with 38% in unregulated markets. The observed pattern highlights the need for context-specific inspection regimes, particularly in low-surveillance zones.

Regarding hygiene practice, age, location, and years of vending were significant predictors. Age showed significance in one category: vendors aged 55–64 years (66.7%) were more likely to report good practice than those aged 65 years and above (100%). This finding, though atypical, suggests heightened caution among middle-aged vendors who remain physically

active yet health-conscious. Bantie et al. (2023) in Ethiopia observed a similar trend, reporting that 63.4% of vendors aged 45–59 years practised good hygiene compared with 48.1% among younger respondents and 46% among those above 60 years. This may indicate that experience and alertness interact to shape hygiene behaviour.

ears of vending experience again displayed a significant effect on practice. Vendors engaged for 6–10 years (36.4%) were less likely to demonstrate good hygiene compared with those vending for 1–5 years (52.6%). This mirrors the knowledge pattern, reinforcing that prolonged vending does not necessarily translate into better practice; in fact, complacency or outdated routines may erode adherence. Pereira et al. (2021) in South Africa reported that 59% of vendors with less than five years' experience complied with safe-handling standards compared with only 41% of those with ten years or more, attributing the decline to overconfidence and reduced participation in refresher courses. Similarly, Salifu, Muktar and Alhassan (2025) found that newly registered vendors in Tamale displayed 61% good practice after exposure to local health-inspector training, whereas compliance fell to 39% among older operators lacking follow-up supervision. These parallels confirm that time in business without continuous oversight tends to weaken hygiene discipline.

Location was also a significant determinant of practice. Vendors in Labone (56.7%), Tse Addo (52.2%), and Airport (50.0%) exhibited higher practice levels than those in La (32.1%), reflecting spatial inequalities in regulation and infrastructure. Issahaku et al. (2020) found that vendors operating within 10 metres of open drains were 2.3 times more likely to have poor hygiene scores than those in cleaner areas. This underlines how environmental context shapes hygiene outcomes.

Collectively, these findings indicate that both knowledge and practice among street food vendors are less influenced by static demographic factors such as sex, religion, or basic

education, and more by dynamic and contextual variables such as marital status, years of vending, and location. In this study, vendors with 1–5 years of experience exhibited the highest levels of both knowledge (49.0%) and practice (52.6%), while longer service years consistently predicted poorer outcomes. The pronounced location effects further highlight the need for geographically tailored interventions. Continuous retraining, especially for long-serving vendors, and intensified inspection in low-compliance areas such as La and peri-urban markets could substantially enhance food-safety outcomes. Ultimately, the evidence reinforces that sustained regulatory engagement and refresher education, rather than demographic targeting alone, are crucial for improving street-food hygiene standards in Ghana.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This study assessed knowledge and hygienic practices of street food vendors in La Dade-Kotopon Municipality and the socio-demographic factors influencing them. Overall, vendors demonstrated a relatively high level of knowledge on food hygiene and safety, with strong awareness of contamination risks, handwashing, and cross-contamination prevention. However, specific misconceptions persisted, particularly regarding disease transmission and the assumption that hot food is always microbe-free.

In terms of practice, vendors showed some positive behaviors such as regular cleaning of vending areas, use of tap water, and handwashing. Nevertheless, significant gaps remained, including frequent bare-hand contact with food, near absence of apron use, and vending close o open drains.

The analysis further showed that knowledge was significantly associated with marital status, years of vending, and vending location, while practice was influenced by age, years of vending, and location. The findings highlight that while food hygiene knowledge among vendors is high, the translation of this knowledge into consistent safe practices remains limited. Sustained training, stronger regulatory enforcement, and improved infrastructure are therefore essential to bridge the gap between awareness and behavior and to safeguard public health.

6.2 Recommendations

1. The District Health Directorate should intensify education campaigns focusing on correcting misconceptions about foodborne and non-foodborne diseases among food vendors in the municipality.

2. The Food and Drugs Authority (FDA) should consider refresher trainings for permit renewal, particularly targeting long-serving vendors in the Municipality.
3. LaDMA should enforce regular inspections and mandatory hygiene training for street food vendors, while providing basic infrastructure such as clean water, waste disposal facilities, and sheltered vending spaces to improve food safety in the municipality.
4. Further qualitative observations should be conducted to validate the outcome/findings of the study.

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APPENDICES

Appendix I: Participant Consent Form

Title of Study: Assessment of Hygienic Practices Among Street Food Vendors in La Dade-Kotopon Municipality

Introduction

You are being invited to take part in a research study that aims to understand how street food vendors maintain food hygiene. The study will assess your knowledge of food hygiene, the practices you use during food preparation and service, how well these align with hygiene regulations, and the sanitary conditions of your work environment.

What to Expect

If you choose to take part, the study will take about 20 to 30 minutes of your time. You will be asked several questions about your current practices and experiences. There are no right or wrong answers—please feel free to speak openly and ask for clarification at any time.

Risks and Benefits

There are no known risks involved in participating in this study apart from the time it takes to answer the questions. While there may not be any direct benefits to you personally, the results may help guide public health initiatives aimed at improving food hygiene and safety.

Confidentiality

Your responses will remain confidential and will not be linked to your name or identity in any way. Only the researcher and their academic supervisor will have access to the information you provide. You have the right to view any personal information collected about you during the study.

Compensation

There will be no financial compensation for participating, but your time and contribution will be sincerely appreciated.

Voluntary Participation and Withdrawal

Taking part in this study is entirely voluntary. You can choose to stop participating at any time without any consequences or penalties. If any new information arises that might affect your decision to continue, you will be informed promptly.

By signing the consent form, you confirm that you understand what the study involves and agree to participate.

Contact Information

Please contact me in case of any issues related to the study:

Edinam Maureen Sedo

0271627569

maureen.sedo@st.ensign.edu.gh

Participant Agreement

I have read (or have had someone read to me) all the information provided above. I have had the chance to ask questions and have received clear answers. I understand what the study involves, and I willingly agree to take part, or allow my child/ward to take part, in this research.

I understand that signing this form does not take away any of my legal rights. I will also receive a copy of this consent form for my own records.

Name of Participant: _____

Signature or Mark of Participant: _____

Date: _____

I confirm that I have explained the purpose of the study, as well as any potential benefits and risks, to the participant named above.

Name of Person Obtaining Consent: _____

Signature of Person Obtaining Consent: _____

Date: _____

Appendix II: QUESTIONNAIRE

ENSIGN GLOBAL UNIVERSITY

DEPARTMENT OF COMMUNITY HEALTH

QUESTIONNAIRE FOR FOOD VENDORS

This instrument seeks data on the hygienic practices of the food vendors in La Dade-Kotopon Municipality for an academic study. Please answer as candidly as you can.

SECTION A: DEMOGRAPHICS

1. What is your age?

2. Sex? a. Male b. Female

3. Highest level of education attained

   a. Primary or elementary school b. high or secondary school

   c. College or university d. non-formal e. No formal education

4. Which religion do you belong

   a. Islam b. Christianity c. African tradition d.Other,

   specify.....

5. Marital status

   a. never married b. married c. divorced d. widowed e. Separated

6. Type of food sold:

7. Location of vending site:

8. Vendor Type: a. Stationary b. Hawker

9. For how long have you been selling or preparing food for sale?

a. Less than1 year b.1 -5 years c. 6-10 years d. above 11 years

SECTION B: FOOD HANDLERS KNOWLEDGE ON FOOD HYGIENE PRACTICES

Tick as appropriate

Transmission of food borne – disease	Strongly agreed 4	Agreed 3	Don't know 0	Strongly disagreed 1	Disagreed 2
10. Fresh meat/fish always has microbes on the surface					
11. Canned foods may have harmful microbes					
12. Healthy people can cause illness by carrying germs to food					

13. Lettuce and other raw vegetables have harmful microbes					
14. Vegetables should be disinfected before use (wash with salt/vinegar)					
15. Cooked foods do not have microbes(hot)					
16. Foods prepared too long in advance and not stored properly gives microbes time to grow					
17. Diseases such as HIV, Hep B and TB can be spread through food					
18. Cholera can be spread through food					
19. Food preparation surfaces can contaminate foods					
20. Soap and water can be used to reduce all harmful microbes on cutting boards after preparation of raw meat					

21. You cannot prepare food with a wound on the hand if the wound is covered with a bandage					
22. Hands should be properly washed after sneezing or blowing your nose before touching food					

23. Which of the following are components of food hygiene and safety? (Select all that apply)

a. Washing hands before food preparation b. Cooking food thoroughly

c. Keeping food covered d. Using gloves or utensils e. Disposing waste properly

SECTION C: FOOD HYGIENE PRACTICES

24. Which of the following would you say influenced the choice for locating your food vending services? (Select all that apply)

a. Closeness to home b. Only place demarcated by local authorities

c. It is a cluster of food sellers d. Closeness to customers

e. Customer convenience e.g. Available parking or eating spaces

f. The only space available large enough to support the vending business

g. Lower cost of rent h. Lower competition

i. To serve a specific group of people (workers, race etc

j. Others, please specify.....

25. What do you think attracts customers to your food? (Select all that apply)

a. Clean and appealing environment b. Taste of food

c. Affordable price d. Fast service e. Friendly staff f. Clean food containers g. Other: .....

26. How did you acquire your knowledge on food preparation practices?

a. From relatives b. Self-taught c. Catering school d. Others, specify.....

27. What do you consider before you select food stuffs?

a. Cost b. Quantity c. Quality d. None of the above f. Specify if others.....

28. What do you physically look out for on the food stuffs before purchasing them?

a. Worms b. Rotten parts c. Tender parts d. Colour of the fruits and vegetables e. Others, specify.....

29. Where do you prepare your food before selling?

a. At the selling place (open space) b. At selling place (enclosed kitchen)

c. At home (open space) d. At home (enclosed kitchen)

30. What is the condition of the food preparation area?

a. Very clean and organized b. Moderately clean c. Poor and unhygienic

31. Who prepares the food?

a. Seller b. Formally trained cooks c. Home-schooled cooks d. Others, specify.....

32. How do you keep food warm before serving?

a. Reheating by microwave before serving b. Keeping food in an enclosed ice chest c. Keeping food in saucepans with lids d. Keeping food in plastic cases

e. Others, please specify.....

33. How do you serve food to customers?

a. With clean utensils only b. With both utensils and hands

c. Mostly with bare hands

34. What kind of plates do you serve food in?

a. Reusable plates (properly washed) b. Reusable plates (washed occasionally)

c. Disposable plates d. Customers bring their own plates

35. Do you wash your hands before preparing or serving food?

a. Yes b. Sometimes c. No

36. How do you usually dry your hands after washing?

a. Clean towel b. Shared towel c. Air dry d. Clothes/Apron

e I don't dry my hands

37. Which of the following items are available at your vending site for hand hygiene? (Select all that apply)

a. Handwashing container with tap b. Bucket/bowl without tap

c. Running water from pipe d. Soap e. Hand sanitizer f. Tissue or towel

g. None of the above

38. What type of water do you use for food preparation?

a. Tap water b. Borehole c. Sachet/bottled d. Rainwater

39. How often do you clean your vending area?

a. After every shift/day b. Twice a week c. Once a week d. Rarely

SECTION D: INSTITUTIONAL SET-UP GOVERNING SAFE PRACTICES OF FOOD VENDORS

40. Are you registered with the Municipality?

a. Yes b. No

41. Do you have a valid health certificate?

a. Yes b. No

42. If No, why?

a. Don't know where to get it b. It is expensive c. Don't have time

d. Bureaucratic e. Others

43. Are your activities being monitored by any government agency?

a. Yes b. Sometimes c. No

44. If yes, select as applicable, which of these agencies do come to supervise your activities?

a. Municipality officers b. Environmental health officers c. Food and drugs authority d. Ghana health service e. Ghana tourism authority f. Others (specify)

45. What do they normally talk to you about?

a. Personal hygiene b. Proper ways of food handling c. The need for environmental hygiene d. Collect tax e. Others(specify)

46. How frequent do they do this?

a. every month b. every 3 months c. every 6 months d. Yearly

47. Have you ever undergone medical examination for purposes of food vending?

a. Yes b. No

48. If yes, when was the last time you were medically examined?

a. less than a year ago b. 1-2 years ago c. more than 3 years now

49. Do food safety inspectors visit your vending site?

a. Yes b. Sometimes c. No

50. How often are inspections conducted?

a. Weekly b. Monthly c. Quarterly d. Annually e. Rarely f. Never

51. What do the authorities inspect before issuing the continuance of your operations?

a. The environment b. The cooking ware c. The medical certificate of vendors and helpers d. The foodstuffs e. The protective ware

f. Others, specify

52. Have you received any health education on food hygiene?

a. Yes b. No

53. Are you aware of Ghana's food hygiene laws or regulations?

a. Yes b. No

54. Have you ever received a warning or fine from health authorities?

a. Yes b. No

55. What do they do to enforce compliance?

a. threatens us with by-laws b. can close the vending site c. Make us pay more for non-compliance d. do not do or say anything e. Others specify.....

OBSERVATION CHECKLIST

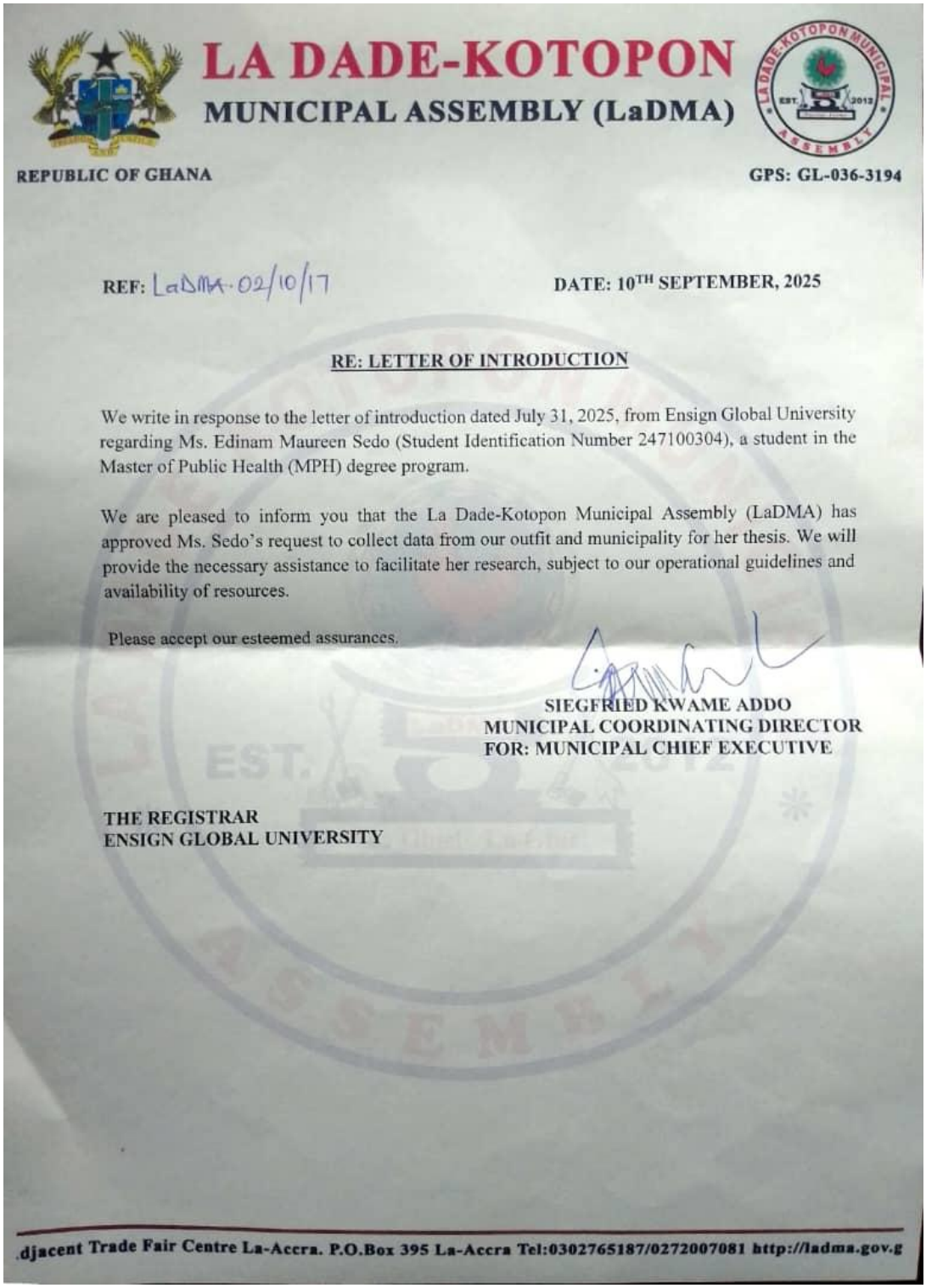
OBSERVATION CHECKLIST FOR ASSESSING THE SANITARY CONDITIONS OF THE ENVIRONMENT WITHIN WHICH FOOD VENDORS OPERATE

Verification identification number:			
	Yes	No	Comment
56. Food sold near open gutters			
57. Food sold close to refuse dump			
58. Food sold close public toilets			
59. Litter around the selling points?			
60. Availability of open dustbins			
61. Flies making direct contact with food served			

62.Foods prepared are stored in: a. Flytrap sieve case b. Glass screen case c. Open bowl d. Plain rubber sack e. Ice chest			
63. Hair covered			
64. Street food vendors wear aprons			
65. Street food vendors touch the food with their bare hands			
66. Street food vendors use food handling thongs			
67. Street food vendors touch the food and money with same bare hands			
68. Conversing while serving food			

69. Chewing sticks/gums etc while serving food			

APPENDIX III: PERMISSION LETTER FROM LA DADE-KOTOPON MUNICIPAL ASSEMBLY



LA DADE-KOTOPON
MUNICIPAL ASSEMBLY (LaDMA)

REPUBLIC OF GHANA

GPS: GL-036-3194

REF: LaDMA-02/10/17

DATE: 10TH SEPTEMBER, 2025

RE: LETTER OF INTRODUCTION

We write in response to the letter of introduction dated July 31, 2025, from Ensign Global University regarding Ms. Edinam Maureen Sedo (Student Identification Number 247100304), a student in the Master of Public Health (MPH) degree program.

We are pleased to inform you that the La Dade-Kotopon Municipal Assembly (LaDMA) has approved Ms. Sedo's request to collect data from our outfit and municipality for her thesis. We will provide the necessary assistance to facilitate her research, subject to our operational guidelines and availability of resources.

Please accept our esteemed assurances.

SIEGFRIED KWAME ADDO
MUNICIPAL COORDINATING DIRECTOR
FOR: MUNICIPAL CHIEF EXECUTIVE

THE REGISTRAR
ENSIGN GLOBAL UNIVERSITY

djacent Trade Fair Centre La-Accra. P.O.Box 395 La-Accra Tel:0302765187/0272007081 http://ladma.gov.g

APPENDIX 1V: EHTICAL CLEARANCE

ENSIGN GLOBAL
UNIVERSITY

OUR REF: ENSIGN/IRB/EL/SN-304/03
YOUR REF:

August 4, 2025

INSTITUTIONAL REVIEW BOARD SECRETARIAT

Edinam Maureen Sedo
Ensign Global University
Kpong.

Dear Edinam,

ETHICAL CLEARANCE TO UNDERTAKE POSTGRADUATE RESEARCH

At the General Research Proposals Review Meeting of the *INSTITUTIONAL REVIEW BOARD (IRB)* of Ensign Global University held on Friday, August 1, 2025, your research proposal entitled **"Assessment of Hygienic Practices Among Street Vendors in La Dade-Kotopon Municipality in the Greater Accra Region of Ghana"** was considered.

You have been granted Ethical Clearance to collect data for the said research under academic supervision within the IRB's specified frameworks and guidelines.

We wish you all the best.

Sincerely,

Dr. (Mrs.) Rebecca Acquaah-Arhin
IRB Chairperson

APPENDIX V: TURNITIN REPORT

22416504:EDINAM_MAUREEN_SEDO_MPH_THESIS_FINALE_[...

ORIGINALITY REPORT

18%	15%	11%	7%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.udsspace.uds.edu.gh Internet Source	2%
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