

ASSESSING THE HYGIENIC PRACTICES OF FOOD HANDLERS IN SELECTED  
RESTAURANTS IN THE ACCRA METROPOLIS

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(BED HOME ECONOMICS)



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

DECEMBER, 2014

## DECLARATION

### STUDENT'S DECLARATION

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

SIGNATURE: .....

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### SUPERVISOR'S DECLARATION

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

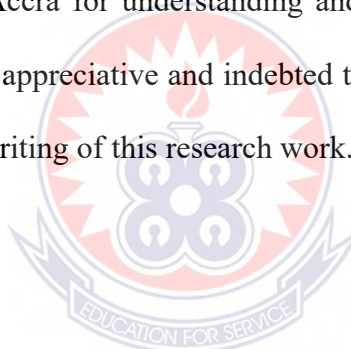
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## ACKNOWLEDGEMENTS

I express my deepest gratitude to God for His blessings, protection, guidance and the gift of knowledge and understanding to pursue my postgraduate studies and seeing me through a successful completion. I am grateful to my supervisor, Mrs. Vida Commey of the Department of Tourism and Hospitality at the University of Education, Winneba for her effective supervision, constructive criticisms and contributions, which helped in no small way to shape this research work. I am also indebted to all my lecturers at the Department of Tourism and Hospitality Education of the Faculty of Vocational Education, who took me through this postgraduate programme. My deepest appreciation to Mr. Stephen Asiamah Danso, the headteacher of Immanuel Presby Basic School, Madina – Accra for understanding and permission to allow me pursue this programme. I am also appreciative and indebted to Mr. Edmund Kwame Ankamah for his guidance towards writing of this research work.



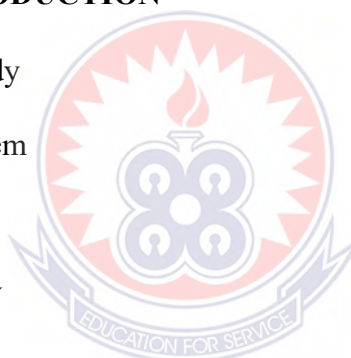
## **DEDICATION**

I dedicate this research work to my parents, Mr. and Mrs. Gborgblorvor, my brothers  
and my entire family



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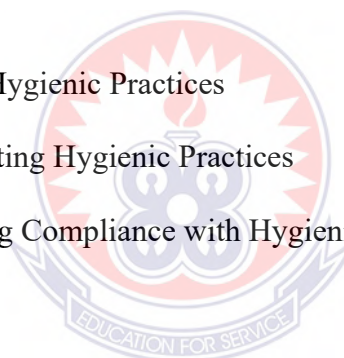
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## ABBREVIATIONS

ACAGS	Anglican Church of Australia General Synod
CAC	Codex Alimentarius Commission
CCP	Critical Control Point
CIEH	Chartered Institute of Environmental Health
FSA	Food Standards Agency
GHP	Good Hygiene Practices
GMP	Good Manufacturing Processes
HACCP	Hazard Analysis and Critical Control Point
SPSS	Statistical Package for Solutions and Services
POST	Parliamentary Office of Science and Technology
WHO	World Health Organization



## ABSTRACT

The purpose of the study was to assess the hygienic practices of food handlers in selected restaurants in the Accra Metropolis, to unearth the gap between theory and practice. Descriptive survey research design was used with quantitative approach. The study involved 120 food handlers selected purposively from 10 restaurants to answer the questionnaire. Data collected through the questionnaire were analyzed using SPSS. It was found that food handlers properly wash their hands before and after performing some tasks, maintain personal hygiene, and clean utensils, work surfaces and equipment used in the restaurant. It was revealed that the major causes of violating hygienic practices were food handlers' ignorance about the best hygienic practices they have to adopt, and lack of laid down hygienic practices leading to the adoption of inappropriate hygienic practices by food handlers. It was indicated there were of the consequences of not maintaining proper hygienic practices in the restaurant. It was found that some food handlers do not comply with appropriate the food hygiene standards. This was because of the fact that food handlers' knowledge about the causes of food hygiene violations was limited. The researcher recommends that management ensure compliance with hygienic practices in the restaurant by incorporating hygiene policies and principles in the training of food handlers. Also, there should be monitoring and evaluation of food handlers with respect to their hygienic practices. Again, potential sources of contamination from the environment should be considered

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background to the Study

The World Health Organization (WHO) has long created awareness on the need to train food handlers about their responsibilities for food safety. In the early 1990s, WHO developed the Ten Golden Rules for Safer Food Preparation which was replaced in 2001 by the Five Keys to Safer Food, a global health message which explains the basic principles that each individual should know all over the world to ensure safe food handling practices and prevent foodborne diseases. The Five Keys to Safer Food, and associated training materials, were developed to provide countries with materials that are easy to use, reproduce and adapt to different target audiences (WHO, 2006). However, according to a study on food poisoning cases, it was reported that food handlers are responsible for foodborne disease outbreaks for the past years and there is no indication that this is diminishing (Greig *et al.* 2007) despite the WHO interventions and sensitization.

According to the World Health Organization (WHO) foodborne diseases are major public health problem estimated to affect up to 10% or more of the population in the industrialized countries (WHO, 2005). Foodborne diseases are at best unpleasant; and at worst, they can be fatal (Codex Alimentarius Commission, 2009). In restaurants and other food service establishments, food contamination may occur as a result of proliferation of microbes at unsafe temperatures, handling by infected persons who practice unsanitary habits and direct exposure of food items to microbes that cause the disease (Cardinale, 2005). Therefore, good hygienic practices in restaurants are important not only to reduce direct and cross-contamination of food but also to increase

the morale and efficiency of workers and to satisfy the customers from an aesthetic point of view (Powell, 1997).

According to Howes *et al.* (as cited in Al-Khatiband & Al-Mitwall, 2009), improper food handling practices have contributed to approximately 97% of foodborne illnesses in homes and food-service establishments in the United States of America. Therefore, food-handlers adopt proper hygiene practices such as cleanliness of hands and work clothes and correct methods of handling food and utensils. They must not smoke cigarettes while preparing or serving food (Benjamin & Stanton, 2004) or work in any area of a food service establishment while infected with any communicable disease. Training the restaurant staff especially food handlers on the principles of handling food in all its stages is important.

Food handling personnel play an important role in ensuring food safety throughout the chain of food production, supply and storage. Mishandling and disregard of hygienic measures on the part of the food handlers may enable pathogenic bacteria to come into contact with food and in some cases survive and multiply in sufficient numbers to cause illness in the consumer (WHO, 2006).

Globally, foodborne illnesses are still among the most widespread and when investigated, poor hygienic conditions of the food handlers are most identified as the cause of the incidence (Redman, 2000). Outbreaks of foodborne illnesses can damage trade and tourism, and lead to loss of earnings, unemployment and litigation. Food spoilage is wasteful, costly and can adversely affect trade and consumer confidence. Everyone, including farmers and growers, manufacturers and processors, food handlers and consumers, has a responsibility to assure that food is safe and suitable for consumption

Foodborne diseases have been increasing in recent years, with a greater impact on the health and economy of developing countries (WHO, 2002). Although governments all over the world are doing their best to improve the safety of the food supply, the occurrence of foodborne disease remains a significant health issue in both developed and developing countries (WHO, 2006). According to the WHO, in 2005 alone, 1.8 million people died from diarrhea diseases and most of these cases can be attributed to contaminated food or water. In 2009, 27,037 notifications of nine diseases or conditions that are commonly transmitted by food have been reported in Australia (The OzFoodNet Working Group, 2009). In Europe, there has also been a marked increase in reported food poisoning cases. In 2009, there were 212,064 human cases of campylobacteriosis as compared to 99,020 cases of salmonellosis (Eurosurveillance Editorial Team, 2010)

Foodborne illness happens when a person becomes ill from eating food that contains a biological, chemical, or physical hazard. Food poisoning bacteria can be found: on the hands, in cuts, boils, sores and spots, in the hair, ears, nose and mouth, and on clothes of food handlers. Food handlers are therefore a common source of food poisoning bacteria. According to the WHO, among the most important causes of foodborne illness are errors in food handling and preparation. Outbreaks of food-borne diseases can be reduced if food handlers understand the importance of correct personal hygiene and hygienic food practices.

Food handlers are found in every process in the food industry. They are a crucial and an irreplaceable link in the farm-to-table process. As such, they must take responsibility to prevent cross-contamination through complying with proper hygienic practices during food handling. Food safety remains a critical issue in a world with so much outbreaks of foodborne illness that are resulting in ample costs to individuals, the food

industry and the economy in general (Kaferstein, Motorjemi & Bettche, 2007). Research around food safety is a new field of endeavour that has received little academic attention. Information on food hygiene and safety violations is largely scarce and while the issue of food mishandling plays a significant role in the occurrence of foodborne illness, it has not been given a major attention.

## **1.2 Statement of the Problem**

Food handlers are an essential link in the food service industry; and so failing to adopt the proper hygienic practices in food handling may increase the transmission of foodborne illnesses. However, while food safety systems based on HACCP principles have been successfully applied in food service operations and have been universally accepted by stakeholders in the food service industry around the world, little is known of the hygiene practices of food handlers and their compliance with HACCP systems and other food hygiene standards in Ghana. The non-compliance with proper food hygiene practices on the part of restaurateurs and food handlers partly led to the outbreak of cholera in the Accra Metropolis in 2014. This led to the massive closure of some restaurants and food service centres in the Accra Metropolis by the authorities of the Accra Metropolitan Assembly for non-compliance with food hygiene standards. It is against this backdrop, that the researcher deems it important to conduct this study to assess the hygienic practices of food handlers in some selected restaurants in the Accra Metropolis in order to determine the food handlers' compliance with proper hygienic conditions during food handling.

### **1.3 Main Objective**

The general objective of the study was to assess the hygienic practices of food handlers in some selected restaurants in the Accra Metropolis in order to determine food handlers' compliance with food hygiene standards.

### **1.4 Objectives of the Study**

The following objectives were expected to be achieved at the end of the study:

1. To unearth the gaps between theory and practice of food hygiene in the restaurants.
2. To identify the causes of food hygiene violations in the restaurants.
3. To find out whether food handlers are aware of the impact of the violation of hygienic practices on the restaurant and the extent to which the practices are ensured in the restaurants.

### **1.5 Research Questions**

The following research questions were designed to guide the study:

1. To what extent do food handlers comply with hygienic practices in the restaurants?
2. What are the causes of food hygiene violations by food handlers in the restaurants?
3. a) What are the implications of the violation of food hygiene practices by food handlers on the restaurants?  
b) What are the measures for ensuring compliance with hygiene practices by food handlers in the restaurants?

### **1.6 Significance of the Study**

The results of the study will be of importance to the management of the selected restaurants under review by giving them an insight into the hygienic practices of their food handlers. The management of the restaurants will find the information on the analysis of the hygienic practices of food handlers very useful in identifying the areas that need improvement and in enhancing the whole process of food handling in their restaurants. Given that food handlers are the main food contamination vehicles, this study will highlight the need for adopting safety hygienic practices and appropriate tools to ensure that food handlers' practice that increase the risk of foodborne diseases in restaurants is reduced to the barest minimum. The implementation of the various recommendations made by the researcher could contribute largely in enhancing the hygienic and food safety practices of restaurants and other food service establishments. To future researchers in personal hygiene and food safety, the study will shed more light on the need to ensuring proper hygienic practices in food handling and in the food supply chain as a whole.

### **1.7 Limitations of the Study**

The study was limited to only 10 selected urban restaurants in the Accra Metropolis and its findings may not wholly reflect the general hygienic practices of food handlers in other restaurants across the Greater Accra Region and most especially rural restaurants. Therefore, findings cannot be generalized nationwide because the sample was not an adequate representation of restaurants in the country. Also the study did not involve actual testing of food, but measuring the knowledge, and adoption of safe food handling practices of food handlers in the restaurants. Further, the findings were analyzed by using descriptive statistics and therefore the conclusions might have been



different if an inferential statistical technique was used to examine the hygienic practices of food handlers in restaurants.

### **1.8 Delimitation of the Study**

The study covered only 10 selected restaurants in the Accra Metropolis even though there are a large number of restaurants across the Accra Metropolis. The choice of the geographic area was largely due to its nearness to the researcher's place of abode. Also only hygienic practices of food handlers were considered though there are several issues related to the operation of restaurants which could have been give similar attention.

### **1.9 Definition of Terms**

*Food hygiene:* All conditions and measures necessary to ensure the safety and suitability of food at all stages of the food chain.

*Food handler:* Any person who directly handles packaged or unpackaged food, food equipment and utensils, or food contact surfaces and is therefore expected to comply with food hygiene requirements.

*Food safety:* Assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use.

*HACCP:* A system that identifies evaluates and controls hazards that are significant for food safety.

*Hazard:* A biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect.

### **1.10 Organization of the Study**

The study was divided into five chapters. Chapter One is the introductory section of the study and covers the background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance of the study, limitations

of the study, delimitations of the study, definition of terms, and the organization of the study.

Chapter Two consists of an exhaustive but incisive review of relevant literature related to the study area. The literature review is geared towards justifying the specific objectives of the study, and the theoretical framework upon which the study is built. In addition, the identified gap in the related literature is highlighted in this chapter. It covers the hygienic practices of food handlers in the restaurant, the causes of food hygiene violations by food handlers in the restaurant, the impact of the violation food hygiene practices by food handlers on the restaurant, and how food hygiene practices of food handlers are ensured in the restaurant. Also, the concepts and theoretical framework of food hygiene practices will be considered in this chapter.

Chapter Three is the methodology section. It focuses on the research design, population, the sample and sampling techniques, data collection instruments, validity and reliability of the instruments, data collection procedures, and data analysis.

Chapter Four comprises the presentation, analysis of the results of the study as well as the discussion of the major findings with references to previous related studies in the literature review. Finally, Chapter Five presents the summary of the findings, conclusion, and recommendations. It also includes suggestions for further research.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

The chapter introduces the concept and theories of food hygiene in food service establishments. It describes the concepts of food hygiene and food safety culture. It presents literature pertaining to food handlers' knowledge of hygienic practices, the hygienic practices of food handlers, the causes of food hygiene violations, the impact of the violation food hygiene practices, and how food hygiene practices of food handlers are ensured in the restaurant. In addition, other general issues relating to food hygiene and safety were considered in the literature review.

#### 2.2 The Concept of Food Hygiene and Food Handler

Food is any substance, whether processed, semi-processed or raw which is intended for human consumption, including drinks, chewing gum and any substance which has been used in the manufacture, preparation or treatment of food but excluding cosmetics, tobacco and substances used only as drugs (Codex Alimentarius Commission, 1995). According to the Codex Alimentarius Commission, CAC (2009), food hygiene involves all the conditions and measures necessary to ensure the safety and suitability of food at all stages of the food chain. WHO (2007) defines food hygiene as the conditions and measures necessary for the production, processing, storage and distribution of food designed to ensure a safe, sound, wholesome product fit for human consumption. Simone, Brecht, Sargent, Ritenour and Schneider (2008) contend that there is a direct correlation between poor personal hygiene and foodborne illness. Therefore, one can infer from this assertion that food hygiene basically concerns personal hygiene on the part of food handlers.

Food hygiene is the set of basic principles employed in the systematic control of the environmental conditions during production, packaging, delivery/transportation, storage, processing, preparation, selling and serving of food in such a manner as to ensure that food is safe to consume and is of good keeping quality (<http://www.dlb.sa.edu/tsftmoodle/mod/resource>) However, food itself can pose a health threat, a problem that is serious in developing countries due to difficulties in securing optimal hygienic food handling practices. The public health objective of food hygiene and safety is the prevention of illness attributable to consumption of food. This is because of adequate supply of safe, wholesome and healthy food is essential for the health and well-being of human.

Food hygiene includes all the conditions and measures necessary to ensure the safety and suitability of food at all stages of the food supply chain, from its growth, production or manufacture until its final consumption, with the assurance that food will not cause harm to the consumer when it is prepared and/ or eaten according to its intended use (Codex Alimentarius Commission, 2003). Food handlers need proper hygiene practices concerning cleanliness of hands and work clothes and correct methods of handling food and utensils. Training the staff on the principles of handling food in all its stages is important. Food handlers need to have skills and knowledge in food safety and food hygiene that relate to their work activities. When preparing and serving food to the public, it is your responsibility and obligation to ensure that the food you are serving is safe.

Nyamari (2013) defines personal hygiene as those protective measures primarily with the responsibility of individuals which promote health and limit the spread of infectious disease chiefly those transmitted by direct contact. Nyamari states that such measures

encompasses washing hands with soap and water and keeping the body and cloths clean by sufficiently frequent soap and water bath. For this reason, it is critical that food handlers and other persons who have direct contact with raw foodstuffs, cooking utensils, cooked food or the process of food preparation understand and practice good basic hygiene habits, including proper hand washing, on a regular basis. Food handler is a person in the food trade or someone professionally associated with it, such as an inspector who, in his routine work, comes into direct contact with food in the course of its production, processing, packaging or distribution (Nyamari, 2013). Food handlers play an important role in ensuring food safety through the chain of production, processing, storage and preparation.

Foodborne diseases are a global threat as a result of the increase in international travel and trade, microbial adaptation and changes in the food production system, as well as human demographics and behaviour (Nyamari, 2013). Food spoilage is wasteful, costly and can adversely affect trade and consumer confidence. Therefore, effective food and personal hygiene is vital to avoid the adverse human health, litigations and economic consequences of foodborne illness. Nyamari suggests that food hygiene training is significant to equip food handlers with the knowledge and skills to handle food safely. WHO (2001) therefore recommends that regular appraisals of the effectiveness of training and instruction activities should be made together with periodic supervision to enforce adherence to hygienic procedures.

According to e-how.com, a food handler is a person with any job that requires him/her to handle unpackaged foods or beverages and be involved in preparing, manufacturing, serving, inspecting, or even packaging of food and beverage items. Therefore, it is a basic requirement of all food handlers to use proper hygiene and sanitation methods

when working with food. Food handlers are persons who, in the course of their normal work, come into contact with food not intended for their personal use (Codex Alimentarius Commission, 2003). A food handler is thus any person involved in the processing, production, manufacturing, packaging, preparation, sale or serving of any foodstuff, including water and beverages is therefore expected to comply with food hygiene requirements. The Codex Alimentarius Commission (2003) states that food handlers who come into contact with food should operate in an appropriate manner to ensure that they are not likely to contaminate food. People who do not maintain an appropriate degree of personal hygiene can contaminate food and transmit food-borne illnesses to consumers.

### **2.3 The Concept of Food Safety Culture**

Food Safety is the assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use (Codex Alimentarius Commission, 1969). This can be achieved through the utilization of various resources and strategies to ensure that all types of foods are properly stored, prepared, and preserved so that they are safe for consumption (WHO as cited in Nyamari, 2013). According to Nyamari (2013), practicing this level of food sanitation begins with the purchase or acquisition of different food items and ends with the proper storage of leftovers for future use. One of the most important aspects of practicing food safety involves preventing foods from becoming contaminated. Making sure foods are stored properly goes a long way in avoiding any type of food contamination

Griffith, Livesey and Clayton (2010) view food safety culture as a new emerging risk factor in the food industry. They assert that an organization's culture is ultimately its beliefs, attitudes and values that the employee is exposed to everyday. According to

Griffith, Livesey and Clayton, food safety culture is the aggregation of the prevailing, relatively constant, learned, shared attitudes, values and beliefs contributing to the hygiene behaviors used within a particular food handling environment.

Yiannas (as cited in Nyamari, 2013) states that organizations can choose to create a strong food safety culture. He argues that leaders are accountable for instigating a strong food safety culture since they have the power and influence to create such an atmosphere. According to Yiannas (as cited in Nyamari 2013), practicing a positive food safety culture may have the potential to reduce the global burden of food borne illness. Also creating a positive food safety culture can support this process by actually changing the thoughts, behaviors, and beliefs of individuals within a group.

#### **2.4 Maintaining Hygienic Practices during the Food Preparation and Serving**

The food handler as a vehicle for the contamination of food and surfaces during preparation and serving in a commercial environment (Cur, 2008). In a handbook entitled “The Anglican Church and Food Safety” by The Anglican Church of Australia General Synod (ACAGS); (2005), it was reported that safe food handling begins with the initial step of purchasing the raw and pre-prepared ingredients from the food store. It states that to demonstrate due diligence should the need arise, one will need to ensure that he/she purchases food supplies from reputable food suppliers who have systems in place to ensure their food is safe for sale. In addition, to prevent cross-contamination, place meat, poultry, and seafood in plastic bags separate from ready-to-eat foods such as fruits and vegetables. Cur (2008) suggests that food must be obtained from a health-approved source, cooked properly, covered and stored carefully. He further suggests that food handlers should avoid contact between raw and cooked food.

During preparation, there are many ways food may become contaminated or temperature abused. It is necessary for all staff/volunteers to follow good personal hygiene and food safety. Strategies for all stages of preparation, including cutting/slicing and thawing are necessary to ensure that the risk of contamination and temperature abuse is reduced. ACAGS (2005) outlines the following hygienic practices to be adopted during food preparation as a means of ensuring food safety:

- Remember to always wash hands before preparing food, and between each task.
- Equipment used to prepare raw foods must be washed thoroughly after use and always before being used to prepare foods which are already cooked, or are to be consumed raw. Bacteria can be spread throughout the kitchen and get onto cutting boards, utensils and counter tops.
- Separate raw and ready to eat foods to avoid cross-contamination
- Minimize cross-contamination. When preparing large volumes of food, assign one person to focus on the cutting or slicing for the duration instead of many people doing multiple tasks at one time.
- Clean and sanitize cutting boards, meat slicers and utensils between tasks or every 2 hours if doing the same task. Consider using different coloured boards for raw foods (meat, chicken, and fish) and those that are ready to eat (lettuce, tomato, fruit etc.).
- Minimize the time food spends in the temperature danger zone. For example, when cutting large batches of potentially hazardous food, such as chicken, take only one container of chicken out of the refrigerator at a time and then place back in the refrigerator before bringing out additional meat for preparation
- Never use fly sprays when there is open food around and clean all food surfaces and equipment after use.



- Hot food should be very hot, and cold food should be chilled.
- Avoid using any foods left at room temperature for more than 2 hours. Particular care needs to be taken about food prepared in large quantities, in advance or under difficult conditions—at meetings, large social events, outdoor events etc. Store food at the proper temperatures. Remember the food danger zone, where bacteria can multiply in food that is left between 5°C and 60°C for long periods.

According to CAC (2009), the potential effects of primary production activities on the safety and suitability of food should be considered at all times. In particular, this includes identifying any specific points in such activities where a high probability of contamination may exist and taking specific measures to minimize that probability. CAC suggests that the Hazard Analysis and Critical Control Point (HACCP)-based approach may assist in the taking of such measures

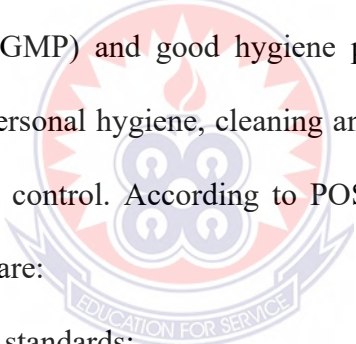
### **2.5 Hazard Analysis and Critical Control Point (HACCP)**

The Parliamentary Office of Science and Technology (POST), (2009) in its report entitled ‘Food Hygiene Standards’ defines HACCP as “a preventative system designed to ensure food safety by identifying all the critical control points in a food process where contamination can occur”. It states that a critical control point (CCP) is simply any step in a food process where control can be applied to eliminate a food safety hazard or reduce it to an acceptable level. According to CAC (2009), the HACCP system is a science-based system that identifies specific hazards and measures for their control to ensure the safety of food. CAC defines HACCP as a tool to assess hazards and establish control systems that focus on prevention rather than relying mainly on end-product testing. It states that any HACCP system is capable of accommodating

change, such as advances in equipment design, processing procedures or technological developments.

The CAC (2009) asserts that HACCP can be applied throughout the food chain from primary production to final consumption and for that matter, its implementation should be guided by scientific evidence of risks to human health. It further states as well as enhancing food safety, implementation of HACCP can provide other significant benefits. In addition, the application of HACCP systems can aid inspection by regulatory authorities and promote international trade by increasing confidence in food safety.

POST (2009) reports that in practice, an effective HACCP system requires good manufacturing processes (GMP) and good hygiene practices (GHP) to be in place, covering aspects such as personal hygiene, cleaning and sanitation, training, the design of food premises and pest control. According to POST, among the main benefits of HACCP-based procedures are:

- 
- improved hygiene standards;
  - reduced microbial counts in products;
  - higher customer satisfaction;
  - providing a formal basis for developing a relationship between food companies and regulatory authorities;
  - providing a basis for a legal defence in court.

Despite the benefits that a foodservice establishment is likely to enjoy upon proper implementation of HACCP procedures, POST (2009) finds out that in practice, food companies may experience a number of constraints implementing HACCP-based procedures. This is especially true for small businesses; barriers include:

- Lack of financial resources;
- Lack of time;
- Caterers handling a wide range of different foods;
- Lack of technical expertise;

The successful application of HACCP requires the full commitment and involvement of management and the workforce (CAC, 2009). CAC further states it also requires a multidisciplinary approach; this multidisciplinary approach should include, where appropriate, expertise in agronomy, veterinary health, production, microbiology, medicine, public health, food technology, environmental health, chemistry and engineering, according to the particular study. According to CAC, the application of HACCP is compatible with the implementation of quality management systems, such as the ISO 9000 series, and is the system of choice in the management of food safety within such systems. However, the implementation of HACCP procedures in Ghana is mostly informal without any legislation sanctioning the adherence to these procedures.

## **2.6 Food Handlers' Knowledge of Hygienic Practices**

According to ACAGS (2005), health statistics clearly indicate that microbial contamination is the greatest risk to food safety. It states that food poisoning bacteria can be found: on the hands, in cuts, boils, sores and spots, in the stomach, in the hair, ears, nose and mouth, and on clothes. It is believed that food handlers are an important source of food poisoning bacteria. According to the World Health Organization, among the most important causes of food-borne illness are errors in food handling and preparation by food handlers. WHO suggests that outbreaks of food-borne diseases can be reduced if food handlers understand the importance of correct personal hygiene and hygienic food practices.

Ceserani (2006) describes a food handler as anyone who handles food, come in direct contact with food and food stuffs or who works where food is handled. Little and McLauchlin (2007) posit that food handlers can be a source of food contamination and facilitators of cross-contamination, personal hygiene of food handlers is of extreme importance in food safety which is principally associated with cleanliness of hands. They suggest that ways in which food handlers may contaminate food should be identified and develop appropriate interventions to reduce or eliminate the risk of food safety violation.

According to Worsfold and Griffith (2003), food handlers have a crucial role in a food service business. Therefore, food handlers should have the skill and knowledge of food safety and hygiene to ensure that food is safe to be consumed (Thio & Wijaya, n.d.). Cruikshank (1990) notes that good personal hygiene practice is a critical factor in preventing food safety violation in the food industry and it is documented as one of the most critical elements that food handlers must observe in an attempt to ensure safe food supply and preparation. Food outlet owners should therefore not allow food handlers with gastrointestinal infections to work in the kitchens as they are likely to contaminate food and the environment of operations (Thio & Wijaya, n.d.).

Little and McLauchlin (2007) opine that food handlers need to have the knowledge and the know-how of food safety so that they do not violate them. They note that many food handlers are not trained as to how to handle food in the workplace or restaurants. Therefore, managers in the foodservice industry have an important role in minimizing the risk of contamination of food by ensuring that all staff understand the importance of good personal hygiene and receive training in the safe handling of food. Ceserani (2006) argues that, it is important to know whether food handlers working

in food outlets, hotels and restaurants, are aware of food safety violations and what constitutes it. Therefore, it is important that everyone who handles food or who works in a place where food is handled knows about the essence of keeping clean and safe.

It is interesting to note that currently there is no any legal requirement in Ghana that requires food handlers and managers to attend formal and/or accredited training before they can prepare or handle food meant for public consumption. At best, the available hygiene regulations simply require food operators to supervise, instruct and/or train food handlers on food hygiene and personal hygiene practices. It widely is believed that the necessary skills may be obtained through on-the-job training, self-study or relevant prior experience (POST, 2009). However, the Chartered Institute of Environmental Health (CIEH) as (cited in POST, 2009) suggests that high hygiene standards cannot be achieved without adequate and regularly updated training that meets employer defined National Occupational Standards. The CIEH believes that accredited training is vital to improving food hygiene standards and reducing cases of food-borne illnesses.

Food hygiene and safety training courses are administered worldwide as a means to inform food service workers on matters of food safety. Furthermore, data suggest that the food service industries are more likely to hire workers trained in food safety (Hine et al., 2003). The expectation in providing these courses is ultimately to reduce the incidence of foodborne illness (Kassa et al., 2010). According to POST (2009), whilst the CIEH has argued for mandatory food hygiene training on the contrary the Food Standards Agency (FSA) of the UK agrees with the European regulations that businesses should take responsibility for ensuring food handlers know how to do their job. It points out that formal training could place unnecessary burdens and costs on

businesses and does not guarantee that food handlers will apply their knowledge in practice. However, in the researcher's view, compliance with food hygiene training and practices in Ghanaian restaurants is not as strictly formal as in the case of CIEH assertion but follow the suggestion given by both the FSA and the European regulations. Therefore, more often in food handlers in Ghanaian foodservice establishments use their own discretion in deciding what amounts to proper hygienic practices in handling food items with references to laid international standards of food safety and hygiene practices.

Pajot and Aubin (2011) posit that there is limited evidence that food handlers training, whether mandatory or not, improves food safety practices of food handlers working in food premises, and limited evidence that it enhances knowledge or behaviour. This assertion is consistent with the findings by Hammond *et al.* (2005). Hammond *et al.* found that critical food violations actually increased after training. Furthermore, Ehiri *et al.* (1997) suggest that there are no significant improvements after training on a number of critical concepts in food safety such as, food storage, cross-contamination, temperature control, and high risk foods. The authors further identify problems in training regimes that tend to rely merely on dissemination of information with no practical reinforcement. Also Powell (1997) found that there was no relationship between the level of knowledge of staff and hygiene standards in restaurants.

The debate is further compounded by the assertion of Howes *et al.* (as cited in Al-Khatiband & Al-Mitwall, 2009). Howes *et al.* report that the fact that other studies have shown improved knowledge of food hygiene practices does not always result in the required transformation in food handling behaviour. In a study conducted at the

Kenyatta National Hospital in Kenya, Githiri *et al.* (2009) found that during the collection of data food handlers scored highly in a questionnaire on hygiene practices whereas each sample of food tested was contaminated.

However, Little and McLauchlin (2007) contend that the production of safe food is the responsibility of all those involved in food preparation regardless of their capacity and role. Therefore all those involved in food preparation and handling must be trained about the principles of food hygiene and how to prevent foodborne disease. According to Little and McLauchlin, the training methods should differ between groups but the basic principles should be the same for all disciplines.

Cates *et al.* (2009) concur with Little and McLauchlin (2007) when they suggested that the presence of a certified kitchen manager is protective for the majority of critical food violations and therefore employing and properly training such a manager is essential to ensuring a safe food product. In a related studies Mathias *et al.* (1995) found that health inspection scores increased after food safety training, thereby implying the knowledge imparted from food safety training is sufficient in achieving higher inspection scores.

Angellilo, Viggiani, Rizzo, and Bianco (2000) and his associates examined foodservice staff in hospital environments. The findings of their study suggested a lack of knowledge regarding temperature of food storage of hot and cold foods, the identification of pathogens associated with foods, and common food vehicles that transmit pathogens (Angelillo *et al.* 2000). The study recommended that food safety training and implementation of HACCP system was necessary to reducing the likelihood of a foodborne illness. Also, it is assumed that if food handlers are aware of their legal obligations and they are provided with the knowledge and understanding on

the prevention of food poisoning, this will automatically result in the implementation of good hygiene practices (Sprenger, 2009).

## **2.7 Hygienic Practices of Food Handlers**

The review of literature on hygienic practices of food handlers was based mainly on the recommendations of WHO (1996); CAC (2009); ACAGS (2005); Green and Selman (2005). WHO (1996) in its “Essential Safety Requirements for Street-Vended Foods” recommends that food handlers should wear clean and proper clothing according to prevailing local standards. The requirement for food handlers to wear aprons of a particular colour or shade or to wear hair coverings should be tempered by the realization that it has more to do with food aesthetics and inspiring consumer confidence than food safety (WHO, 1996). Also, food handlers should wash their hands with soap and water after engaging in any activities that are likely to introduce biological, chemical or physical hazards (e.g. after handling raw foods of animal origin, after using the toilet, after handling unsanitary objects such as garbage containers, after touching animals and after contact with toxic substances such as pesticides and disinfectants).

WHO (1996) opines that particular attention should be given to this hygienic practice before handling ready to eat foods. It states that in the preparation and sale of food, food handlers should:

- Refrain from unhygienic and unsightly practices, such as - chewing or smoking tobacco, chewing betel nut or chewing gum; touching mouth, tongue, nose, eyes, etc.; and - spitting, sneezing and coughing on or near food.



- Avoid contamination of food with physical hazards by - careful food handling practices; - protecting food from the environment; and - removing jewelry prior to handling food.

According to CAC (2009), inadequate food temperature control is one of the most common causes of foodborne illness or food spoilage. Such controls include time and temperature of cooking, cooling, processing and storage. Systems should be in place to ensure that temperature is controlled effectively where it is critical to the safety and suitability of food.

CAC therefore recommends that temperature control systems should take into account:

- The nature of the food, e.g. its water activity, pH, and likely initial level and types of micro-organisms;
- The intended shelf-life of the product;
- The method of packaging and processing; and
- How the product is intended to be used, e.g. further cooking/processing or ready-to-eat.

CAC (2009) further recommends that food handlers should maintain a high degree of personal cleanliness and, where appropriate, wear suitable protective clothing, head covering and footwear. It states that where cuts and wounds exist, but food handlers are permitted to continue working, then they should be covered by suitable waterproof dressings. CAC suggests that food handlers should always wash their hands when personal cleanliness may affect food safety, for example:

- at the start of food handling activities;
- immediately after using the toilet; and

- After handling raw food or any contaminated material where this could result in contamination of other food items; they should avoid handling ready-to-eat food, where appropriate.

ACAGS (2005) states that hands are the main vehicle for transferring food poisoning bacteria to high-risk food. Hand washing is one of the most effective ways to stop the cycle of infectious disease, especially those diseases spread through oral-fecal or person-to-person contact. Proper hand washing can remove dirt, soil, and some other contaminants including chemical (e.g. pesticides, cleaning solutions) and biological agents (e.g., bacteria, viruses, parasites). For this reason, hands-like equipment-must be kept clean and washed frequently throughout the day. Many think that hand washing is common sense, but each person may have their own way of washing. In order to successfully remove the majority of harmful microorganisms from hands, there is only one proper way to wash hands.

It is important that people working in the food industry understand that certain utensils and equipment require cleaning and sanitizing in order to ensure the safety of the food, minimize the potential for the spread of harmful microorganisms and to maintain a safe working environment (ACAGC, 2009). Cleaning refers to the removal of visible items such as food particles, dirt, dust and grease and is usually carried out using warm water and detergent (ACGC, 2009). Cleaning is not designed to remove all micro-organisms but merely removes the visible items such as dust, dirt, food spillage, food particles, grease, etc. Sanitizing refers to the process that reduces the number of microorganisms to a safe level and this is usually undertaken using hot water and/or chemicals (ACAGS, 2009). Also raw food areas should be cleaned to ensure that one does not

transfer the germs from the raw food area to the ready-to-eat food area. However, it is worthy to note that manufacturer's instructions should be followed strictly when using cleaning chemicals.

ACAGS (2009, p. 12 - 14) in its handbook has outlined the following processes and practices for food handlers during food preparation and handling as a means of maintaining food hygiene and safety:

i. Slicing and Cutting

- Clean and sanitize cutting boards, meat slicers and utensils between tasks.
- Use different coloured boards for raw foods (meat, chicken, fish) and those that are ready to eat (lettuce, tomato, fruit, etc.).
- Minimize the time food spends in the temperature danger zone. For example, when cutting large batches of potentially hazardous food, such as chicken, take only one container of chicken out of the refrigerator at a time and then place it back in the refrigerator before bringing out additional meat for preparation.

ii. Thawing

- Thaw food in the refrigerator at 5°C or less.
- Thaw meat and poultry on the lowest shelf in the cold room or refrigerator – this will ensure that any leakage does not contaminate other foods.
- Thaw in a microwave oven only if the food will be cooked immediately afterward.

- Thaw food as a part of the cooking process. This is only acceptable for thick foods like hamburgers, but is not suitable for large foods such as roasts or turkeys.

iii. Cooling

- Place food in the refrigerator at 5°C or lower.
- Do not overfill the refrigerator. Cool air must circulate to keep food safe.
- Divide food and place in shallow containers. Slice roast beef or ham and layer in containers in portions for serving.
- Divide large cooked chicken or turkey into smaller portions or slices and refrigerate. Remove stuffing from cavity.

iv. Holding

- Hold hot food at 60°C or higher; hold cold food at 5°C or lower.
- Use prepared food as quickly as possible.
- Use hot holding equipment such as a slow cooker, a bain-marie or hot holding cart only for holding food and not for cooking or reheating. Cover and label cooked foods.
- Include the preparation date on the label.

v. Cooking - Whether you are grilling, frying, baking, sautéing, or roasting food, it is recommended that the following guidelines should be adhered to ensure safe cooking:

- Use a calibrated food-grade thermometer to take the internal temperature of the food.
- In order to reduce time spent in the temperature danger zone, consider cooking food in small batches.

- vi. Pest Control - Pests, such as rodents and insects, carry microorganisms that can cause disease. It is easier to prevent pests from entering a kitchen than to remove them once they have come into the area. Therefore following strategies to keep pests from entering the kitchen should be followed:
- Cover holes in screens or walls to prevent pests from entering the kitchen.
  - Keep all rubbish outside and away from the building in a secure rubbish bin.
  - Clean all spills as quickly as possible.

Green and Selman (2005) in their study involving “Factors Impacting Food Workers’ and Managers’ Safe Food Preparation Practices” they outlined the following hygienic practices which in their view were necessary to ensuring food hygiene and safety:

- Food handlers should wash their hands frequently. For example, they should wash their hands after they use the restroom, before preparing food, and after they have handled raw meat or poultry.
- Cross contamination from raw meat and poultry to other types of food should be prevented. Table tops, equipment, and utensils should be washed, rinsed, and sanitized after they have come into contact with raw meat and before they are used for anything else.
- To minimize hand-food contact, gloves should be worn when handling ready-to-eat food or raw food with your hands.
- When cooking raw meat or poultry, a thermometer should be used to check that these foods have reached recommended temperatures at the end of the cooking process.

- Hot foods should be held at 140° or above, and cold foods should be held at 41° or below. Additionally, the temperatures of held food should be checked periodically to ensure that the foods are being held at safe temperatures.
- Hot foods should be cooled from 140° to 70° within two hours and from 70° to 41° within four hours. The temperatures of cooling food should be checked periodically to ensure that the foods are being held at safe temperatures.
- Reheated food (food that has been previously cooked in the establishment and is being reheated for service) should be reheated to 165° or higher. The temperature of reheated food should be checked at the end of the reheating process to ensure that the food reaches 165°.

## **2.8 Causes of Food Hygiene Violations by Food Handlers**

According to WHO (1996), food handlers may introduce biological hazards:

- When suffering from specified diseases;
- From organisms on the food handlers' skin or in their intestine and faeces;
- When respiratory tract organisms contaminate foods or food contact surfaces;  
and
- By cross-contamination after handling raw materials.

Also physical hazards may also be introduced by food handlers wearing jewelry, bandages or by careless food-handling practices (WHO, 1996). In another study, WHO (2001) suggests that personal effects like jewelry, pins and other adornments should not be brought into food handling areas. Therefore, a food handler implicated to be a carrier of a disease illness should neither be allowed to go into food handling areas or handle food.

The assertion of WHO (1996) that food handlers suffering from specified diseases may introduce biological hazards when handle food is corroborated by the findings of the Food Safety and Inspection service of the United States Department of Agriculture, (2003), when it was found that food handlers may carry disease which can contaminate food. These findings are also supported by Codex Alimentarius Commission (2003). Therefore, it is imperative that food handlers undergo full medical examinations and issued with a certificate before allowed to handle food.

Food handlers need proper hygiene practices concerning cleanliness of hands and work clothes and correct methods of handling food and utensils. It has been reported that most outbreaks of foodborne diseases result from faulty food handling practices. According to Shojaei *et al.* (2006), it is generally accepted that food-borne illnesses are linked to poor personal and hand hygiene of the food handler, which can be a reservoir and vehicle for the transmission of pathogens to food and work surfaces. Food handlers with poor personal hygiene (i.e. no hand washing) especially after visiting the restrooms pose the risk of carrying high loads of microbes such as *E. coli* and *S. aureus* on their hands (Shojoei *et al.*, 2006).

Green *et al.* (2007) concurs with the earlier findings of Shojoei *et al.* (2006) when they assert that food handlers may introduce pathogenic microbes to the food during the process of preparation, distribution and serving. They assert that this is through inoculation of the food with infected excreta, pus, exhalations and other body discharges. Hence, in such instances food handlers are the source of contamination and eventual health consequences (Kaferstein, 2003). Therefore, in order to decrease foodborne illness it is essential to gain an understanding of the prevailing food safety

practices, beliefs and knowledge of food handlers. Because food safety is dependent upon the significant roles played by food handlers along the food service system.

A study done by Howes *et al.* (cited in Bas *et al.*, 2006) suggested poor sanitary practices, food storage, handling and preparation, along with poor food safety knowledge of the food handlers, can create an environment in which food-borne pathogens are more easily transmitted. Borch and Arinda (2002) contend that *Staphylococcus* and *E. coli* pathogenic microbes have been linked with foodborne morbidity and even mortality in many world populations each year. They posit that more often food handlers may also carry the microbial pathogens on their skin, hair, digestive systems or respiratory tracts. These pathogens are associated with poor personal hygiene practices. WHO (2002) attributes food hygiene violation to the deficiency of knowledge among food handlers/consumers and negligence.

According to FAO/WHO (2003) African countries have been hampered by a number of factors which leads to the violation of food safety practices. The inadequate or out of date food legislation, ill-equipped food inspectorates, inadequate laboratory facilities, poor management of food handlers, and lack of coordination and cooperation among government food control agencies are all factors which in one way or the other lead to food safety violations.

## **2.9 The Implications of Violating Food Hygiene Practices**

Chapman *et al.*, (2010) claim that globally foodborne illness affects an estimated 30% of individuals annually. A study done by Howes *et al.* (cited in Bas *et al.*, 2006) in the USA suggested that improper food handler practices contribute to approximately 97% of foodborne illnesses in food service establishments and homes. Food hygiene rests directly on the state of personal hygiene and habits of the personnel working in the



establishments. Obionu (2007) contends that the normal atmospheric temperature in most developing such as Nigeria is ideal for the multiplication of micro-organisms which cause food poisoning. He opines that sometimes the food may look attractive and may be normal in smell and taste, and yet cause acute illness almost immediately after consumption or after a period of time due to toxins produced by bacteria.

Mishandling and disregard of hygienic practices on the part of the food handlers may enable pathogenic bacteria to come into contact with food and in some cases survive and multiply in sufficient numbers to cause illness in the consumer. Codex Alimentarius Commission (2009) asserts that outbreaks of foodborne illness can damage trade and tourism, and lead to loss of earnings, unemployment and litigation. Similarly, Simone, Brecht, Sargent, Ritenour and Schneider (2008) find that foodborne illness can result in litigation and regulatory actions that can bring major financial hardship to any food related business. Many produce operations and farms have gone out of business after foodborne illness outbreaks were traced back to them. Food spoilage is wasteful, costly and can adversely affect trade and consumer confidence. Effective hygiene control, therefore, is vital to avoid the adverse human health and economic consequences of foodborne illness, foodborne injury, and food spoilage.

According to Schlundt *et al.* (2004) the consumption of contaminated or unsafe foods may result in illness, also referred to as foodborne disease. Foodborne diseases remain a major public health problem across the globe. They further state that even in developed countries, microbiological foodborne diseases affect an estimated one-third of the population each year. Kaferstein and Abdussalam (1999) also reported that up to 10% of the population of industrialized countries might suffer annually from foodborne diseases.

Yeung and Morris (2001) argue that despite better knowledge, a clear understanding of how and why consumer perceive food safety risk cannot be neglected since the uncertainty of achieving food safety goal may lead to some possible consequent losses for consumers. Roselius (as cited in Yeung & Morris, 2001) asserts that consumers tend to adopt one of four actions in order to reduce perceived risk in a purchase, they are:

- i. Stop permanently or temporarily, the purchase of offending product;
- ii. Reduce the purchase of the offending product;
- iii. Shift from one product to another similar type of product with less perceived risk; and
- iv. Continue to purchase and absorb the unresolved risk.

Thio and Wijaya (n.d.) assert that it is obvious that the reduce purchase by customers will lead to the reduce profit of food service operators and so this matter should be acknowledged by the food service operators to pay more attention to the food safety and hygiene practice in their business. Additionally, for food service company with established brands, preparing and serving safe food is vital to enjoying continued success in a global economy. Fournaris as (cited in Thio & Wijaya, n.d.) posit that a failure to ensure the consistent quality and integrity of goods and services delivered to the public under registered proprietary marks may result not only in lawsuits, but also in potentially much more devastating global negative publicity and brand erosion.

Therefore, Morrison *et al.* (1998) suggests that food service operators should always ensure that food is delivered safe, clean and free of contamination to consumers in order to increase restaurant's profitability and create consumer confidence in the safety of the food. The loss of customer loyalty is serious threat to business survival. The impact of poor hygienic practices in the foodservice industry cannot be overemphasized as

indicated in by previous studies. In view of this, Smith and Riethmuller (2000) suggest that food service operators should guarantee their consumers that their products are free from chemical residues, growth hormones, diseases and other health risks by handling and displaying the food in a hygienic condition.

### **2.10 Ensuring Proper Hygienic Practices of Food Handlers**

The importance of food-borne illnesses and their consequences for the food industry, the general public at large and the patients should be seen as an important factor in the alarming increase in the number of food-borne illnesses (Cur, 2008). According to Codex Alimentarius Commission (2009), everyone including farmers and growers, manufacturers and processors, food handlers and consumers have a responsibility to ensure that food is safe and suitable for consumption. The Codex basic texts on food hygiene promote understanding of how rules and regulations on food hygiene are developed and applied.

Sprenger (2009) asserts that if food handlers are aware of their legal obligations and they are provided with the knowledge and understanding on the prevention of food poisoning, this will automatically result in the implementation of good hygiene practices. Therefore, healthy food handlers with good personal hygiene should be allowed to in a restaurant. Food handlers can contaminate food by working while they are sick; touching pimples or sores; touching their hair; not wearing a band-aid and single-use gloves over sores and wounds; and not washing their hands properly before, during, and after handling food.

Allwood *et al.* (cited in Shojaei *et al.* 2006:525) point out that improved personal hygiene and hand washing would limit faeces-to-hand-to-mouth spread of potentially pathogenic micro-organisms. In addition, the USDA (2003) indicates that unwashed

hands are a prime cause of food poisoning; it emphasizes that hand washing is an important practice in a food-processing environment and that food handlers should keep their hands clean to prevent cross-contamination of pathogens. In a related development, Trickett (2000) opines that maintaining a high standard of hand hygiene is an important factor for food handlers when preparing or handling food.

According to the South African Bureau of Standards (SABS); (2001), to prevent contamination of food, training and retraining must be provided for all personnel involved in food handling. Training should be implemented, documented and maintained over and above keeping records for statistical purposes to ensure that the process of hygiene is efficient and acceptable. The SABS recommends that there should be availability of change rooms; clothing; toilets and washing facilities with applicable soap and hand wash procedure notices.

## **2.11 Summary**

Food hygiene involves all the conditions and measures necessary to ensure the safety and suitability of food at all stages of the food chain. Food handlers are the persons involved in the handling of food and utensils throughout all the stages of the food chain. It is worthy to note that food hygiene basically concerns personal hygiene on the part of food handlers. Food handlers in their routine work, come into direct contact with food in the course of its production, processing, packaging or distribution. Food handlers play an important role in ensuring food safety throughout the chain of production, processing, storage and preparation. Therefore, effective food and personal hygiene is vital to avoid foodborne illness which leads to adverse human health, litigations and economic consequences of foodborne illness. Food service managers can ensure food safety by implementing food safety policies that promote good personal hygiene of food

handlers. Policies and practices such as personal cleanliness; proper work attire thus workers wearing clean hat or hair restraint, clean clothing, appropriate shoes, and removing jewelry; workers frequently and properly washing their hands, having short fingernails, and properly using gloves should be strictly ensured.



## CHAPTER THREE

### METHODOLOGY

#### 3.1 Introduction

This chapter gives a description of the research design, target population and a sample and sampling technique which was used in the research. It also comprised an outline of instruments used, their validity and reliability, data collection procedure and analysis.

#### 3.2 Research Design

According to Kothari (2004), a research design stands for advance planning of the methods to be adopted for collecting the relevant data and the techniques to be used in their analysis, keeping in view the objective of the research and the availability of staff, time and money. A careful review of relevant literature on hygienic practices of food services shows the descriptive survey design was appropriate for this type of study. Therefore, the researcher adopted the descriptive survey design because by considering the main objective of the study, it is the most obvious and appropriate design that could help obtain the necessary findings and draw meaningful conclusions for the purpose of generalization. Denscombe (2007) asserts that the survey design provides a snapshot of how things are at a specific time, whilst no attempt could be made by the researcher to control the conditions or manipulate the variables under study and could only report what has happened or what is happening (Kelley, Clark, Brown & Sitzia, 2003, Kothari, 2004). Thus, the purpose of the descriptive survey design is to describe the state of affairs of a problem or case as it exists at present. In addition, for the purpose of generalizing the findings to other restaurants in the Accra Metropolis, Kothari (2004) posits that the descriptive survey design allows for a sample of the population to be

studied (questioned or observed) to determine its characteristics or relationship, and it is then inferred that the population has the same characteristics or relationship.

### **3.3 Study Area**

Historically the Accra Metropolitan Assembly (AMA) began as a Town Council and was first established by the Town Council Ordinance of 1894, after the introduction of Native Authorities by the colonial government in 1878. The native authorities were local government units made up of non-elected paramount chiefs, sub-chiefs and elders. The traditional rulers served as central figures in local government and were only given powers to pass bye-laws. Though this local administration produced close relationship between the chiefs and the British authorities, it failed to meet the needs and aspiration of the people. Accra was declared a city on the 28th June 1961 and became Accra City Council. The Accra City Council was dissolved to become Accra Tema City Council in August 1964. The AMA was established by PNDC Law 207 which has been replaced by the Local Government Act 1993 (Act 462).

The AMA is one of the ten (10) District Assemblies that make the Greater Accra Region and one of the One Hundred and seventy (170) Districts within the country. Accra is the Metropolitan, Regional and National Capital and this role places Accra in a very unique position in Ghana. Geographically, the Accra Metropolis covers an area of 173 sq km and located on longitude 05 35' and on latitude 00 06'. The Metropolis is bounded on the East by the La Dadekotopon Municipal Assembly, on the South by the Gulf of Guinea, on the West by Ga South and Central Municipal Assemblies, and on North by the Ga West and La Nkwatanang Municipal Assembly. The Southern boundary of AMA is the Gulf of Guinea stretching from Gbegbeyese to La. Structurally, the AMA is made up of the General Assembly at the apex, followed by

Eleven (11) Sub-Metropolitan District Councils which are subordinate bodies of the Assembly performing functions assigned to them by the instrument that sets up the Assembly or delegated to them by the Assembly.

The 2010 population and housing census estimated the population of the AMA as approximately 1.7 million. In addition to this figure, it is estimated that on daily basis there is an influx of population of 1 million to the City for various socioeconomic activities. The AMA has almost 42% of the total population of the Greater Accra Region with a population density for 112 per kilometre squared. The AMA can boast of a number of manufacturing industries, banking and financial institutions, telecommunication companies, tourism and hospitality businesses, trade and commercial firms, educational institutions, health institutions and other important establishments. These institutions provide employment opportunities to the thousands of young people in migrate to the Metropolis in search for employment. Their presence continues to attract people from all parts of the country and beyond to transact various businesses. In addition, these industries and institutions contribute significantly to internally generated revenue of the AMA in the form of business operating permits, property rates, etc.

**(Source: Accra Metropolitan Assembly, 2014)**

### **3.4 Population**

The target population for the study comprised food handlers of all the restaurants in the Accra Metropolis. Restaurants in this sense comprise all food service providers operating from standard structures/building at specific locations within the Accra Metropolis.



### **3.5 Sample and Sampling Technique**

Due to the lack of official list and addresses of restaurants in the Accra Metropolis as well as the scattered nature of the restaurants, the researcher used the snowball sampling technique to select 10 restaurants to serve as the sample size for the study. These restaurants were selected because the researcher was able to easily locate them among the lot of restaurants in the Accra Metropolis. The restaurants comprised Asanka Locals, Red Lobsters, Ashanti Home Touch, Odo Rise, Papaye, Frankies, White Bell, Dynasty Restaurant, Paloma Arcade and El Gringo. According to Marshall (1997), snowball sampling is useful when information about a population is scanty. Also, it is appropriate sampling technique in situations when the members of a special population are difficult to locate (Babbie, 2005). After selecting the restaurants, the researcher selected 12 food handlers from each of the 10 restaurants to make up a total of 120 food handlers who were used as respondents for the study. The food handlers were selected using the purposive sampling technique based on the premise that they were the objects of the study and therefore were deemed to be in a better position to provide the appropriate responses to the research instruments.

### **3.6 Data Collection Instruments**

The researcher intended to conduct a quantitative study and therefore deemed the questionnaire method as the appropriate method for the purpose of data collection. Questionnaire involves the generation of data in quantitative form that can be subjected to rigorous quantitative analysis in a formal and rigid fashion from which a generalization could be made (Kothari, 2004). In view of this, a questionnaire method was used to collect primary data from the participants because it will enhance the easy analysis of quantitative data and allow for a generalization of the findings and conclusions of the study. Also, Koul (2002) notes that questionnaire is a device

consisting of series of questions to address psychological, social and/or professional topics with the objective of obtaining data on the problem(s) under investigation. Therefore, a set of questionnaire was designed and comprised dichotomous response items closed-ended questions. The questionnaire consisted of four sections: the first section tackled the demographic characteristics of the respondents whilst the remaining sections tackled the respective research questions in an orderly manner.

### **3.7 Validity and Reliability of Instruments Used**

Mugenda and Mugenda (2003) define validity as the accuracy and meaningfulness of inferences which are based on research results. According to Patton (2002) validity is quality attributed to proposition or measures of the degree to which they conform to establish knowledge or truth. Validity therefore refers to the extent to which an instrument can measure what it ought to measure i.e. the extent to which an instrument asks the right questions in terms of accuracy. For a research instrument to be considered valid, the content selected and included in the questionnaire must be relevant to the variables being investigated (Neuman, 2000). Therefore, the researcher designed the questionnaire based on the three research questions. This was to ensure that the various question items reflected the research questions and were appropriate in seeking the right answers to the research questions. In addition, the questionnaires were submitted to the researcher's supervisor for necessary correction and modification before they were administered to the respondents.

Reliability is a measure of the degree to which a research instrument yields results after repeated trials (Mugenda & Mugenda, 2003). Reliability is a quality attributed to proposition or measures to the degree to which they produce consistent results. To ensure the reliability of the instruments, the questionnaire was piloted with five food

handlers selected from two restaurants outside the sample. Piloting helps to ascertain that the instrument for collecting data is free from any pitfalls and mistakes that would have surfaced in the main data collection process if the pretesting of the instrument had not been done. Piloting was done to help point out any flaws or errors that might be committed during the construction of the instrument. The responses of the pilot study and the comments of the respondents were used to revise and refine the questionnaire to enhance the reliability of the final instrument administered.

### **3.8 Data Collection Procedure**

Before the commencement of data collection, the researcher obtained an introductory letter from the Head of Department of Hospitality and Tourism Education at the College of Technology Education, Kumasi of the University of Education, Winneba. She made copies of the letter and distributed them to management of all the 10 selected restaurants in the Accra Metropolis in order to officially inform them of her intention to use their restaurants as case studies in her research work. Also, during the distribution of the introductory letters, the researcher took the opportunity to explain the purpose and objectives of the study to the management of the restaurants. In addition, an appropriate date and time was being agreed upon between the researcher and the prospective respondents for the purpose of final administration of the questionnaire. This helped the participants to prepare well in advance in order to provide appropriate responses to the questions within the stipulated time.

The researcher self-administered one set of questionnaire to 120 food handlers within five working days, thus one day for two restaurants. During the distribution of the questionnaire, the researchers reiterated the purpose of the study to them and explained the guidelines for answering the questionnaire. A period of three days was agreed upon

for the respondents to complete the questionnaire so that the researcher could back to collect them on the fourth day. The researcher was able to retrieve 100 completed questionnaires from the respondents. However, 20 respondents could not submit the completed questionnaire because they had misplaced them.

### **3.9 Data Analysis**

The responses obtained from the questionnaire were edited in order to detect and correct errors if any. The data was then be classified, coded and entered into the Statistical Package for Solutions and Services (SPSS version 21) for analysis. The analysis of data was done to generate descriptive statistics such as percentages and frequencies. The data relating to each research question were categorized under appropriate headings and presented in tabular form to enhance easy reading and understanding.



## **CHAPTER FOUR**

### **RESULTS AND DISCUSSION**

#### **4.1 Introduction**

The general objective of the study was to assess the hygienic practices of food handlers in selected restaurants in the Accra Metropolis. The chapter presents the demographic characteristics of the respondents. It contains the presentation and analysis of data received from the questionnaire. It further presents the discussion of major findings of the study with reference to the relevant literature.

#### **4.2 Demographic Characteristics of Respondents**

This section describes the respondents who participated in the study in terms of gender, age, educational qualification and work experience. This was to give readers an overview of the nature of people who participated in the study. Twelve food handlers were selected from each of the 10 restaurants to form the sample however at the time of data collection, only 100 food handlers were able to complete and present their questionnaire. Twenty food handlers were unable to submit their questionnaire for one reason or the other. Therefore, presentation of the demographic data in Table 4.1 is in respect of 100 respondents.

**Table 4.1****Demographic Characteristics of Respondents**

<b>Characteristics</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Gender</b>		
Male	28	28.0
Females	72	72.0
<b>Age</b>		
Below 30 years	45	45.0
30 – 39	30	30.0
40 – 49	13	13.0
50 - 59	12	12.0
<b>Educational Level</b>		
Basic	10	10.0
Secondary/Technical	72	72.0
Tertiary	18	18.0
<b>Work Experience</b>		
Below 2 years	4	4.0
2 - 4	12	12.0
5 - 7	54	54.0
8 - 10	24	24.0
More than 10 years	6	6.0



**Source: Researcher's Field Data, 2014**

Table 4.1 presents the demographic characteristics of 100 respondents from 10 restaurants in the Accra Metropolis. As shown in Table 4.1, almost three-quarter of the respondents representing 72% were females whilst the rest representing 28% were males. This greater number of females confirms the Ghanaian culture that the kitchen and for that matter food related matters is the duty of females. Slightly below half of the respondents (45.0%) were below 30 years whilst a relatively significant number (30.0%) belonged to the 30 – 39 age group. It could be inferred from the age distribution

in Table 4.1 that three-quarter of the respondents were below the age of 40. This may be as a result of the tasks of food handlers which involves a lot of movement in and around the restaurant and therefore requires more energetic youthful workers. Table 4.1 indicates that all the respondents had attained some level of education ranging from basic to tertiary. However, almost three-quarter of the respondents representing 72.0% had acquired either secondary or technical qualifications. It can be observed from Table 4.1 that slightly more than half of the respondents (54.0%) have gained 5 – 7 years of experience as food handlers. Also, a relatively significant number of the respondents (24.0%) indicated that they have worked for between 8 – 10 years. This implies that slightly more than three-quarters of the respondents had some level of work experience as food handlers and therefore where in a better position to provide the appropriate responses to the questions posed to them.

## **1.2 Analysis of Research Questions**

This section comprises the presentation and analysis of data from the questionnaires and observation schedule. Under this section, each of the three research questions was answered by presenting the data in relating to the questions under each research question respectively. The responses from the questionnaires were presented in the form of tables. The responses to the questionnaire item answering the first research question were ranked on a five-point Likert scale ranging from: Never (1) Seldom (2), Sometimes (3), Frequently (4), and Always (5); whilst the responses to the questionnaire items answering research two and three were ranked on a three-point scale of Disagree (1), Not sure (2) and Agree (3).

### 4.3.1 Research Question One

To what extent do food handlers comply with hygienic practices in the restaurant? The data in Table 4.2 represents the responses of food handlers with respect to the extent to which they comply with hygienic practices in the restaurant.

**Table 4.2: Hygiene Practices of Food Handlers**

<b>Hygienic Practices</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
<b>Hand washing</b>					
Wash hands after visiting restroom	0	0	0	0	95
Wash hands before preparing food	0	0	0	25	75
Wash hands when changing tasks	7	6	18	50	19
Wash hands before preparing raw meat/fish	8	3	14	33	50
Wash hands periodically under running water	2	7	18	35	48
Wash hands after taking a break	3	9	12	56	20
Wash hands after touching face, hair, or clothes	36	29	25	15	5
Use sanitizer	0	0	24	45	21
Wash hands after handling rubbish or trash	0	0	0	25	75
Wash hands after handling dirty equipment	0	0	0	33	67
Wash hands when switching between raw and ready-to-eat food	0	0	4	39	57
<b>Using Gloves</b>					
Wear gloves when preparing raw meat/fish	10	4	16	23	47
Wear gloves when hands have cuts or scratches	0	0	18	25	57
Wear gloves when preparing food you are not supposed to touch directly	0	0	0	22	78
Wear gloves when handling raw food stuffs	11	5	39	28	17
Wear gloves when sweeping, mopping and scrubbing	0	6	23	30	41
Wear gloves when handling rubbish or dealing with dirt	0	0	0	34	76



**Packing and Serving Prepared Food**

Store food in clean, non-toxic, food storage containers	0	0	0	3	97
Wash and sanitise containers before using them	0	0	21	32	47
Do not re-use containers that are only meant to be used once	0	0	0	2	98
Use clean, sanitised utensils (tongs, spoons, spatulas) to handle cooked or ready-to-eat food	0	0	0	15	85
Use forceps or ladles to pick up ready-to-eat food	0	0	7	34	59

**Cooling Food**

Keep frozen food solid during storage	0	0	13	37	50
Place cooling food in walk-in coolers	17	8	23	38	14
Check temperature of cooling food	5	12	45	37	10
Place cooling food in shallow pans	9	15	47	22	7

**Bodily Hygiene**

Wear clean clothes that had sleeves	0	0	0	12	88
Wear aprons	7	9	21	23	40
Cut and clean fingernails	0	0	0	11	89
Cover hair	16	10	19	23	32
Do not coat or decorated fingernails	0	0	12	25	73
Do not wear jewellery, such as rings, bracelets, and watches in the restaurant	3	8	14	28	47

**Cleaning Equipment and Utensils**

Use clean utensils for ready-to-eat food	0	0	0	8	92
Use clean utensils for cooking and serving	0	0	0	3	97
Use clean cutting boards for raw food	0	0	0	7	93
Clean, sanitise and dry cutting boards, knives, pans, plates etc.	0	3	18	52	27

**Key: 1 – Never, 2 – Seldom, 3 - Sometimes, 4 - Frequently, 5 - Always**

**Source: Researcher's Field Data, 2014**

It could be inferred from Table 4.2 that hand washing was a common hygienic practice among food handlers in the selected restaurants. A significant majority of 95% of the respondents stated that they always wash their hands after visiting the restroom. Three-quarters of the respondents (75%) indicated that they wash their hands before preparing food. Half of the respondents (50%) indicated that they always wash their hand before preparing raw meat/fish whilst a slightly below half of the respondents (48%) indicated that they always wash their hands under running water. Also, a slightly more than half of the respondents (56%) indicated that they frequently wash their hands after taking a break. However, more than half of the respondents did not see the essence of washing their hand after touching their face, hair or clothes. This was indicated by 36% of the respondents stating that they never wash their hands after touching some parts of their body before handling food whilst 29% of the respondents also stated that they seldom wash their hands.

With the use of sanitizers after washing hands 45% of the respondents indicated that they frequently use sanitizers. It could be observed from Table 4.2 that three-quarter of the respondents (75%) indicated that they always wash their hands after handling rubbish or trash whilst 67% of the respondents indicated that they always wash their hand after handling dirty cooking gadgets. A slightly more than half of the respondents (57%) indicated that they always wash their hands when switching between raw food to ready-to-eat food. Also, it could be observed from Table 4.2 that a significant number of food handlers wear gloves when performing certain tasks in the restaurant. It was indicated by a 45% of the respondents that they always wear gloves when preparing raw meat/fish. Also 57% of the respondents stated that they always wear gloves when they have cuts or scratches on their hands. Slightly below half of the respondents 45% and

47% indicated that they sometimes check temperature of cooling food and place cooling food in shallow pans respectively.

Also bodily hygiene practices as indicated in Table 4.2 were observed by a significant number of food handlers in the selected restaurants. This was revealed by more than three-quarter of the respondents (88%) and (89%) indicating that they always wear clean clothes with sleeves and trim their finger nails respectively. Also slightly below half of the respondents (40%) answered that they always wear aprons when preparing or handling food.

Again, almost three-quarter of the respondents (73%) indicated that they do not coat or decorate their fingernails with chemical substances. However, below half of the respondents (32%) and (47%) of the respondents stated that they always cover their hair and do not wear jewelry, such as rings, bracelets, watches, etc. in the restaurant respectively. It was also observed from Table 4.2 that food handlers always clean equipment and utensils used throughout out the food chain. This was indicated by almost all the respondents: Use clean utensils for ready-to-eat food (92%); use clean utensils for cooking and serving (97%); and use clean cutting boards for raw food (93%). However, slightly more than half of the respondents (52%) indicated that they frequently clean, sanitize and dry cutting boards, knives, pans, plates, containers.

Also a slightly more than three-quarter of the respondents (75%) indicated that they always wear gloves when preparing food that are not supposed to touch directly. However, below half of the respondents (39%) indicated that they sometimes wear gloves when handling raw foodstuffs. Again, a slightly below half of the respondents (41%) indicated that they always wear gloves when sweeping, mopping and scrubbing

whilst three-quarter of the respondents (76%) indicated that they always wear gloves when handling rubbish.

In terms of packaging and serving already prepared food, a significant majority of 97% of the respondents indicated that they always store food in clean, non-toxic, food storage containers whilst a slightly below half of the respondents (47%) indicated that they always wash and sanitize containers before using them. Also 98% and 85% of the respondents noted that they always use food containers meant to be used only once just once and use clean, sanitized utensils (tongs, spoons, spatulas) to handle cooked or ready-to-eat food respectively. Also, it was observed from Table 4.2 that 59% of the respondents always use forceps or ladles to pick up ready-to-eat food. Cooling food as means of preservation has its own health implications and therefore must be given attention by food handlers. As shown in Table 4.2, half of the respondents (50%) indicated that they always keep frozen food solid during storage whilst 38% frequently place cooling food in walk-in coolers.

#### **4.3.2 Research Question Two**

What are the causes of food hygiene violations by food handlers in the restaurant? Table 4.3 presents the views of food handlers on the causes of food hygiene violations in the selected restaurants.

**Table 4.3: Causes of Violating Hygienic Practices**

<b>Causes</b>	<b>1</b>	<b>2</b>	<b>3</b>
	<b>%</b>	<b>%</b>	<b>%</b>
Ignorance of food hygiene practices	23	18	59
No formal rules on hygienic practices	32	10	58
Not adopting the appropriate hygienic practices	22	14	66
Not sanctioning workers who break hygiene rules	19	11	70
Not knowing the impact of violating hygienic practices	21	5	74
Lack of industry regulations on hygienic practices	8	13	79

**Key: 1 - Disagree, 2 - Not sure, 3 - Agree**

**Source: Researcher's Field Data, 2014**

Several reasons may account for the violation of hygienic practices by food handlers in the foodservice industry. However, upon seeking the views of food handlers on the causes of violation of hygienic practices in 10 selected in the Accra Metropolis, the responses received are shown on Table 4.3. It can be observed from the table that slightly above half the respondents agreed (59%) and (58%) agreed that ignorance of food hygiene practices on the part of food handlers and the non-existence of formal rules on hygienic practices in restaurants respectively could lead to their violation. Also slightly below three-quarter of the respondents (66%) and (70%) agreed that the adoption of inappropriate hygienic practices and the absence of sanctions for workers who flout hygienic rules respectively may lead to the violation of hygienic practices. As could be observed from Table 4.3, almost three quarters of the respondents (74%) agreed that hygienic practices might be violated by food handlers as result of their ignorance about the adverse implications such violations on the restaurant. Again, slightly above three-quarters of the respondents (79%) agreed that lack of industry

regulations on hygienic practices could also create a leeway for food handlers to violate hygienic practices.

### 4.3.3 Research Question Three (A)

What are the implications of the violating food hygiene practices in the restaurant?

Table 4.4 presents the views of food handlers on the implications of violating hygienic practices in the selected restaurants.

**Table 4.4: Implications of Violating Hygienic Practices**

<b>Effects</b>	<b>1</b>	<b>2</b>	<b>3</b>
	<b>%</b>	<b>%</b>	<b>%</b>
Contamination of food being prepared	2	5	93
Legal suit by customers against the restaurant	23	14	63
Closure of restaurant by government authorities	13	8	79
Loss of revenue due to decline in sales	10	6	84
Bad image and publicity	21	18	61
Increased food spoilage and food poison	20	15	65

**Key: 1 - Disagree, 2 - Not sure, 3 - Agree**

**Source: Researcher's Field Data, 2014**

It was observed in Table 4.4 that majority of the respondents (93%) agreed that food hygiene violations on the part of food handlers can lead to contamination of prepared food. Also, slightly below three-quarters, of the respondents (63%) agreed that the restaurant could be sued by customers who experience any foodborne illness as a result of eating contaminated food from the restaurant. Slightly above three-quarters, of the respondents (79%) and (84%) agreed that the violation of hygienic practices can lead to the closure of the restaurant by industry regulation authorities and loss of revenue due to decline in sales respectively. Again, 61% of the respondents agreed that if a restaurant that does not comply with hygienic practices, it creates a bad image and

publicity for itself in the market. Furthermore, 65% of the respondents agreed that non-compliance with hygienic practices could lead to increased food spoilage and food poison.

#### 4.3.4 Research Question Three (B)

What are the measures for ensuring compliance with hygiene practices by food handlers in the restaurant? Table 4.5 presents the views of food handlers on measures taken by the management of their respective restaurants in ensuring their compliance with hygienic practices in the restaurant.

**Table 4.5: Measures for ensuring Compliance with Hygienic Practices by Food**

<b>Measures</b>	<b>1</b>	<b>2</b>	<b>3</b>
	<b>%</b>	<b>%</b>	<b>%</b>
Management incorporates hygiene policies in the work of food handlers	21	5	74
Train food handlers on personal hygiene practices	24	4	72
Model good hygiene practices for food handlers at all times	32	6	62
Supervise food handlers' practices continuously	35	7	58
Revise polices on hygienic practices when industry rules and regulations change	38	2	60

**Key: 1 - Disagree, 2 - Not sure, 3 - Agree**

**Source: Researcher's Field Data, 2014**

Table 4.5 presents respondents views on how management of restaurant ensures food handlers' compliance with hygienic practices. As indicated in Table 4.5, slightly below three-quarter of the respondents (74%) and (72%) agreed that management incorporates hygiene policies in the work of food handlers and train food handlers in personal

hygiene practices respectively. Also, slightly above half of the respondents (62%) and (58%) indicated that hygiene is ensured among food handlers by modelling good hygiene practices for food handlers and supervising food handlers' practices continuously. Again, 60% of the respondents agreed that the compliance with hygienic practices can be ensured through the revision of policies on hygienic practices when industry rules and regulations on hygiene changes.

#### **4.4 Discussion of Findings**

This section presents the discussion of findings with reference to relevant previous studies to establish if any, corroborations or contradictions. The discussion is done under suitable theme/headings developed from the respective research questions as follows:

##### **4.4.1 Hygienic Practices of Food Handlers**

It was revealed in Table 4.2 that hand washing before and after performing some tasks was a very common practice of food handlers in restaurant in ensuring proper hygiene. This is because hands are the main vehicle for transferring food poisoning bacteria or pathogens to high-risk food. For this reason, food handlers kept their hands clean and washed frequently throughout the day. This corroborates WHO (1996) assertion that to ensure proper food hygiene food handlers should wash their hands with soap and water after engaging in any activities that are likely to introduce dirt, chemical substances or bacteria into the food.

Also, it confirms the suggestion of ACAGS (2005) which states that hand washing is one of the most effective ways to stop the cycle of infectious disease, especially those diseases spread through oral-faecal or person-to-person contact. The findings of the study are consistent with the suggestions of CAC (2009) that food handlers should



always wash their hands when personal cleanliness may affect food safety, for example: i) at the start of food handling activities; ii) immediately after using the toilet; and iii) after handling raw food or any contaminated material where this could result in contamination of other food items. Furthermore the findings confirms Green and Selman's (2005) assertion that food handlers should wash their hands frequently and that of Trickett (2000) when he opines that maintaining a high standard of hand hygiene is an important factor for food handlers when preparing or handling food.

The use of gloves as a measure to ensuring that bacteria from the hand does not get into food as indicated by the results in Table 4.2 corroborates the assertion of Green and Selman (2005) that to minimize hand-food contact, gloves should be worn when handling ready-to-eat food or raw food with your hands. These findings are also consistent with the requirement of CAC (2009) which states that where cuts and wounds exist, but food handlers are permitted to continue working, then they should be covered by suitable waterproof dressings.

It was revealed that food handlers always clean and sanitize if necessary food containers and utensils used for preparing, packaging and serving food. These findings confirm the assertion of ACAGS (2005) that during food preparation as a means of ensuring food safety, equipment used to prepare raw foods must be washed thoroughly after use and always before being used to prepare foods. ACAGS further states that food handlers should clean and sanitize cutting boards, meat slicers and utensils between tasks or every 2 hours if doing the same task. The study further revealed it is a necessary hygienic practice to keep cooked or raw food under appropriate temperatures to avoid food contamination or spoilage. This finding is consistent with the recommendation of CAC (2009) that hot foods should be cooled from 140°C to 70 °C within two hours and from 70 °C to 41 °C within four hours.

The findings in relation to bodily/personal hygiene corroborates the findings of previous studies and reports which suggested that personal effects like jewellery, pins and other adornments should not be brought into food handling areas (WHO, 2001). Also, they affirm the suggestion of CAC (2009) which states that food handlers should maintain a high degree of personal cleanliness and, where appropriate, wear suitable protective clothing, head covering and footwear. However, the practice of food handlers wearing clean clothes and aprons contradicts that of WHO (1996) that the requirement for food handlers to wear aprons of a particular colour or shade or to wear hair coverings should be tempered by the realization that it has more to do with food aesthetics and inspiring consumer confidence than food safety.

#### **4.4.2 Causes of Violating Hygienic Practices**

It could be inferred from Table 4.3 that lack of knowledge of proper hygienic practices on the part of food handlers is a major factor that accounts for the violation of the hygienic practices. This confirms Little and McLauchlin's (2007) assertion that food handlers need to have the knowledge and the know-how of food safety so that they do not violate them. It also corroborates the findings of Thio and Wijaya (n.d) when they posit food handlers should have the skill and knowledge of food safety and hygiene to ensure that food is safe to be consumed. The findings also give relevance to the argument of Ceserani (2006) that it is important to know whether food handlers working in food outlets, hotels and restaurants, are aware of food safety violations and what constitutes it.

The lack of formal rules on hygienic practices leading to the adoption of improper hygienic practices by food handlers as observed in Table 4.3 supports the finding of Shojoei *et al.* (2006) that food handlers practices poor personal hygiene (i.e. no hand washing) especially after visiting the restrooms. It also agrees with the assertion of

Howes *et al.* (cited in Bas *et al.*, 2006) that poor sanitary practices, food storage, handling and preparation, along with poor food safety knowledge of the food handlers, can create an environment in which food-borne pathogens are more easily transmitted.

The revelation that lack of industry regulations on hygienic practices and the practice of not sanctioning workers who break hygiene rules account for the violation of hygienic practices confirms an earlier findings by FAO/WHO (2003). FAO/WHO finds that the inadequate or out of date food legislation, ill-equipped food inspectorates, inadequate laboratory facilities, poor management of food handlers, and lack of coordination and cooperation among government food control agencies are all factors which in one way or the other lead to food safety violations.

#### **4.4.3 Implications of Violating Hygienic Practices**

The contamination of food leading to food spoilage and foodborne illness as result of violating hygienic practices is perceived to have an adverse impact on the restaurant. Therefore, according to Schlundt *et al.* (2004), the consumption of contaminated or unsafe foods may result in illness, also referred to as foodborne disease. Loss of revenue due to decline in sales and closure of restaurant by government authorities are some of the effects of violation of hygienic practices on the restaurant as indicated in Table 4.4. These finding corroborates the assertion of CAC (2009) that outbreaks of foodborne illness can damage trade and tourism, and lead to loss of earnings, unemployment and litigation. Thio and Wijaya (n.d.) notes that it is obvious that the reduce purchase by customers will lead to the reduce profit of food service operators. Again, Simone, Brecht, Sargent, Ritenour and Schneider (2008) find that foodborne illness can result in litigation and regulatory actions that can bring major financial hardship to any food related business. Therefore, the possibility of customers instituting

legal action against the restaurant as indicated by the food handlers confirms the assertion of Simone, Brecht, Sargent, Ritenour and Schneider (2008).

It was found that restaurants that do not ensure proper hygienic practices were likely to create bad image and publicity for themselves. This finding is consistent with the position of Fournaris as (cited in Thio & Wijaya, n.d) that a failure to ensure the consistent quality and integrity of goods and services delivered to the public under registered proprietary marks may result not only in lawsuits, but also in potentially much more devastating global negative publicity and brand erosion.

#### **4.4.4 Measures for ensuring Compliance with Hygienic Practices by Food Handlers**

The assertion by almost three-quarter of the food handlers that management incorporates hygiene policies in the work of food handlers supports Sprenger's (2009) position that if food handlers are aware of their legal obligations and they are provided with the knowledge and understanding on the prevention of food poisoning, this will automatically result in the implementation of good hygiene practices. In addition, majority of the food handlers agree that it was necessary for them to undergo training in personal hygiene. This confirms the position of Allwood *et al.* (cited in Shojaei *et al.*, 2006:525) that improved personal hygiene and hand washing would limit faeces-to-hand-to-mouth spread of potentially pathogenic micro-organisms.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter is the concluding part of the study and it presents the summary of the major findings of the study and the conclusions inferred from the findings of the study. It also includes the necessary recommendations made by the researcher to correct the lapses identified and improve upon the current situation.

#### 5.2 Summary of Findings

The following are summary of the major finding of the study as observed from each analysis of responses to each research question. The summary of findings is presented under themes according to the three research questions under consideration as follows:

##### 5.2.1 Hygienic Practices

The findings in Table 2 indicates that hygienic practices of food handlers in restaurant mostly involved: i) hand washing before and after performing some tasks; ii) using gloves when performing some particular activities; iii) proper packing and serving of prepared food, proper cooling of hot food; iv) ensuring proper bodily/personal hygiene; and v) cleaning equipment and utensils.

##### 5.2.2 Causes of Violating Hygienic Practices

From the analysis of responses received from the food handlers on the causes of food hygiene violation, the following findings were revealed: i) ignorance of food hygiene practices on the part of food handlers; ii) the non-existence of formal rules on hygienic practices in restaurants; iii) the adoption of inappropriate hygienic practices; iv) the absence of sanctions for workers who flout hygienic rules; v) ignorance about the

adverse implications such violations on the restaurant; and vi) lack of industry regulations on hygienic practices.

### **5.2.3 Implications of Violating Hygienic Practices**

The study revealed that following as some possible impact of violating hygienic practices on the restaurant: i) food hygiene violations on the part of food handlers can lead to contamination of prepared food; ii) the restaurant could be sued by customers who experience any foodborne illness as a result of eating contaminated food served by the restaurant; iii) violation of hygienic practices can lead to the closure of the restaurant by industry regulation authorities; iv) loss of revenue due to decline in sales; v) create a bad image and publicity for the restaurant in the foodservice industry; and vi) non-compliance with hygienic practices can lead to increased food spoilage and food poison.

### **5.2.4 Measures for Ensuring Compliance with Hygienic Practices**

The study found that management of the various restaurants have taken some measures as means of ensuring food handlers compliance with hygienic practices in the restaurant. The following are the findings of the study in this area: i) management incorporates hygiene policies in the work of food handlers; ii) train food handlers in personal hygiene practices; iii) by modelling good hygiene practices for food handlers; iv) supervising food handlers' practices continuously; and v) the revision of policies on hygienic practices when industry rules and regulations on hygiene changes.

## **5.3 Conclusions**

In assessing the hygienic practices of food handlers, by drawing on existing literature on the standard hygienic practices in the food services establishment, it came to light that some food handlers do not comply with the appropriate food hygiene standards. As

a result of that foodborne diseases have been common in our part of the world. Therefore, if food handlers are to take precautionary measures seriously it will help minimize foodborne diseases.

#### **5.4 Recommendations**

Based on the findings of this study, the following recommendations were made:

- i. The awareness about the importance of the practice of food safety and hygiene should be cultivated from early education by including it into the national curriculum and by conducting food hygiene campaign in the nationwide. At the higher level and especially in food service establishments, food hygiene education and training should be provided for food handlers to increase their knowledge and awareness of the need to ensure food hygiene and safety.
- ii. There should be monitoring and evaluation of food handlers with respect to their hygienic practices to ensure good hygiene practices are maintained all the time.
- iii. Potential sources of contamination from the environment should be considered. In particular, primary food production should not be carried on in areas where the presence of potentially harmful substances would lead to an unacceptable level of such substances in food.
- iv. The adoption of HACCP-based approach may assist in the taking of measures to identify the potential effects of primary production activities on the safety and suitability and taking specific measures to minimize that probability.

- v. Where appropriate, the internal design and layout of food establishments should permit good food hygiene practices, including protection against cross-contamination between and during operations by foodstuffs.
- vi. Food hygiene training is basically significant to equip the handlers with the knowledge and skills to handle food safely. Regular appraisals of the effectiveness of training and instruction activities should be made together with periodic supervision to enforce adherence to hygienic procedures.

### **5.5 Suggested Areas for Further Research**

It was unfortunate that the study did not involve actual testing of food to ascertain whether the hygienic practices of food handlers in the restaurants actually affected the food itself but only considered the adoption of safe food handling practices of food handlers in the restaurants. Therefore, the researcher recommends that the ready-to-eat food should be tested scientifically in any future studies in the area of food hygiene and hygienic practices of food handlers.



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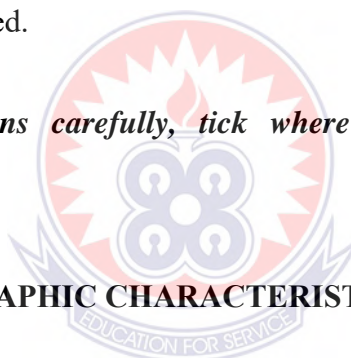
## APPENDIX

**UNIVERSITY OF EDUCATION, WINNEBA**  
**COLLEGE OF TECHNOLOGY EDUCATION, KUMASI**  
**QUESTIONNAIRE FOR FOOD HANDLERS**

Dear Sir/Madam

It is my pleasure to inform you that you have been selected as an employee of this restaurant to take part in a survey on assessing the hygienic practices of food handlers in some selected restaurants in the Accra Metropolis. You are therefore kindly requested to complete this questionnaire by providing appropriate responses to the all the question items. Responses are used for academic purposes only. Your responses are therefore greatly appreciated.

*Please read the questions carefully, tick where appropriate and state where necessary:*



### SECTION A: DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS

1. What is your gender?

Male  Female

2. Please select your age group

Below 20 years

20 – 29

30 – 39

40 – 49

50 and above

3. Educational Qualification

- BECE
- SSCE/WASSCE/NVTI
- DIPLOMA/HND
- Bachelor's Degree
- Masters/Doctorate Degree

4. Please indicate your years work experience as a food handler

- Below 2 years
- 2 - 4
- 5 – 7
- 8 – 10
- More than 10 years



**SECTION B: HYGIENE PRACTICES OF FOOD HANDLERS**

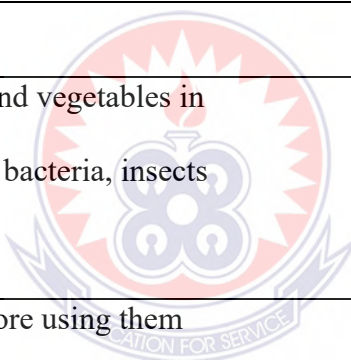
5. To what extent do you undertake the following as hygienic practices in your restaurant? Please rate your responses on a scale of: Never (1) Seldom (2), Sometimes (3), Frequently (4), Always (5).

<b>Hygienic Practices</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Hand washing</b>					
Wash hands after visiting restroom					
Wash hands before preparing food					
Wash hands when changing tasks					
Wash hands before preparing raw meat/fish					
Wash hands periodically under running water					
Wash hands before putting on gloves					
Wash hands after handling money					
Wash hands after sneezing/coughing					
Wash hands after eating					
Wash hands after taking a break					
Wash hands after touching face, hair, or clothes					
Use sanitizer					
Wash hands after handling garbage or trash					
Wash hands after handling dirty equipment or utensils					
Wash hands when switching between raw and ready-to-eat food					
<b>Using Gloves</b>					
Wear gloves when in the kitchen or preparing food					

Wear gloves when preparing raw meat/fish					
Wear gloves when hands have cuts or scratches					
Wear gloves when preparing food you are not supposed to touch directly					
Wear gloves when handling raw food stuffs					
Wear gloves when sweeping, mopping and scrubbing					
Wear gloves when handling rubbish					
<b>Packing and Serving Prepared Food</b>					
Store food in clean, non-toxic, food storage containers					
Wash and sanitize containers before using them					
Do not re-use containers that are only meant to be used once					
Use clean, sanitized utensils (tongs, spoons, spatulas) to handle cooked or ready-to-eat food					
Use forceps or ladles to pick up ready-to-eat food					
<b>Cooling Food</b>					
Keep frozen food frozen solid during storage					
Place cooling food in walk-in coolers					
Check temperature of cooling food					
Place cooling food in shallow or small pans					
<b>Bodily Hygiene</b>					
Wear clean clothes that had sleeves					
Wear aprons					
Cut and clean fingernails					



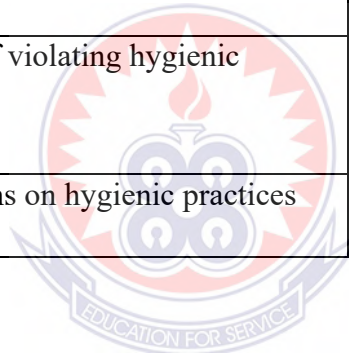
Cover hair					
Do not coat or decorated fingernails					
Do not wear jewelry, such as rings, bracelets, and watches					
<b>Cleaning Equipment and Utensils</b>					
Use clean utensils for ready-to-eat food					
Use clean utensils for cooking					
Use clean cutting boards for raw food					
Thoroughly clean, sanitize and dry cutting boards, knives, pans, plates, containers					
<b>Handling Foodstuffs</b>					
Thoroughly rinse all fruit and vegetables in clean water to remove soil, bacteria, insects and chemicals.					
Inspect raw food stuffs before using them					



**SECTION C: CAUSES OF FOOD HYGIENE VIOLATIONS**

5. To what extent do you agree or disagree with the following as factors that cause violation of hygienic practices in your restaurant? Please rate your responses on a scale of: Strongly disagree (1) Disagree (2), Undecided (3), Agree (4), Strongly agree (5).

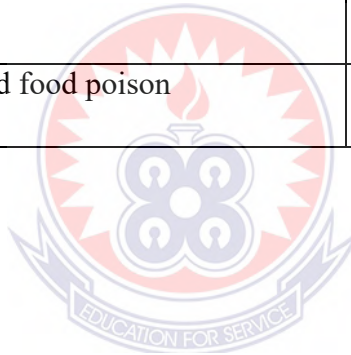
<b>Causes of Violating Hygienic Practices</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Ignorance of food hygiene practices					
No formal rules on hygienic practices in the restaurant					
Not adopting the appropriate hygienic practices					
Not sanctioning workers who break hygiene rules					
Not knowing the impact of violating hygienic practices					
Lack of industry regulations on hygienic practices					



**SECTION D: IMPACT OF VIOLATING HYGIENIC PRACTICES**

6. To what extent do you agree or disagree with the following as effects of violating hygienic practices in the restaurant? Please rate your responses on a scale of: Strongly disagree (1) Disagree (2), Undecided (3), Agree (4), Strongly agree (5).

<b>Effects</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Contamination of food being prepared					
Legal suite by customers against the restaurant					
Closure of restaurant by government authorities					
Loss of revenue due to decline in sales					
Poor image and publicity					
Increased food spoilage and food poison					



**SECTION E: ENSURING COMPLIANCE WITH HYGIENIC PRACTICES**

7. What are the means of ensuring food handlers compliance with hygienic practices in your restaurant? Please rate your responses on a scale of: Strongly disagree (1) Disagree (2), Undecided (3), Agree (4), Strongly agree (5).

<b>Measures</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Management incorporates hygiene policies in the work of food handlers					
Train food handlers on personal hygiene practices					
Model good hygiene practices for food handlers at all times					
Supervise food handlers' practices continuously					
Revise polices on hygienic practices when laws and regulations change					

