

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF SCIENCE

FACULTY OF BIOSCIENCES

DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY

**PREREQUISITE PROGRAMS FOR FOOD SAFETY AMONG SELECTED HOTELS IN
THE GA- WEST MUNICIPALITY**

BY

ADWOA YEBOAH

NOVEMBER, 2018

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BY

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(BSc. HOSPITALITY MANAGEMENT)**

A THESIS SUBMITTED TO THE DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY,
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF

MASTER OF SCIENCE IN FOOD QUALITY MANAGEMENT

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DECLARATION

I hereby declare that this thesis is the effort of my own hardworking except for references to other people's work, which have been truly acknowledged, this thesis submitted to the Board of Postgraduate Studies, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, is the result of my own findings and has not been presented for any degree elsewhere.

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Dr. Faustina Dufie Wireko-Manu

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Date

(Head of Department)

DEDICATION

I dedicate this research work to my mother Mrs Gladys Yeboah and my late father Mr Peter Mensah Yeboah and my dear one Mr. Prosper Amepome.

ACKNOWLEDGEMENT

I would like to express my profound gratitude to Almighty God for His grace and strengthen me to complete this work successfully. My special gratitude to my supervisor, Dr. Faustina Dufie Wireko-Manu, for the continuous support and advice throughout the study. Special thanks goes to my dearest Mr. prosper Amepome for giving me all support and the encouragement needed to complete this thesis. I am also grateful to Kenneth Afo Osei Atiemo and Yaw Gyamfi for assisting me in the whole process of writing this study.

ABSTRACT

This study aimed at examining prerequisite programs of food safety among hotels in Accra, using hotels in the Ga-West municipality as well as the effects of gender and educational background on food safety in ten selected hotels. Prerequisite program is defined as essential practices and conditions for food safety required before and during the implementation of a HACCP program. Food safety is the assurance that food will not endanger the health of consumers when it is prepared and / or eaten according to its intended use. It is therefore necessary for people to understand how their behaviors and practices contribute to the safety of food, and how they can decrease the risk of foodborne illness. The research used cross-sectional descriptive survey design and considered 150 hotel staff as respondents using questionnaire survey to collect primary data. The sampled data was quantitatively analyzed using SPSS software on demographics, knowledge and practices of food safety/hygiene as well as environmental sanitation. The study results show that generally, attitudes and behaviors of hotel food-handlers in Ghana were satisfactory in the areas of food safety knowledge, personal hygiene, and cleaning and sanitation procedures, but unsatisfactory in areas of food handling and serving as well as food supply and storage. The men (54 %) dominated in the hotel food preparation in this study. There were no obvious differences between men and women with regards to their food safety knowledge, behaviors and attitudes. However, respondents with higher educational background were more knowledgeable on issues of food safety and hygiene than those with lower educational background. Food safety education and training for food-handlers, targeting specifically those with lower levels of education, should be strengthened to complement other interventions that pursue the enhancement of food safety systems in Ghana.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

The hospitality industry has become well-known in recent times, in response to the change in lifestyle and globalization, thus accounting for its growth due to the rise in population, international travel and trade and economic growth of capital towns in Ghana (Mowforth and Munt, 2015). Hotel restaurants offer ready to eat and ease access to food to individuals, tourists and foreigners who are incapable of preparing their own meals or who are away from home.

Prerequisite Programs (PRPs) provide basic operating and environmental conditions required for safe food production, providing the foundation for Hazard Analysis and Critical control Points (HACCP). They are the practices needed prior to and during implementation of the HACCP plan that are essential for food safety by describing Procedures to prevent the hazard (Baş *et al.*, 2006). Examples of prerequisite programs possible for preventing hazards are good hygienic practices, good manufacturing practices, pest control, sanitation programs, residues programs, and many more.

Foodborne disease occurs as a consequence of consuming contaminated food that contains microorganisms such as pathogenic bacteria, parasites and viruses. In Ghana, Food safety is a national concern specifically, food that is served away from home to the public by food service industries such as the hospitality industries. Research by the Ministry of Food and Agriculture and the World Bank (2007), reported that one in every forty Ghanaian citizen suffers from food borne illness yearly and over 420,000 cases of food borne outbreak are recorded yearly.

Although it is very important for food handlers to observe higher standards of food safety policies, food safety and food hygiene practices among food handlers are appalling (Monney *et al.*, 2014). Studies show that diarrheal infections contribute 96 % of food borne diseases of the world population, with 62 % of the population dying from eating unsafe food (Pimentel *et al.*, 2017). The rate of food borne illness in Ghana is estimated to be 5.8 million yearly (Mensah and Aikins, 2010). The high occurrence of diarrheal diseases in most developing countries is due to consumption of unsafe food and poor personal hygiene practices and food safety problems (Akhtar *et al.*, 2014). Thus, it is necessary for the continuous awareness creation and strict enforcement of regulations in the Ghanaian food industries. Therefore, this study was conducted to examine the state of food safety systems among selected hotels.

1.2 Problem Statement

Ensuring food safety is a critical problem facing most restaurants and hotel industries (Ababio and Lovatt, 2015). This has been attributed to the lack of prerequisites programs such as good manufacturing practices and other food safety system in the hospitality industry (Olaitan, 2011).

Studies that have been undertaken on the safety of street foods in Ghana concluded that most of the foods prepared are done under unhygienic conditions (Mensah *et al.*, 2009). However, there is limited research on the subject of Prerequisites Programs of food safety in relation to the hospitality industry in the municipality. Research done in Jamaica by Stephanie *et al.* (2009) showed that, hotel and restaurant industries are the major sources of food contamination. Mensah (2016) has confirmed the fact that, there is limited knowledge on the adoption of prerequisite programs in the hotel food service industry in the Greater Accra Region.

1.2 Objectives of the Study

1.3.1 Broad Objective

To examine the state of food safety systems in selected hotels in Accra.

1.3.2 Specific Objectives

1. To determine the prerequisite programs of food safety in ten selected hotels in the Ga-West municipality.
2. To determine the effects of gender and educational background on food safety in selected hotels.

1.4. Research Questions

1. To what extent do hotels in the study area, conform to the prerequisite programs on food safety?
2. What are the effects of gender and educational background in conforming to Prerequisite programs in hotels in Greater Accra?

1.5 Justification of the Study

Study findings will provide the needed information for stakeholders of the hospitality industries for greater improvement in the overall food safety management. This will help the hospitality industries to properly formulate, plan and evaluate strategies that effectively strengthen the knowledge, attitudes and behaviors of related staff regarding food safety in order to sustain and grow their businesses devoid of regulatory sanctions.

1.6 Scope of the Study

The research covered selected hotels in the Ga-West Municipality in the Greater Accra Region of Ghana. The study concentrated on issues affecting food safety in these hotels. The population of the study area is 219,788 with comparatively more females than males. It has a youthful population with 33.4 percent of them below the ages of 15 years (Population and Housing Census, 2010).

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

Food safety is a critical priority for all food and beverage outlets in keeping guests and staff safe. Clearly defined food safety principles must be upheld during storing, preparing or serving food to the highest standards. The most effective method of assuring food safety according to Purnomo (2006) requires the establishment of a systematic and continuous training and education for food handlers to understand how to correctly store, control, issue, handle and prepare food in hospitality and food processing industries. Once this is achieved, the hazards and risks in foods can be minimized. However, a high proportion of food poisoning outbreaks still occur as a result of poor food handling, even though the number of food handlers receiving food safety training have increased (Clayton *et al.*, 2002).

2.1.1 Ghana's Hospitality Industry

A hospitality report by PricewaterhouseCoopers (PwC) (2018) ranks Ghana's hospitality industry 4th for profitability on the continent (<https://www.ghanabusinessnews.com>)

As at May 2017, there were two thousand, seven hundred and twenty three (2,723) hotels and lodges in Ghana, the report said. It adds that Ghana's hospitality industry grew 1.2 per cent from 2015 to 2016 and it is expected to rise in the wake of the number of business travellers visiting the country as the state embarks on initiatives that stimulate economic growth. The hotel industry is expected to grow 2.1 per cent in this year and 2.3 per cent in 2019. Reasons that account for the growth in the hospitality business include the growth of the mining and energy industries as

well as an increasing trend in local tourism ultimately generating lots of revenue for the economy. Major challenges of the industry include, but not limited to lack of adequate and skilled personnel and inadequate investment in the industry.

2.2 Food-Borne Illness and its Effects

Foodborne illness (also foodborne disease and colloquially referred to as food poisoning) is any illness resulting from contaminated food by pathogenic bacteria, viruses, or parasites and toxins such as poisonous mushrooms and certain species of legumes that have not been cooked thoroughly (Argudín *et al.*, 2010). It may however, be stated that the impact of morbidity and mortality from food borne diseases is quite substantial. Expressed in monetary terms, the costs of human illness, value of lives shortened through death, loss of productivity, pressure on medical care and public health systems, recalls and destruction of foods, loss of sales and legal settlements that could be a billion-dollar expenditure (Farber *et al.*, 2000).

The United States of America's Center for Disease Control and Prevention (CDC) data reports about 48 million cases of foodborne illness every year. The most common ones include;

Listeriosis: this causes meningitis or encephalitis, severe sepsis, which sometimes resulting in lifelong disability and even death.

Salmonellosis: an asymptomatic infection caused by *Salmonella*, a type of bacteria. The most common symptoms are vomiting, diarrhea, abdominal cramps and fever,

Botulism: a serious disease caused by the toxin *botulinum*. Symptoms and signs include nausea, vomiting, and diarrhea. Victims may be weak and have difficulty in breathing.

E. coli (Escherichia coli): this bacteria can cause intestinal infection. Symptoms of intestinal infection due to *E. coli* include abdominal cramping, fever and fatigue. Most of these are caused by contaminated water or food.

2.3 Prerequisite Programs

Prerequisite Programs (PRPs) provide basic operating and environmental conditions required for safe food production, providing the foundation for HACCP. They include practices needed prior to and during implementation of the HACCP plan that are essential for food safety by describing Procedures to prevent the hazards (Baş *et al.*, 2006).

2.3.1 Good Manufacturing Practices (GMPs)

GMPs give details on specific procedures that must be followed to ensure that products or services are consistently produced and controlled according to quality standards. The steps required by a company to assure that the GMPs are met are termed Standard operating procedures (SOPs). They include procedures of processes, employee training programs, monitoring and evaluation methods, and records used by a facility (Farber *et al.*, 2000).

2.3.2 Employee Personal Hygiene and Practices

Good Manufacturing Practices (GMPs) which embody employee hygiene and practices are critical in producing wholesome and safe foods. These are codified documents given to newly employed staff and re-presented to all employees regularly (Thomas, 2007). Personal hygiene as a food safety regulation in hotels does not only control hand washing but also the covering of hair and cuts on the body, wearing appropriate regalia to work, and covering the mouth and nose

when sneezing or coughing and then washing the hands again. Food handlers in a hotel setting who touch food items or items that will touch the food are required to wash their hands after using the rest room. This is important to avoid potential cross contamination, as they may be carriers of certain hazards after handling raw materials (Rane, 2011).

2.3.3 Cleaning Systems

Cleaning implies the removal of undesirable foreign substance from a solid surface. The aim of a proper cleaning procedure may be to produce (i) a physically clean surface, that is, the absence of an optically detectable or physically measurable deposits (ii) a chemically clean surface, that is, the absence of analytically detectable foreign chemical material; or (iii) a biologically clean surface, that is, the absence of any surviving microorganisms. It is a precondition for the production of hygienically satisfactory and high quality foods (Eves and Dirvisi, 2005).

2.3.4 Employee Training / Education

Provision of a regular employee Training / Education must be implemented to provide food safety and regulatory compliance benefits to the facility (Darko Sophia, 2016). It should be done for new employee(s) and replicated to all employee(s) regularly. Reports of the training/presentation should be signed by the employee and kept on file (Ehiri and Morris, 1996).

2.3.5. Facility Condition and Temperature

The set point and controls of processing and storage areas in a facility are important for control of bacteria growth on equipment and product. The growth of bacteria with sources of food is a time and temperature relationship. The longer the time the product is held at optimum bacteria growth temperature the shorter the shelf life and greater potential for pathogenic (food poisoning) bacteria. Items used in preparing food as well as food areas such as tables, stoves, knives, ovens, utensils, in food service industries must be cleaned and disinfected as they add to the good food safety standards to prevent bacteria growth that can cause food poisoning.

2.3.6 Pest Control

Food pests such as flies, cockroaches, and rodents that cause contamination or destruction to food are prevented access into the facility. Internal pest control mechanisms as well as third party services can be employed regularly to help prevent potential cross contamination problems and keep the clients of the hotel safe.

2.3.7 Preparation of Food

Cooks in hotels must adhere to the appropriate protocols of preparing meals in order for food safety to be at high standards. Expired foods or any foods that touch dirty surface are required to be disposed of. Food is required to be cooked thoroughly unless otherwise directed by the client. Adherence to all personal hygiene protocols prevents the introduction of bacteria, viruses and molds and other microorganisms such as *Salmonella typhi*, non-typhi salmonellae,

Campylobacter and Escherichia coli that can survive on fingertips and other surfaces to contaminate food (WHO, 1999).

2.3.8 Inspection

To maintain and ensure that proper food safety procedures or protocols are being observed, it is imperative that state inspection agencies make regular visits to restaurants and other food service facilities.

2.3.9 Document Control

There needs to be a policy that identifies and explains the record keeping and retention of records relevant to the control of the process or evaluation of food safety, food quality and food defense in the facility.

2.4 Hygienic Practices for Food Handlers in the Hotel Industry

There is an emphasis for an established protocol to ensure that employees adhere to and understand hygienic practices (Mariott and Gravani, 2006). There should be provision of amenities for upkeep of hygiene by providing healthful dressing rooms and wellbeing facilities. Management need to ensure that employees have gone through physical examination to ensure good physical, mental, and emotional health. Food handlers having skin disease or infections need to be identified, quarantine and treated before they handle food to avoid any contamination. Foskett and Ceserani (2007) also added that food handlers suffering from any form of illness need to report to the employer for the necessary action to be taken to protect food from the employee's illness or disease. During work-shift, proper hand washing and sanitizing need to be

adhere to especially after using the toilet, handling garbage or other soiled materials, egg products, or dairy products. Also, hands must be washed thoroughly before handling food after handling money, smoking, coughing or sneezing. Food handlers who violate the established food safety practices need to be query thereby ensuring high standard sanitary practices (D.O.H. 2010).

Most food borne illnesses comes about as a result of not handling the food in a hygienic manner. For instance, not handling food in the proper way resulting in illnesses after consumption makes up 97 % of all food borne illnesses as this is mostly found in the catering industries with Africa contributing 90 % of cholera cases globally (Addo *et al.*, 2007) with Kumasi in the Ashanti Region being the most affected (Ababio and Adi 2012).

CHAPTER 3

3.0 RESEARCH METHODS

3.1 Research Design

To attain the purpose of this study, the researcher utilized cross -sectional descriptive survey design. Likert-style rating scale was employed using five-point rating to indicate the frequency of activity in respondent's view to the questions. Their responses were coded as follows: Always was assigned (1) – daily or usually was assigned (2) – weekly or sometimes was assigned (3) – monthly or rarely was assigned (4) - yearly, and never was assigned (5) – not at all. In other responses, respondents indicate the degree of agreement they consider to the questions as follows: Strongly agree was assigned (1), agree was assigned (2), neutral was assigned (3), disagree was assigned (4) and strongly disagree was assigned (5). A descriptive design was used because it allowed for accurate definition of activities, objects, processes, and persons. Descriptive survey design derived from collection of data from a group of members and individuals related with educational process. The design allows the researcher to manipulate variables (Ary *et al.*, 2018).

3.2 Profile of the Study Area

The study was done in Accra. It is the largest city in Ghana with a population of almost two million people (Takyi, 2016). Ga-West Municipal Assembly, according to the 2010 Population and Housing Census, is about 219,788 with relatively more females (51.0 %) than males (49.0%). Accra can boast of popular hotels that include La Palm Royale Beach Hotel, Oak Plaza, Airport View Hotel, Mesvic Hotel, Sunlodge hotel, Crystal Palm Hotel, Fiesta Royale, Golden Tulip Hotel and Holiday Inn. These accommodation facilities (hotels) help to receive guests in a

harmonious manner and this adds to better experience of visitors hence prompting the tourism and hospitality industry (Doswell, 2009). The hotels have restaurants that provide meals to the high number of workers and visitors who take their lunch and dinner in town. Hotel rating is based on a scale of 1-5 stars, Five-star hotel (luxury), four-star hotel (first class), three-star hotel (middle class) -two-star hotel (economy), one-star hotel (budget, tourist) (Fittkau and Jockwer, 2008).

3.3 Target Population

This study targeted ten (10) hotels in Ga-West municipality in Greater Accra Region of Ghana. The population of the study included all Food and Beverage managers and supervisors in charge of food preparation of the related ten hotels in the Ga-West municipality. Cooks, waiters (who double as cooks in budget hotels), direct kitchen staff and chefs were targeted because they oversee the daily activities of food preparation in providing safe food.

3.4 Data and source of Information

The study used responses from the questionnaires and observational guide as its source of primary data. The primary source of data was generated with the help of questionnaire and observational guide in a field survey from the chefs, waiters (who double as cooks in budget hotels) and cooks in the selected hotels. Secondary source of information was obtained from articles, books, and journals.

3.5 Sampling Techniques and Procedures

The purposive sampling procedure was used in the selection of chefs and head cooks which included both men and women. This technique was used since the researcher wanted respondents who can best fit into the study and since the food handlers have knowledge in the research area and were responsible for the actions of the other workers in the kitchen.

3.6 Sample Size

A total of 10 hotel restaurants that were conveniently available and within the central business district in the municipality were used in the research (Otchere *et al.*, 2015). One hundred and sixty (160) questionnaires were administered to chefs, waiters (who double as cooks in budget hotels) and cooks in the various hotels in the study area. Out of this number, 150 answered questionnaires were valid for statistical analysis, recording a 93.75 % response rate.

3.7 Research Instruments

Questionnaire and the observational guide were the two categories of research instruments used in this study (Appendix I and III). The questionnaire comprised of both closed and open-ended questions (Albrechtsen and Hovden, 2010). The questions provided an efficient means by which statically quantified information could be collected. The researcher developed the questions in the instruments as guided by the research questions and a review of the Prerequisite Programs discussed in the literature review.

3.8 Data Collection Procedure

Questionnaires designed in English language were administered to all chefs, waiters (who double as cooks in budget hotels) and cooks in the selected hotels after the consent of management of the hotels has been sought (Boella *et al.*, 2013). The content was explained to all respondents in order for them to gain a fair idea of what the research was. After that, they were all given the needed time to answer the questions by themselves.

3.9 Data Processing and Analysis

The data collected was edited to check for non-responses and edit errors (Blaikie, 2003). Coding was done to assign values to responses and these were keyed into statistical IBM Package for Social Sciences (SPSS version 23.0, 2015). This was considered based on the convenience and appropriateness of the technique's suitability for analysis. The outcome was presented in the form of tables, graphs and charts. A key part of this research was the demographic information provided by respondents from whom the primary data was collected for this analysis. Socio-demographic information requested for the purposes of the study included their age, gender, educational levels, and marital status. The study again sought information regarding their knowledge, practices and attitudes towards food safety in their facilities.

3.10 Limitation of the Study

The study was limited to hotels in the Ga-West municipality in Greater Accra and its findings might not solely clarify the good hygiene practices of hotels in other regions. The research could not capture more than half of the hotels in the Ga-West municipality. It was conducted only on a small size of population (150 respondents) who got time to answer the questionnaires.

3.11 Ethical Consideration

Ethical clearance and consent was first obtained from top management of these hotels. Respondents also agreed to participate after the purpose of the research it was explained to them. The respondents were assured of anonymity and confidentiality of their responses. Therefore data such as names of the respondents were not collected or recorded. This was done to reduce non- response and to ensure that the respondents provided reliable data.

3.12. Conceptual Framework

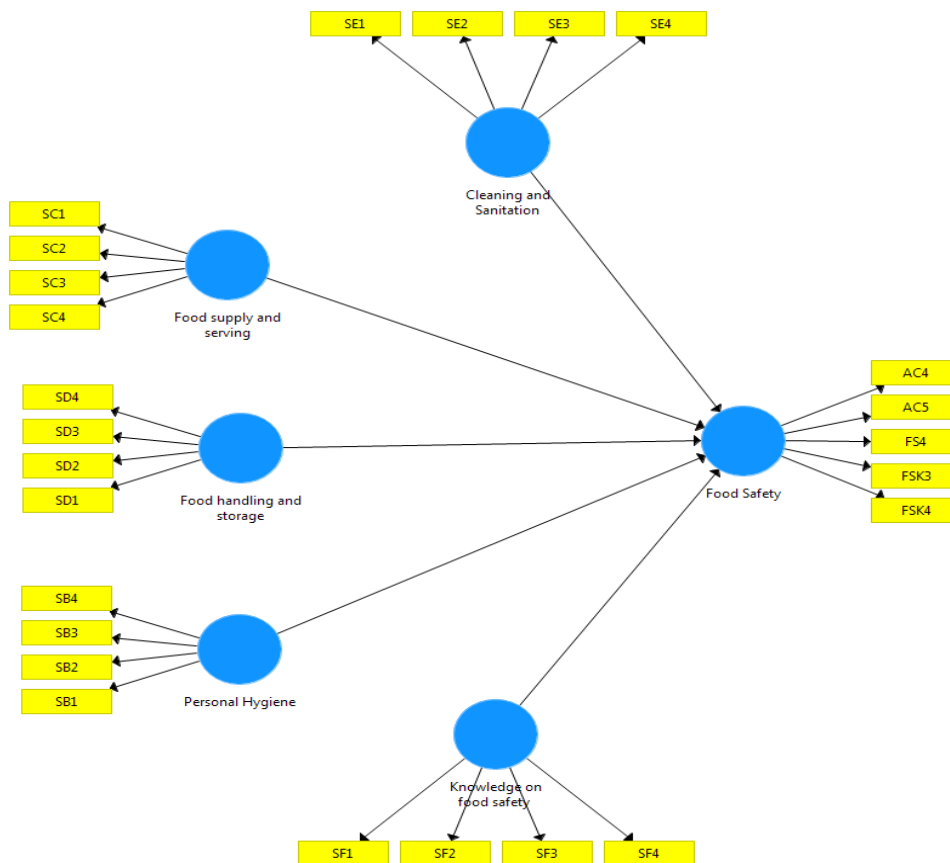


Figure 1: Adopted Design of Conceptual Framework (Porter *et al.*, 1988).

The study considered Personal Hygiene, handlers' knowledge of food safety, food handling and storage, food supply and serving as well as cleaning and sanitation as factors affecting food safety in selected hotels in study area as described by Porter *et al.* (1988).

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Socio-Demographic Characteristics of Respondents

The findings of the study revealed the dominance of men in the areas of food preparation in the hotels (Table 4.1 and 4.2). This compares favorably with the research findings of Habiballah *et al.* (2017) that women, who generally prepared food, do not form the highest number in restaurant operations. Contrary to the domestic setting (as per indigenous culture) where more women are cooks, the main cooks/chefs in Ghanaian hotels as indicated in this study, were mostly men with women being assistants.

The study also showed that a greater number of participants (70 %) were under thirty years of age, categorized as the active working class. This was in agreement with works by Annor and Baiden (2011) in some hotels in Accra also showed majority of participants were under the age of thirty. It is an age workers are young, and are able to withstand the pressures of the food handling departments.

Over (66 %) of respondents had either secondary or tertiary educations. This is in contrast with the study of Addo *et al.* (2014) who revealed that most food preparers in hotels in Accra had barely any formal education. The finding from the study agrees with Tonder *et al.* (2007) who indicated that 54 % of food handlers had some basic education in South Africa. The reason might be that many institutions in the country, such as polytechnics, vocational schools and some universities offer catering courses for the hospitality industry thus, the increase in number of professionally skilled food handlers with numerous categories of certificates employed in hotels. This might have contributed to their awareness and high knowledge of food poisoning, which is key in preventing food borne illness in the hospitality industry.

In respect of the duration (years) that respondents have been engaged at the facility, 40.7 % of respondents had been working for the past 5 years. 32.7 % and 24 % of respondents were engaged within the past 10 years and 15 years respectively, while only 2.7 % of respondents had spent over 15 years in their respective hotels.

WHO/FAO (2010) recommends continuous education and transfer of knowledge in food safety and hygiene to food managers and handlers as a means to improve food handling practices and food safety.

Regarding the various positions respondents occupy in their respective hotels, 19.3 % were supervisors, the majority (40.7 %) were cooks, 33.3 % were waiters and 5.7 % assisted in various roles within the food handling section of their hotels.

On the score of marital status of respondents, the majority of them were single (44 %), married couples were 28 %. Divorced and separated couples were 16.7 % and 11.3 % respectively.

Table 4.1.1: Socio-Demographics of Respondents (N=150)

Variable	Category	Frequency	Percentage (%)
Gender	Male	81	54
	Female	69	46
Age	Between 18 – 25	51	34
	Between 26 – 35	55	36.7
	Between 36 – 45	24	22.7
	Above 45	10	6.7
Educational Level	Illiterate	10	6.7
	Primary	30	20
	Secondary	75	50
	Tertiary	25	16.7
Duration of employment (years)	Below 5	61	40.7
	Between 5 – 10	49	32.7
	Between 10 – 15	36	24
	Above 15	4	2.7
Marital Status	Married	42	28
	Single	66	44
	Divorced	25	16.7
	Separated	17	11.3
Position at work	Supervisor	29	19.3
	Cook	61	40.7
	Waiter	50	33.3
	Other	10	5.7

4.2.1 Personal Hygiene

Results as indicated in Table 4.3 show that, in the frequency of washing of hands under personal hygiene, for example Eighteen percent (18 %) always practiced it, forty three (43 %) usually did it, twenty one (21 %) sometimes did, sixteen (16 %) rarely, whilst less than two (< 2 %) never washed their hands before handling food. Nonetheless, on a general score of respondents attitude towards personal hygiene as indicated in Appendix II recorded a MODE of 2 (usually) and a MEAN of 2.42, signifying that majority usually wash their hands before handling food. This supports Addo *et al.*, (2014) who indicated the need to always wash their hands after visiting the toilet to minimize the risk of transmitting disease. WHO (2007) also indicated that the number of food-related illnesses and death could reduce drastically if proper food handling techniques and hand washing practices are used frequently.

Table 4.2.1: Frequency of Hand washing by Respondents (N=150)

Hand Washing Practice	Frequency	Percent	Cumulative Percent
Always	27	18.0	18.0
Usually	64	42.7	60.7
Sometimes	32	21.3	82.0
Rarely	24	16.0	91.3
Never	3	0.02	100.0

4.2.2 Food Supply and Storage

Separating raw and cooked foods is important in minimizing food contamination. The results in Table 4.4 indicated that, respondents did not demonstrate positive attitude in the area of separating foods in their raw state from cooked foods. Twenty four percent (24 %) always separated raw and cooked foods, twenty eight (28 %) usually did so, nine (9 %) sometimes did it, forty three (43 %) rarely did so, less than five (< 5 %) never separated foods in raw state from cooked foods. On a general score of respondents attitude towards food supply and storage, as illustrated in Table 4.2, recorded a MODE of 3 (rarely) and a MEAN of 2.61 (Appendix II), signifying that respondents attitude with regards to these variables were more likely to allow for potential cross-contamination actions to negatively affect food hygiene and safety practices. The results of the present study agrees with the findings of Donkor *et al.* (2009) who also reported that (27 %) of food handlers always store raw and cooked food separately, 23 % of them usually store raw and cooked foods separately, while the rest (49 %) rarely practice this activity.

Table 4.2.2 Frequency of Raw Foods Storage away from Cooked Foods (N=150)

Storage of raw foods away from cooked foods	Frequency	Percent	Cumulative Percent
Always	37	24.7	24.7
Usually	28	18.7	43.3
Sometimes	13	8.7	86.0
Rarely	64	42.7	94.7
Never	8	5.3	100.0

4.2.3 Food handling and Service

Results from Table 4.5 indicated that respondents had a negative attitude towards washing and sanitizing fresh vegetables and fruits with vinegar before use. Nine percent (9 %) always engaged in the act, five (5 %) usually did, thirteen (13 %) sometimes did, sixty seven (67 %) rarely did it, whilst five (5 %) never sanitized fresh vegetables and fruits with vinegar before use. Water was what they used in cleaning. On a general score of respondents' attitude towards food handling and serving had a MODE of 3 (rarely) and a MEAN of 2.91 (Appendix II), signifying that respondents' attitude has the potential to increase the risk of contamination in food. A review by Redmond and Griffith (2003) underscored that unsafe food-handling practices still persists during the food preparation, thus increasing the risk of illness as a result of food poisoning. The results reaffirm a suggestion by Gibson *et al.* (2009) on the enforcement by Food and drugs Authority, District assemblies and the Environmental Protection agency to protect the health of consumers in the service of wholesome food to the public.

Table 4.2.3: Fresh Vegetables and Fruits Pretreatment before Use by Respondents (N=150)

Fresh Vegetables and Fruits Pretreatment	Frequency	Percent	Cumulative Percent
Always	13	8.7	8.7
Usually	8	5.3	14.0
Sometimes	20	13.3	17.3
Rarely	101	67.4	84.7
Never	8	5.3	100.0

4.2.4 Cleaning and Sanitation

In this study, results showed in Table 4.6 indicate that there was a positive attitude towards cleaning and sanitation of work area and cooking utensils. Forty five percent (45 %) always cleaned and sanitized work areas and cooking utensils, 29 % usually did, 26 % sometimes engaged in cleaning and sanitation of work areas and cooking utensils. On a general score of respondents' attitude towards cleaning and sanitation a MODE of 1 (always) and a MEAN of 1.80 (Appendix II), signifying that respondents' attitude has the potential to reduce the risk of contamination in food. It was found that (65 %) of respondents believed it was not essential to clean and disinfect surfaces of cutting boards between cooking different foods. The same cutting board was used for preparing raw and cooked food without adequately cleansing the cutting boards. These behaviors can introduce pathogens such as *Salmonella* spp., *Listeria* spp, and *E-coli* O157:H7 which has the potential to food contamination (Redmond and Griffith 2003).

Table 4.2.4: Cleaning and Sanitation of Work Area and Equipment by Respondents (N=150)

Cleaning and Sanitation of Work Area and Equipment	Frequency	Percent	Cumulative Percent
Always	68	45.3	45.3
Usually	43	28.7	74.0
Sometimes	39	26.0	100.0

4.2.5 Knowledge of food safety and hygiene

The results in table 4.7 of the study showed that respondents recorded high scores regarding their knowledge of food poisoning and its effect on food safety. Twenty one percent (21 %) strongly

agreed that contaminated food can be deadly, (77 %) agreed to that statement, (3 %) stayed neutral, with statements on the causes and effects of food poisoning. On a general score of respondents' attitude towards cleaning and sanitation a MODE of 1 (always) and a MEAN of 1.72 (Appendix II), signifying that participants had fair knowledgeable of food hygiene, safety and sanitation practices as recommended by the Codex Alimentarius Commission (2012). The reason for the outcome has been due to the high number of respondents' record with secondary and tertiary education. Similar findings with Mauritius consumers reported 65 % of food handlers had satisfactory knowledge on food safety and hygienic practices (Gunsam and Mohamed, 2012).

Table 4.2.5 Knowledge of Food Poisoning and Disinfections by Respondents (N=150)

Knowledge of Food Poisoning and Disinfections	Frequency	Percent	Cumulative Percent
Strongly agree	31	20.7	20.7
Agree	115	76.7	97.4
Neutral	4	2.6	100.0

4.3 Influence of Gender and Educational Level on Food Hygiene and Safety Practices

In the case of gender, as indicated in Table 4.8, the study could not find statically significant differences with regards to their food safety practices, behaviors and attitudes between men and women as indicated in their Mean values and Standard Deviation values. This finding is similar to a study conducted on consumer food safety knowledge and practices in Turkey by Pugo (2012) who found no statistical significance of demographic profile on food handling practices.

It however contrasts studies by Julie (2012) who found that women are more risk cautious when it comes to safety of food than men because women are brought up to be nurturers and mothers (Redmond and Griffith, 2003). Again, studies by Jussaume and Higgins (1998) found females to be more knowledgeable in food safety or reported food handling practices than men.

Table 4.3.1: Gender Influence on Food Safety by Respondents (N=150)

Gender		Personal hygiene	Food Supply and Storage	Cleaning and sanitation	Handling of food and serving	Knowledge of food safety
Male	Mean	2.4543	2.4074	2.5802	1.8037	1.9901
	N	81.0000	81.0000	81.0000	81.0000	81.0000
	Std. Deviation	1.0601	1.1569	0.9779	0.8580	0.8830
	Median	2.0000	2.6000	3.0000	1.8000	2.0000
Female	Mean	2.3797	2.4464	2.5039	1.7014	1.8899
	N	69.0000	69.0000	69.0000	69.0000	69.0000
	Std. Deviation	1.09775	1.1215	0.8769	0.7983	0.8755
	Median	2.0000	2.6000	2.8571	1.8000	1.8000

Table 4.9 illustrates that respondents with higher educational levels (tertiary and secondary) had higher scores (MEAN scores less than 2) with regards to issues of food safety than those with lower education and had corresponding attitudes and behaviors as indicated in their respective MEAN values. The results for this present study agreed with that of Williamson (1992), who

reported that lower educated consumers were less interested in issues of food safety than other consumers in the general question that food could be unsafe to health. However, the obtained results disagreed with studies by Patil *et al.* (2005) who reported that, with regards to preventing cross-contamination and proper cooking and heating, consumers with lower education were safer food handlers than consumers with a higher educational background. This calls for a review in the recruitment process of food handlers into these facilities to target job seekers with a minimum of secondary educational backgrounds.

Table 4.3.2 Educational Background Influence on Food safety by Respondents (N=150)

Education		Personal hygiene	Food Supply and Storage	Cleaning and sanitation	Handling of food and serving	Knowledge of food safety
Primary	Mean	2.1225	2.2200	1.9679	1.8550	2.8900
	N	80.0000	80.0000	80.0000	80.0000	80.0000
	Std. Deviation	0.8357	1.1750	0.9339	0.7558	0.7007
	Median	2.0000	2.2000	2.7143	1.8000	2.0000
Secondary	Mean	1.7689	1.9756	1.6825	1.7111	1.6844
	N	45.0000	45.0000	45.0000	45.0000	45.0000
	Std. Deviation	1.2726	1.0388	0.7804	0.8568	0.6330
	Median	2.6000	2.4000	3.0000	1.4000	1.6000
Tertiary	Mean	1.4440	1.9920	1.7771	1.8480	1.5840
	N	25.0000	25.0000	25.0000	25.0000	25.0000

4.4 Summary of Findings on the Observational Guide

The study found satisfactory conditions of kitchen floors, walls and ceilings in all the hotel restaurants (Details provided in Appendix IV). All floors were concreted and were tidy at time of visit.

There were appropriate ventilation and lighting in the kitchens of (50 %) of facilities visited. All these were the “Four” and “Three” star hotels. The “Two” star and Budget hotel kitchens did not have extractors and some of the sections of the kitchen were dark at the time of visit.

In respect of insect and vermin protection, only the “Four” star hotels had insectocuters that trap and kill insects. The “Four” and “Three” star hotels had a Pest Control System in place. They used checklists for self-inspection, adhered to Standard Operating Procedures as well as methods to prevent pest contamination in their kitchen. However, the study could not find same in the “Two” star and Budget hotels visited. One “Two” star hotel and the two Budget hotels visited (30 %) did not have nylon meshes on their trap doors to prevent insects from entering the facility.

The study did not find any documented plans of hazard analysis of the facilities visited. Water supply to (80 %) of the facilities visited was adequate. Fifty percent (50 %) of the facilities received water was from the municipal source. The rest had their own mechanized dug wells.

All staff in the First and Middle class hotels were in recommended dress code at the time of visit. This was not so in the economy and budget hotels where most food handlers were not in aprons, head gears and appropriate foot wears. There were not any recorded or filed certificates of food handlers in and 70 % of the facilities visited. All facilities used third party waste collectors to

dispose of their refuse. They all had appropriate receptacles for refuse. All cleaning and sanitation chemicals were separated from food areas.

In the area of storage and refrigeration, all facilities had fridges that had deep freezers to store meat and other frozen items, but 60 % of them stored both perishable and non-perishable foods together.

With the exception of the four star hotels, all lower ranked hotels did not have a documented food safety plan in place nor use a team approach in addressing their food safety concerns nor use a team approach in addressing their food safety concerns. This reflects the availability of technical expertise and resources to develop HACCP plans in contrast to the lower ranked facilities.

CHAPTER FIVE

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

Food safety problems may arise at any stage from food production to consumption. Generally, it was observed that respondents attitudes and behaviors of food-handlers in Ghanaian hotels in the areas knowledge of food safety, cleaning and sanitation procedures, and food and personal hygiene were satisfactory, which are cardinal points of the international codes of practice by the Codex Alimentations Commission. However, the study found negative attitudes of respondents in areas of food handling and serving as well as food supply and storage, which can endanger the health of the people who patronize these facilities. The study could not find obvious differences between men and women with regards to their food safety practices, behaviors and attitudes. However, respondents with higher education were more knowledgeable on issues of food safety and hygiene than those with lower educational background. It is important for these facilities to continuously educate and training food handling personnel on food safety, targeting particularly handlers with lower levels of education, to complement other interventions that promote safer food handling to safeguard public health and safety.

5.2 Recommendations

This study proposes the following recommendations based on its findings using best practices in some competitor hotels in the country.

To Hotel Management:

- ❖ Food managers as well as handlers need to be trained to ensure food safety at all times (as proposed in Appendix V), and monitored on proper procedures in food safety because food safety possible processes and procedures that cause foodborne disease are very significant for all food service industries.
- ❖ Adequate hand washing facilities and toilets with soap, fitted with cold and hot running water as well as hygienic drying facilities for staff should be provided at the premises. This should be separated from food preparation areas.
- ❖ The design of all food preparation areas must allow for good food hygiene practices and processes. This applies to doors, floors, ceilings, walls and windows that should be maintained in a good condition. Adequate lighting and appropriate ventilation in kitchens and toilets is necessary to control temperatures, humidity, odors and condensation in the facility.
- ❖ All equipment for food must conform to the appropriate materials for their intended use and should be easily cleanable and kept in acceptable conditions.
- ❖ Potable water for all food preparation activities should be sufficiently available at all times.
- ❖ Appropriate working regalia should be made available to all food handling staff and be worn at all food handling areas to keep good personal hygiene.

- ❖ It is important to follow the guidelines for the control of temperature at each stage as well as defrosting protocols has be strictly adhered to, as they have risks of bacterial growth and development of toxins.
- ❖ Pest control protocols should be visible in all budget hotels to prevent pests from contaminating food. Their waste disposal procedures must also conform to approved hygiene and environmental regulations.

To Government and other Regulatory Agencies:

- ❖ The inspectorate department of the Ministry of Tourism as well as Ga-West Municipal Assembly and the Food and Drugs Authority should endeavor to undertake routine inspections and enforcement activities in these hospitality establishments to ensure that hotel staff complies with proper food safety standards and procedures and defaulters face appropriate sanctions.

This study offers opportunities for further research to establish a set of food safety questionnaires as a comprehensive standard against which future food safety interventions could be measured, and extend the research to other regions of Ghana.

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APPENDICES

Appendix I: Questionnaires for Hotels Personnel in Charge of Food Service

RESPONDENT QUESTIONNAIRE FORM			
Dear Respondent,			
I am a student of Kwame Nkrumah University of Science and Technology - Institute of Distance Learning. This questionnaire is to solicit information for a research on "prerequisites programs for food safety among hotels in Accra" in partial fulfillment of the requirements for the award of an MSc degree in the above named institution. Kindly note that all the information you provide will be treated in the strictest confidence and will only be accessible by academic researchers who are involved in this study.			
Thank you for your help			
Adwoa Yeboah			
Contact: (+233-20-9776-627)			
Please tick (✓) or provide appropriate answers where applicable			
SECTION A. DEMOGRAPHICS - GENERAL INFORMATION			
Gender			
<input type="radio"/> Male	<input type="radio"/> Female		
In which age bracket are you?			
<input type="radio"/> 18- 25 years old	<input type="radio"/> 26-35 years old	<input type="radio"/> 36-45 years old	<input type="radio"/> Above 45 years
How long have you been employed?			
<input type="radio"/> 1- 5 years	<input type="radio"/> 6- 10 years	<input type="radio"/> 11- 15 years	<input type="radio"/> more than 15 years
Current Position at work?			
<input type="radio"/> Supervisor	<input type="radio"/> Cook	<input type="radio"/> Chef	<input type="radio"/> other

What is your marital status?

☐ Married
 ☐ Separated
 ☐ Single
 ☐ Divorced
 ☐

What is the highest educational level you have achieved?

☐ Illiterate
 ☐ Primary
 ☐ Secondary
 ☐ Tertiary
 ☐ Other (Please specify)

SECTION B: PERSONAL HYGIENE

Personal Hygiene	Always	Usually	Sometimes	Rarely	Never
How often do you fall sick under this self-health condition (fever, diarrhea, injury)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How clean would you consider your clothes, hair restraints and shoes before work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you wash hands before handling food?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you cover your hair and keep your fingernails clean and free from nail varnish when preparing food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you cover cuts and abrasions on the body by suitable waterproof dressing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION C: FOOD SUPPLY AND STORAGE

Food Supply and Storage	Always	Usually	Sometimes	Rarely	Never
How often do you check temperatures of the frozen/refrigerated foods?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you separate raw meat, fsh or poultry from ready-to-eat foods to avoid cross-contamination?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you cover food in closed containers?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How many times do you take temperature of the foods in cooking/reheating process with thermometer?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you store raw foods and cooked foods separately in refrigerators and freezers?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SECTION D: HANDLING OF FOOD AND SERVING					
Handling of food and serving	Always	Usual y	Sometime s	Rarely	Never
How do you thaw food?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How frequent do you reheat cooked foods thoroughly before eating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How frequent do you wash and sanitize fresh vegetables and fruits with vinegar before use?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you handle RTE foods with bare hands?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you hold foods or utensils on the kitchen floor unit?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Labeling foods with use-by date in storing the ready to eat (RTE) foods and processed food?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you use separate equipment and supplies of the raw food and RTE food?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SECTION E: CLEANING AND SANITATION					
Cleaning and sanitation	Always	Usual y	Sometime s	Rarely	Never
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you screen all windows and vents to control pest, and verify if there are gaps and cracks in walls and ceilings?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you clean and sanitize knives, cutting boards and wiping clothes?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are you using the appropriate chemicals- (cleaners or sanitizer) and are instructions followed to ensure effective cleaning?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How frequent do you clean?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION F: KNOWLEDGE OF FOOD SAFETY AND HYGIENE

Knowledge of food safety	strongly agree	agree	neutral	disagree	strongly disagree
Same equipment or working surfaces for raw and cooked ready to eat foods must not use without thoroughly cleaning and disinfecting them first.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For as long as food tastes, smells and looks okay, it is safe to eat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Defrost frozen food in the refrigerator or other cool place before further use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Some plastic containers release toxic chemicals upon heating and should not be used in the microwave to heat food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Common symptom of food poisoning is diarrhea and vomiting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kitchen areas and food should be protected from insects, pests and other animals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food should be purchased from sources free from filth or any other potential sources of contamination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix II: Mean, Standard Deviation and Mode of PRP Parameters

	N	Minimum	Maximum	Mean	Std. Deviation	Mode
PERSONAL HYGIENE						
Sickness	150	1.00	5.00	1.4733	.95360	1
Cleanliness	150	1.00	5.00	1.5200	1.02793	1
Hand washing	150	1.00	5.00	1.6800	1.15113	2
Hair/finger covering	150	1.00	5.00	1.8600	1.16596	2
Cuts covering	150	1.00	5.00	1.7667	1.09555	2
				1.642		
FOOD SUPPLY AND STORAGE						
Temp check	150	1.00	5.00	2.5200	1.20803	3
Separate foods	150	1.00	5.00	2.8067	1.06151	2
Cover food	150	1.00	5.00	2.7200	1.16504	1
Record temp	150	1.00	5.00	2.5067	1.15129	3
Store differently	150	1.00	5.00	2.5133	1.11570	3
				2.61		
HANDLING OF FOOD AND SERVING						
Food thawing	150	1.00	5.00	2.7200	1.04477	3
Reheating	150	1.00	5.00	2.8933	.90596	3
Wash vegetables/fruits	150	1.00	5.00	2.8867	.86340	3
Handle RTE foods	150	1.00	5.00	2.5400	.78261	3
Holding food on floors	150	1.00	4.00	2.8667	.90980	3
Labeling foods	150	1.00	4.00	3.5400	1.13888	3
Equipment separation	150	1.00	4.00	2.9133	.89132	3
				2.91		
CLEANING AND SANITATION						
Labeling chemicals	150	1.00	3.00	1.6533	.81089	1
Window screening	150	1.00	3.00	1.8800	.81858	1
Sanitize utensils	150	1.00	4.00	1.8333	.86247	1
Follow chemical instructions	150	1.00	4.00	1.8800	.85859	1
				1.80		

KNOWLEDGE OF FOOD SAFETY AND HYGIENE						
Same equipment or working surfaces for raw and cooked ready to eat foods must not use without thoroughly cleaning and disinfecting them first.	150	1.00	3.00	1.8067	.82492	1
When food looks, tastes or smells okay, it is safe to eat	150	1.00	4.00	1.8467	.87268	1
Defrost frozen food in the refrigerator or other cool place before further use.	150	1.00	4.00	1.8267	.86503	1
Some plastic containers release toxic chemicals upon heating and should not be used in the microwave to heat food	150	1.00	3.00	1.7533	.48240	2
Common symptom of food poisoning is diarrhea and vomiting	150	1.00	5.00	1.2867	1.00560	1
Kitchen areas and food should be protected from insects, pests and other animals	150	1.00	4.00	1.8267	.86503	1
				1.72		

Appendix III: Observational Guide

Floors, and walls and ceilings	YES	NO
Is the floor clean at time of visit?		
Is the wall free from visible dust, soot, dirt or spider web?		
Is the wall free from holes and cracks?		
Does the kitchen space serve for other additional purpose?		
Lighting and ventilation	Yes	No
Is the kitchen provided with adequate lighting systems?		
Is the kitchen provided with adequate ventilation systems?		
Insect and vermin protection	Yes	No
Is any infestation of kitchen observed at time of visiting?		
Any evidence of animal droppings e.g. mouse		
Are all your windows netted with nylon meshes		
Are all entrances to food areas closed at all times		
Sanitation of equipment & utensils and food handlers	Yes	No
Are food handler clothing clean?		
Do all food handlers wear appropriate clothes?		
Do food handlers have discharges from nose and eye and cough during visit?		
Are food handlers' nails short trimmed and clean?		
Do handlers wear any type of jewelry at time of visit?		
Is any kind of visible skin rash, boil, cut and wound observed at time of visit?		
Are utensils and equipment stored in containers or on shelves under conditions which prevent contaminations?		
Are the equipment kept clean and free from visible dirt and filth?		
Are equipment free from cracks?		
Are equipment easily cleanable?		
Is there basin for washing utensils used for food preparation?		
Are there drying racks for sanitized and cleaned utensils?		
Are appropriate refuse receptacles present in the kitchen?		
Are the receptacles properly covered and tight?		
Are the refuse transported to final disposal before over filing?		

Is there a drainage system for collection and handling of liquid waste?		
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?		
Storage and refrigeration	Yes	No
Is a refrigerator available for storage of perishable foods?		
Are highly perishable and non-perishable foods stored together?		
Does the refrigerator have a fixed thermometer reading?		
Is there a separate storage room?		
Is the storage room free from moisture and dust?		
Do stored chemicals come in contact with equipment and/or foods?		
Sanitary facilities and water supply	Yes	No
Is there any tanker for storage of water for shortage time?		
Separation for male and female toilets?		
Is the toilet clean & comfortable to use at time of visit?		
Fly infestation at time of visit?		
Is hand wash basin provided to use after toilet near toilet?		
Is there separate room for clothing, resting and placing of clothes for workers?		

Appendix IV: Observational Criteria Used at the Kitchen of the Selected Hotels

Summary Table of Observational Guide Data Key: (Yes = ●) and (No = ▲)

CRITERIA	SELECTED HOTELS									
	01	02	03	04	05	06	07	08	09	10
Are conditions of kitchen floors, ceilings and walls satisfactory?	●	●	●	●	●	●	●	●	●	●
Is the kitchen provided with adequate lighting and ventilation systems?	●	●	●	▲	▲	▲	▲	▲	▲	▲
Are insect and vermin protection protocols appropriate	●	●	●	●	●	●	●	▲	▲	▲
Are equipment and utensils for food preparation kept clean and fit for purpose	●	●	●	●	●	●	●	●	▲	▲
Do all food handlers wear the appropriate clothes?	●	●	●	●	●	▲	▲	▲	▲	▲
Are appropriate refuse receptacles present and are disposed-off correctly?	●	●	●	●	●	●	●	●	●	●
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	●	●	●	●	●	●	●	●	●	●
Are storage and refrigeration available for the storage of perishable and non-perishable foods separately?	●	●	●	●	▲	▲	▲	▲	▲	▲
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	●	●	●	●	●	●	●	●	●	●
Are the sanitary facilities and water supply appropriate and fit for purpose?	●	●	●	●	●	●	●	●	▲	▲
Are the toilet facilities for men and women separated, clean and comfortable to use?	●	●	●	●	●	●	●	●	●	●
Are there records to show food handlers certificate of kitchen staff?	●	●	●	▲	▲	▲	▲	▲	▲	▲
Is there any food safety program in place?	●	●	▲	▲	▲	▲	▲	▲	▲	▲

1. Observational Criteria Used at the Kitchen of Hotel-01 (4 star)

CRITERIA	SCORE	
	YES	NO
Are conditions of kitchen floors, ceilings and walls satisfactory?	❖	
Is the kitchen provided with adequate lighting and ventilation systems?	❖	
Are insect and vermin protection protocols appropriate	❖	
Are equipment and utensils for food preparation kept clean and fit for purpose	❖	
Do all food handlers wear the appropriate clothes?	❖	
Are appropriate refuse receptacles present and are disposed-off correctly?	❖	
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	❖	
Are storage and refrigeration facilities available for the storage of perishable and non-perishable foods separately?	❖	
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	❖	
Are the sanitary facilities and water supply appropriate and fit for purpose?	❖	
Are the toilet facilities for men and women separated, clean and comfortable to use?	❖	
Are there records to show food handlers certificate of kitchen staff?	❖	
Is there any food safety program in place?	❖	

2. Observational Criteria Used at the Kitchen of Hotel-02 (4 star)

CRITERIA	SCORE	
	YES	NO
Are conditions of kitchen floors, ceilings and walls satisfactory?	❖	
Is the kitchen provided with adequate lighting and ventilation systems?	❖	
Are insect and vermin protection protocols appropriate	❖	
Are equipment and utensils for food preparation kept clean and fit for purpose	❖	
Do all food handlers wear the appropriate clothes?	❖	
Are appropriate refuse receptacles present and are disposed-off correctly?	❖	
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	❖	
Are storage and refrigeration facilities available for the storage of perishable and non-perishable foods separately?	❖	
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	❖	
Are the sanitary facilities and water supply appropriate and fit for purpose?	❖	

Are the toilet facilities for men and women separated, clean and comfortable to use?	❖	
Are there records to show food handlers certificate of kitchen staff?	❖	
Is there any food safety program in place?	❖	

3. Observational Criteria Used at the Kitchen of Hotel-03 (3 star)

CRITERIA	SCORE	
	YES	NO
Are conditions of kitchen floors, ceilings and walls satisfactory?	❖	
Is the kitchen provided with adequate lighting and ventilation systems?	❖	
Are insect and vermin protection protocols appropriate		❖
Are equipment and utensils for food preparation kept clean and fit for purpose	❖	
Do all food handlers wear the appropriate clothes?	❖	
Are appropriate refuse receptacles present and are disposed-off correctly?	❖	
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	❖	
Are storage and refrigeration facilities available for the storage of perishable and non-perishable foods separately?	❖	
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	❖	
Are the sanitary facilities and water supply appropriate and fit for purpose?	❖	
Are the toilet facilities for men and women separated, clean and comfortable to use?	❖	
Are there records to show food handlers certificate of kitchen staff?		❖
Is there any food safety program in place?		❖

4. Observational Criteria Used at the Kitchen of Hotel-04 (3 star)

CRITERIA	SCORE	
	YES	NO
Are conditions of kitchen floors, ceilings and walls satisfactory?	❖	
Is the kitchen provided with adequate lighting and ventilation systems?		❖
Are insect and vermin protection protocols appropriate		❖
Are equipment and utensils for food preparation kept clean and fit for purpose	❖	
Do all food handlers wear the appropriate clothes?	❖	
Are appropriate refuse receptacles present and are disposed-off correctly?	❖	
Are cleaning and sanitizing chemicals labeled and stored at safer place	❖	

away from foods?		
Are storage and refrigeration facilities available for the storage of perishable and non-perishable foods separately?	❖	
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	❖	
Are the sanitary facilities and water supply appropriate and fit for purpose?	❖	
Are the toilet facilities for men and women separated, clean and comfortable to use?	❖	
Are there records to show food handlers certificate of kitchen staff?		❖
Is there any food safety program in place?		❖

5. Observational Criteria Used at the Kitchen of Hotel-05 (3 star)

CRITERIA	SCORE	
	YES	NO
Are conditions of kitchen floors, ceilings and walls satisfactory?	❖	
Is the kitchen provided with adequate lighting and ventilation systems?		❖
Are insect and vermin protection protocols appropriate	❖	
Are equipment and utensils for food preparation kept clean and fit for purpose	❖	
Do all food handlers wear the appropriate clothes?	❖	
Are appropriate refuse receptacles present and are disposed-off correctly?	❖	
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	❖	
Are storage and refrigeration facilities available for the storage of perishable and non-perishable foods separately?		❖
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	❖	
Are the sanitary facilities and water supply appropriate and fit for purpose?	❖	
Are the toilet facilities for men and women separated, clean and comfortable to use?	❖	
Are there records to show food handlers certificate of kitchen staff?	❖	
Is there any food safety program in place?		❖

6. Observational Criteria Used at the Kitchen of Hotel-06 (2 star)

CRITERIA	SCORE	
	YES	NO
Are conditions of kitchen floors, ceilings and walls satisfactory?	❖	
Is the kitchen provided with adequate lighting and ventilation systems?		❖
Are insect and vermin protection protocols appropriate		❖
Are equipment and utensils for food preparation kept clean and fit for purpose	❖	
Do all food handlers wear the appropriate clothes?		❖
Are appropriate refuse receptacles present and are disposed-off correctly?	❖	
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	❖	
Are storage and refrigeration facilities available for the storage of perishable and non-perishable foods separately?		❖
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	❖	
Are the sanitary facilities and water supply appropriate and fit for purpose?	❖	
Are the toilet facilities for men and women separated, clean and comfortable to use?	❖	
Are there records to show food handlers certificate of kitchen staff?		❖
Is there any food safety program in place?		❖

7. Observational criteria used at the Kitchen of Hotel-07 (2 star)

CRITERIA	SCORE	
	YES	NO
Are conditions of kitchen floors, ceilings and walls satisfactory?	❖	
Is the kitchen provided with adequate lighting and ventilation systems?		❖
Are insect and vermin protection protocols appropriate		❖
Are equipment and utensils for food preparation kept clean and fit for purpose	❖	
Do all food handlers wear the appropriate clothes?		❖
Are appropriate refuse receptacles present and are disposed-off correctly?	❖	
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	❖	
Are storage and refrigeration facilities available for the storage of perishable and non-perishable foods separately?		❖
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	❖	
Are the sanitary facilities and water supply appropriate and fit for purpose?	❖	

Are the toilet facilities for men and women separated, clean and comfortable to use?	❖	
Are there records to show food handlers certificate of kitchen staff?		❖
Is there any food safety program in place?		❖

8. Observational Criteria Used at the Kitchen of Hotel-08 (2 star)

CRITERIA	SCORE	
	YES	NO
Are conditions of kitchen floors, ceilings and walls satisfactory?	❖	
Is the kitchen provided with adequate lighting and ventilation systems?		❖
Are insect and vermin protection protocols appropriate		❖
Are equipment and utensils for food preparation kept clean and fit for purpose	❖	
Do all food handlers wear the appropriate clothes?		❖
Are appropriate refuse receptacles present and are disposed-off correctly?	❖	
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	❖	
Are storage and refrigeration facilities available for the storage of perishable and non-perishable foods separately?		❖
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	❖	
Are the sanitary facilities and water supply appropriate and fit for purpose?	❖	
Are the toilet facilities for men and women separated, clean and comfortable to use?	❖	
Are there records to show food handlers certificate of kitchen staff?		❖
Is there any food safety program in place?		❖

9. Observational Criteria Used at the Kitchen of Hotel-09 (Budget)

CRITERIA	SCORE	
	YES	NO
Are conditions of kitchen floors, ceilings and walls satisfactory?	❖	
Is the kitchen provided with adequate lighting and ventilation systems?		❖
Are insect and vermin protection protocols appropriate		❖
Are equipment and utensils for food preparation kept clean and fit for purpose?	❖	
Do all food handlers wear the appropriate clothes?		❖
Are appropriate refuse receptacles present and are disposed-off correctly?	❖	
Are cleaning and sanitizing chemicals labeled and stored at safer place	❖	

away from foods?		
Are storage and refrigeration facilities available for the storage of perishable and non-perishable foods separately?		❖
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?		❖
Are the sanitary facilities and water supply appropriate and fit for purpose?	❖	
Are the toilet facilities for men and women separated, clean and comfortable to use?	❖	
Are there records to show food handlers certificate of kitchen staff?		❖
Is there any food safety program in place?		❖

10. Observational Criteria Used at the Kitchen of Hotel-10 (Budget)

CRITERIA	SCORE	
	YES	NO
Are conditions of kitchen floors, ceilings and walls satisfactory?	❖	
Is the kitchen provided with adequate lighting and ventilation systems?		❖
Are insect and vermin protection protocols appropriate		❖
Are equipment and utensils for food preparation kept clean and fit for purpose	❖	
Do all food handlers wear the appropriate clothes?		❖
Are appropriate refuse receptacles present and are disposed-off correctly?	❖	
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?		❖
Are storage and refrigeration facilities available for the storage of perishable and non-perishable foods separately?		❖
Are cleaning and sanitizing chemicals labeled and stored at safer place away from foods?	❖	
Are the sanitary facilities and water supply appropriate and fit for purpose?	❖	
Are the toilet facilities for men and women separated, clean and comfortable to use?	❖	
Are there records to show food handlers certificate of kitchen staff?		❖
Is there any food safety program in place?		❖

Appendix V: Training Manual for Food Handlers to Ensure Food Safety at all Times

PERSONAL HYGIENE

Hand Washing

All food production and service personnel will follow proper hand washing practices to ensure the safety of food served to customers.

All employees involved in handling food must wash hands using the following steps:

Procedure:

- ❖ Wash hands using soap from a soap dispenser. Lather at least 10 seconds.
- ❖ Wash hands (including under the fingernails) and forearms vigorously and thoroughly with the soap and warm water (water temperature should be at least 100°F) for a period of 20 seconds.
- ❖ Use a sanitary nail brush to remove dirt from under fingernails. Wash between fingers thoroughly.
- ❖ Use only hand sinks designated for that purpose. Do not wash hands in sinks in the production area.
- ❖ Dry hands with single use towels or a mechanical hot dryer. (Retractable cloth towel dispenser systems are not recommended)
- ❖ Turn off faucets using a paper towel in order to prevent recontamination of clean hands if foot pedals are not available.

Hand Washing Should be done at the Following Times:

- ❖ When entering the facility before work begins.
- ❖ Immediately before preparing food or handling equipment.
- ❖ As often as necessary during food preparation.
- ❖ In the restroom after using the toilet and when you return to your work station.

- ❖ When switching between working with raw foods and working with ready-to-eat or cooked foods.
- ❖ After touching face, nose, hair, or any other body part, and after sneezing or coughing
- ❖ After cleaning tables.
- ❖ Between each task performed and before wearing disposable gloves.
- ❖ After eating, or drinking.
- ❖ Any other time an unsanitary task has been performed – i.e. taking out garbage, handling cleaning chemicals and picking up a dropped food item or any other item.
- ❖ Wash hands only in hand sinks designated for that purpose.
- ❖ Dry hands with single use towels. Turn off faucets using a paper towel in order to prevent recontamination of clean hands.
- ❖ Change disposable gloves as often as hand washing is required.
- ❖ Wash hands before donning and after discarding gloves.

Work Attire:

- ❖ Wear appropriate and clean uniform with sleeves.
- ❖ Wear clean non-skid, close-toed work shoes (or leather tennis shoes) that are comfortable for standing and working on floors that can be slippery.
- ❖ Wear clean and appropriate apron on site.
- ❖ Do not wear apron to and from work.
- ❖ Take off apron before using the restroom.
- ❖ Change apron if it becomes soiled or stained.

Hair Restraints and Jewelry:

- ❖ Wear a hair net or cap in any food production area that completely covers all hair.
- ❖ Keep beards and moustaches neat and trimmed.
- ❖ Refrain from wearing jewelry in the food production area.
- ❖ Only a plain wedding band is permitted.
- ❖ No necklaces, bracelets, or dangling jewelry are permitted.

- ❖ No earrings or very small ones are permitted.

Cuts, Abrasions, and Burns:

- ❖ Bandage any cut, abrasion, or burn that has broken the skin.
- ❖ Cover bandages on hands with gloves and finger cots as appropriate.

EATING, DRINKING AND GUM CHEWING AT WORK

Restaurant employees will eat and drink in designated areas

Procedure:

- ❖ All restaurant employees must never eat in the work area.
- ❖ Eating (with the exception of cooks tasting foods to ensure quality) is NOT allowed in the production and service areas.
- ❖ Drinking from a closed beverage container or glass of water is permitted in production area, when placed out of sight.
- ❖ Refrain from chewing gum or eating candy during work in a food production area.

GLOVE AND UTENSILS USE

Gloves or utensils will be used for handling all ready-to-eat foods and also when there are cuts, sores, burns, or lesions on the hands of food handlers.

Procedure:

All employees handling food or utensils must:

- ❖ Wash hands thoroughly prior to putting on gloves and when gloves are changed.
Change gloves when:

- Beginning each new task.
- They become soiled or torn.

- They are in continual use for four hours.
- Finished handling raw meat and before handling cooked or ready-to-eat foods.
- Use utensils, such as spatulas or tongs, as an alternative to gloves.
- Cover cuts and sores on hands, including fingernails, with clean bandages. If hands are bandaged, clean gloves or finger cots (protective coverings) should be worn at all times
- Protect the bandage and to prevent it from falling into food.
- Inform kitchen supervisor of all wounds.

HYGIENE STANDARDS FOR SERVICE

All food will be served in a manner to ensure food safety.

Procedure:

Employees involved in the service of food must observe the following procedures:

Cleaning and sanitation:

- ❖ Before food is placed in service area clean on around the service area, using warm soapy water and designated clean cloths. Thoroughly rinse after washing.
- ❖ Sanitize on and around the service area, using an approved chemical sanitizer at proper concentration.
- ❖ Wipe down area as needed throughout service with cloth stored in sanitizing solution away from food.
- ❖ Cloths used for cleaning food spills should not be used for anything else

Service Utensils/Service Ware:

- ❖ Store utensils properly on a clean, sanitized food-contact surface.
- ❖ Keep hands away from the food item.
- ❖ Clean and sanitize utensils before using.

- ❖ Use separate utensils for each food item.
- ❖ Handle glassware and dishes properly; so hands are not in contact with surfaces that will be touched by food or patron's mouth.
- ❖ Hold flatware and utensils by the handles.

HOLDING OF FOOD

- ❖ All hot food will be held hot (above 57° Celsius) and cold food will be held cold (below 5° Celsius).
- ❖ Temperatures of food will be taken routinely to ensure that proper temperatures are maintained through holding to ensure the safety of the food served to customers. When in doubt about the safety of food, throw it out.

Procedure:

Employees involved in the production or service of food must:

Holding Hot Food:

- ❖ Prepare and cook only as much food as is needed. Batch cooking is ideal for maintaining food temperature and quality.
- ❖ Use hot-holding equipment that can keep hot food at 57° Celsius or higher.
- ❖ Follow manufacturer's instructions in using hot-holding equipment. [NOTE: Customize your SOP by including instructions. For example, you may need to indicate that the steam table wells need to be filled with hot water and at what level.
- ❖ Keep foods covered to retain heat and to keep contaminants from falling into
 - Measuring internal food temperatures once an hour using a calibrated thermometer.
 - Record temperatures in the Holding Temperature Log. If temperatures are below 57° Celsius, then reheat to 74° Celsius.

- Discard hot potentially hazardous food after four hours if they have not been properly held at or above 57° Celsius.
- Do not mix freshly prepared food with food being held for service.

Holding Cold Food:

- ❖ Use cold-holding equipment that can keep cold foods below 5° Celsius.
- ❖ Measure internal food temperatures once an hour using a calibrated thermometer and record temperatures in the Holding Temperature Log.
- ❖ If temperatures are above 5° Celsius, then refrigerate.
- ❖ Protect cold food from contaminants with covers or food shields.
- ❖ Discard cold potentially hazardous foods after four hours if they have not been properly held below 5° Celsius.
- ❖ If there are no temperature controls, cold food held for longer than six hours must be discarded.
- ❖ Place cold food in pans or on plates first, never directly on ice.
- ❖ Wipe the clean and sanitize thermometer stem with alcohol wipes prior to taking the temperatures of each food. Open the sanitizer package with clean hands.

Preparing Cold Foods:

- ❖ Pre-chill ingredients for food served cold (sandwiches and salads) to below 5°C before combining.

REHEATING FOOD

All food will be reheated to an internal temperature of 74° Celsius and held at least 15 seconds to assure the safety of food.

Procedure:

Employees reheating food should:

- ❖ Remove leftover food from the freezer/refrigerator.
- ❖ Check the temperature of the food to make sure it is lower than 5° Celsius using a calibrated thermometer. Record on the Reheating Log.
- ❖ Reheat the food product to 74° Celsius for 15 seconds using an oven, stove, or steamer. The goal is to take the food through the temperature danger zone (5° Celsius - 57° Celsius) as quickly as possible. Discard food that has not reach this temperature within two hours.
- ❖ Serve the food immediately, or place the food in a steam table or a pre-heated hot cart and recheck temperature to
- ❖ Make sure temperature is held at or above 57° Celsius.
- ❖ Check the temperature of the food before serving if the food has been held.
- ❖ Discard any potentially hazardous foods held in the temperature danger zone (5° Celsius to 57° Celsius) for more than four hours.

COOKING FOOD

All foods will be cooked using appropriate practices and procedures to ensure safety. This includes cooking foods to required internal temperatures and taking and recording temperatures.

THAWING FOOD

All foods will be thawed using appropriate practices to ensure food safety.

Procedure:

Steps for thawing food include:

- ❖ Use one of the three acceptable methods for thawing food:
- ❖ Thaw food in the refrigerator at 5° Celsius or below. NEVER thaw food at room temperature.

- ❖ Thaw food needed for immediate service under potable running water at 21° Celsius or lower. Prepare the product within 4 hours of thawing.
- ❖ Thaw the product in the microwave if product will be cooked immediately.
- ❖ Use the lowest shelf in the cooler for thawing raw meat to prevent cross-contamination and separate raw products from cooked and ready-to-eat products.
- ❖ Do not refreeze thawed food, unless they are first cooked or processed.

Food contact surfaces:

- ❖ When possible use color-coded cutting boards for all products. Red for raw meat, green for vegetables or fruits, and yellow for raw poultry.
- ❖ Food contact surfaces should be smooth, easily cleaned and sanitized, with appropriate material.
- ❖ Clean and sanitize all food contact surfaces prior to and after use. Cleaning and sanitizing steps need to be done separately in order to be effective