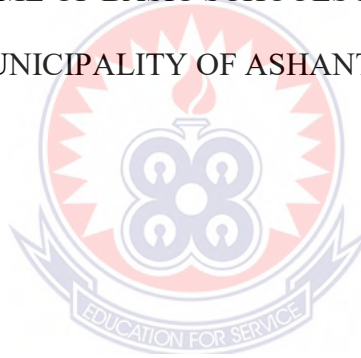


UNIVERSITY OF EDUCATION, WINNEBA
COLLEGE OF TECHNOLOGY EDUCATION, KUMASI

ASSESSING THE HYGIENIC PRACTICES OF CATERERS IN THE SCHOOL
FEEDING PROGRAMME OF BASIC SCHOOLS IN THE AHAFO-ANO NORTH
MUNICIPALITY OF ASHANTI REGION



ROSALINE AOPE

NOVEMBER, 2018

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ROSALINE AOPE

(7161180015)

**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 award of the Master of Technology (Catering and Hospitality)
degree**

NOVEMBER, 2018

DECLARATION

STUDENT'S DECLARATION

I, Rosaline Aope, 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:

DATE:

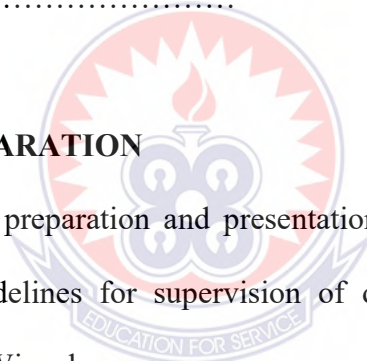
SUPERVISOR'S DECLARATION

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

NAME OF SUPERVISOR: MR. MICHAEL TSORGALI

SIGNATURE

DATE:



ACKNOWLEDGEMENTS

I owe a great pleasure and gratitude to my very generous and resourceful supervisor in the person of Mr. Michael Tsorgali (Head of Department-Construction, Wood and Technology Education, UEW) for his patience, guidance and fatherly advice throughout the work. My felicities also goes to Mr. Richard Aboagye Mensah, Tapa Municipal Education Sports Coordinator and all the Heads of Schools and Caterers within the Ahafo-Ano North Municipality in which the School Feeding Programme is being implemented. Their resourceful information was helpful to me for the successful completion of this project work. May the Lord richly bless you all.



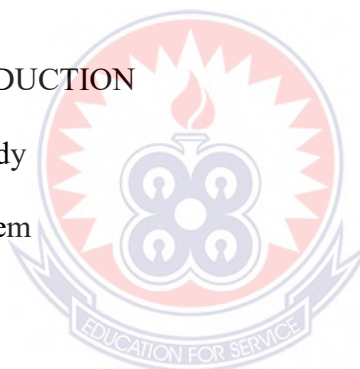
DEDICATION

To my husband, Supt. Simon Peter Akabati of the Ghana Police Service, my children, Awinebuno, Atoya and Akatig-re and parents, Aope and Kajanga of blessed memory, and my siblings, Immaculate, Beatrice, Benedict and Scholastica for their love and support during the programme.



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ABSTRACT

Maintaining positive hygiene practices among Caterers is a pre-requisite in sustaining healthy population which the school system is no exception. The study sought to examine food hygiene practices among Caterers of School Feeding Programme within the Ahafo-Ano North Municipality. A sample size of 179 14 Caterers, 50 pupils and 115 teachers were selected from using purposive and convenience sampling techniques. Questionnaire, interview guide and observation served as the medium of collecting data from respondents. Descriptive statistics in the form of percentages, mean scores and standard deviation were adopted in analyzing the data. The study found that the common personal hygiene practices by most of the Caterers were proper bathing, cutting of nails short and food were mostly served hot. The results showed that most of the Caterers who handle the food had no formal training. Lack of adequate training for Caterers on best practices towards food and personal hygiene practices have been a worrying trend in the Ahafo-Ano North Municipality. The study also found that Poor hygiene practices by Caterers are attitudinal, poor knowledge, ignorance and non-enforcement from health inspectors. It is imperative for health inspectors to ensure that there are regular visits to various food preparation and serving sites in the various schools benefiting from the School Feeding Programme. It is appropriate for Caterers to ensure that the right attitude and lifestyles are adopted to ensure good practices of food hygiene.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The Ghana school feeding programme (GSFP) is a pilot project to provide food to children at school. It is run by the Ghana school feeding programme secretariat in partnership with international agencies including the World Bank, the world food programme, the partnership for child development and UNICEF as well as national organizations including Canadian international development agencies (CIDA), the US Agency for international development (USAID) and the Dutch embassy (WFP, 2004).

According to Afoakwa (2009), Ghana school feeding programme (GSFP) arguably one of the most important social interventions by government to help boost enrolment in public basic schools through yielding fruitful results, is gradually taking a nose dive. The programme which was initiated by government to boost nutritional needs of basic schools is merely limping along, as it release of funds for the smooth running of the programme is not forthcoming. In an attempt to reduce poverty, the government of Ghana in collaboration with the Dutch government started a school feeding programme known as the Ghana school feeding programme (GSFP) four years after the inception of the programme enrolment, attendance and retention have improved appreciably in most school implementing the programme(Quaye, Essegbey, Frimpong, & Ruivenkamp, 2010).

The pilot is a collaboration effort between ACDEP SNV to link the (GSFP) supported schools to local domestic food production. The purpose of the pilot is to test to the management of Ghana school feeding programme a feasible practical approach to involve

all key stake holders in actualizing the dream of small holder farmers been able to access the GSFP as a viable market for their produce (Quaye, et. al., 2010).

The main overall aim of the programme is to contribute to poverty reduction, to reduce food insecurity, as the objectives of the GSFP are to increase enrolment, attendance and retention, reduce hunger and malnutrition and boost domestic food production. In order to achieve these aim goals (Ghana News Agency, 2014). A total of eleven (11) existing farmers and caterers were mobilized. Caterers are assisted to determine their annual demand and purpose plan. Farmers and caterers have also undergone training in groups dynamic and basic business skills to sharpen their daily business.

The food and Drugs Authority (2013), organized a training workshop on good hygienic practices for caterers in the school feeding programmes for caterers in the school feeding programme at Navrongo in the Upper East Region in the Kassena-Nakana East Municipality. The training was to assist the caterers in meeting the requirements of the national food hygiene legislation. The training also aimed at inculcating the habit of good food handling practices to promote food safety and compliance among the food service operators and caterers.

Addo (2013) Food and Drug Authority Officer (UER) The Training programme was meant to improve food safety safeguard public health and safety. Food and Drug Authority mandated by the public health Act (Act 551) to regulate all food service operators in Ghana. The GSFP had the basic concept of providing children in public primary schools in deprived communities with hot nutritious meals prepared from locally grown food stuff as part of government effort to attaining million Development Goal one

and two which seeks to eliminate extreme hunger, poverty and achieve basic education. The health of the pupils on the programme is of paramount important and should not be compromised. It can be compromised by caterers who do not practice good hygiene (UNESCO, 2000).

Monday 17th November (2014) caterers asked to prepare food under good hygienic conditions. Avolv (2014) urged caterers of the school feeding programme to prepare their meals under good hygienic conditions, he stressed the need to guard against any contamination that could cause food poisoning. He condemned the attitude some matrons who failed to supervise the work of caterers of the programme, the reminded the matrons that they would be held responsible for any mishaps and urge matrons to pay regular visits to the schools to ensure that caterers provided the required balanced diet for the school children. Also urged school management committee (SMCs) to licence with it as kitchen for the caterers as the diverse consequence were the spread of diseases such as cholera, typhoid fever, tuberculosis and Hepatitis A & B to vulnerable pupils through various activities in getting food ready for them (Avolv, 2014).

According to Alale (2014), about 77 percent of all traceable food borne illness result from improper handling in the food service establishment, most of which are preventable with proper food handing and personal hygiene, poor food hygiene could lead to large number of pathogenic in food leading to some food borne diseases with long term effects that could cause cancer, arthritis and neurological disorders thus, caterers should prevent micro-organism from getting into food as good hygiene prevents food contamination and food poisoning.

1.2 Statement of the problem

The government of Ghana initiated the national school feeding programme in the year 2016. In an attempt to reduce poverty, the programme was introduced with emphasis on using locally grown foodstuffs with a target of procuring at least 50% of food from local communities and small holder farmers. The Ahafo-Ano North Municipal has been a beneficiary of the Ghana school feeding programme (GSFP) since its introduction in 2006.

The Municipal Directorate together with the Municipal Assembly have put measures in place to improve hygienic practices amongst Caterers such as medical screening, organizing food health programmes for the Caterers at Mabang SHS with Senior High School matron as the key resource personnel. Despite the provision of such training for the Caterers, the researcher's personal observation indicates that

The following challenges are faced by the caterers in the course of running the free school feeding programme.

Foodborne illness in the schools is on the increase, poor personal hygiene such as neatness, method of serving, quality of food served, poor availability of clean water and dirty environment have been prevailing matters which needs crucial attention by well-meaning stakeholders in the Catering and hospitality industry with specific reference in schools. Therefore, the hygienic practices of Caterers need to be further looked at since most children patronised the food. It is because of these challenges and others that has made I the researcher embark on this topic assessing the hygienic practices of Caterers in the school feeding programme in basic schools in the Ahafo-Ano – North Municipal Assembly.

1.3 Purpose of the Study

The purpose of this study is to assess food and personal hygiene practices by caterers undertaking the School Feeding Programme in Ahafo-Ano North Municipality.

1.4 Objectives of the Study

The objective of the study seeks to achieve the following:

- Examine the hygienic practices of caterers in the school feeding programme.
- Identify the factors that challenge hygienic practices in the school feeding programme.
- Determine the food safety control measures that can be used to improve hygienic practices of the caterers.

1.5 Research Questions

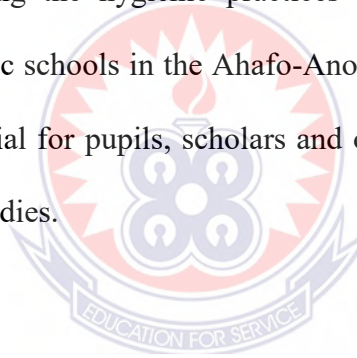
- What are the hygienic practices of caterers in the school feeding programme?
- What are the factors that challenge hygienic practices of caterers in the school feeding programme?
- What are the food safety control measures that could be applied by the caterers to improve hygienic practices?

1.6 Significance of the Study

- The findings of this study are expected to help address challenges confronting caterers in charge of School Feeding Programme on positive food hygiene and

safety practices to improve the quality of food provided to selected schools under the programme.

- This will help reduce outbreak of foodborne diseases which emanate from poor personal hygiene practices. The study gives first-hand insight into the hygienic practices of caterers in the school feeding programme of Basic Schools in the Ahafo-Ano North Municipality.
- The findings of the study would also help to identify factors that affect the hygienic practices in the school feeding programme.
- It is also expected that the current study would help fill the knowledge gap on the subject of assessing the hygienic practices of caterers in the school feeding programme of basic schools in the Ahafo-Ano North Municipal and further serve as reference material for pupils, scholars and other researchers who may want to conduct similar studies.

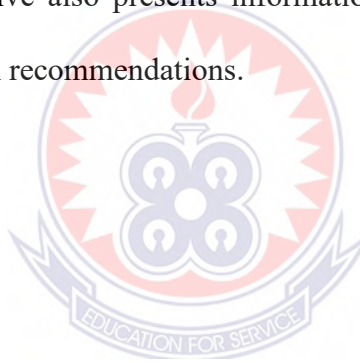


1.7 Scope of the Study

The study is focused on food safety and hygiene practices among caterers of School Feeding Programme undertaking at Ahafo-Ano North Municipality. Areas covered in the study include overview of Ghana School Feeding Programme, food hygiene and practices, importance of food hygiene practices, food safety, food safety knowledge of caterers, challenges of food hygiene and safety practices and strategies to enhance the situation.

1.8 Organization of the Study

This study is organized into five chapters. Chapter one is the introductory chapter which describes key themes such as background of the study, statement of the problem, research objectives, questions, information on the significance of the study, scope and organization of the study. Chapter two deals with a thematic review of the literature related to the study. Chapter three presents information on the research methods employed in the study. It details the research design, data collection procedures and data analysis techniques. Chapter four deals with presentation and discussion of the study results, which is divided into subsections that correspond to the objectives the study, set out to achieve. Chapter five also presents information on the summary of the study's major findings, conclusion recommendations.



CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

In this chapter, the researcher review literature relevant to the study. That is the researcher look at the relevant literature under the following headings:

- An Overview of Ghana School Feeding Programme
- The Objectives of Ghana School Feeding
- The Concept of Hygiene
- Food Hygienic Practices
- The Practice of Food Hygiene
- Importance of food hygiene practices
- Definition and Scope of Food Safety
- Food safety knowledge of Caterers
- Strategies to ensure Hygienic practices among Caterers

2.2 An Overview of Ghana School Feeding Programme

Ghana is the first of ten (10) countries in Sub-Saharan Africa implementing a SFP modeled to the guidelines of the NEPAD as described in the CAADP. The formulation of the GSFP started in the year 2004 and the programme has been run from January 2006 until December 2010. It was preceded by a pilot programme, which was carried out from September to December 2005 (NEPAD, 2005). In the year 2010, the programme intended to serve about 1.04 million children in all 138 districts of Ghana (NEPAD, 2005). The long-term objective of the GSFP is to contribute to poverty reduction and food security

and to increase school enrollment, attendance and retention. The SFP is based on locally grown food products, which should promote domestic food production and improve market access for resource-poor farmers.

The government wants to achieve this objective through an increase in employment and income level of farmers at community and national level. In addition, greater availability, access and utilization of food crops and products at community level are assumed to enhance food security. By the end of the programme, it is expected that there will be: a real increase in income at national and community levels, an increased employment at community level and a greater availability, access, utilization and stability of food crops at community level. This strategy complements the development strategies of the government of Ghana (Quaye et al., 2010).

2.3 Objectives of Ghana School Feeding Programme

According to GSFP policy document, GSFP (2008) Programme Pilot Review Report, and Programme Document 2007-2010, the basic objectives of GSFP is to provide children in public primary schools and kindergartens with one hot nutritious meal prepared from locally grown foodstuffs on every school going day.

The policy has a secondary objective of improving education, health and agriculture of the country. The health component involves the fact that pupils of the beneficiary schools are to be given good drinking water, de-wormed and fed in a good sanitary environment. In line with improvement of education, enrolment of pupils will improve so as to achieve universal basic education. In the agriculture sub sector the patronage of locally produced

goods will be and food security in the country will be achieved. Programme implementation partner organizations such as Netherlands Development Co-operation (SNV), (SEPD), and World Food Programme (WFP, 2004) are to carry out training sessions for caterers and cooks to enhance their capacities. To achieve the objectives of the programme, GSFP (2008) indicated that roles were assigned to the following key stakeholders as follows;

- The government made up of Cabinet and Parliament are responsible for passing the GSFP Bill to legitimize the operations of the programme and sourcing for funds;
- The Ministry of Local Government and Rural Development (MLGRD), in collaboration of the Ministry of Education (MoE) is responsible for the implementation and supervision of the programme;
- Ministry of Food and Agriculture (MoFA) is responsible for achievement of the agric objectives;
- Ministry of Finance and Economic Planning (MoFEP) responsible for the release of funds;
- Ministry of Women and Children Affairs (MoWCA) responsible for monitoring and supervision;
- Ghana School Feeding Programme National Secretariat responsible for the implementation of the policy at the national level.

2.4 Concept of Hygiene

According to Tauxe (2002), the term "hygiene" is derived from hygeia, the Greek Goddess of health, cleanliness and sanitation. To Tauxe (2002), it refers to the set of practices associated with the preservation of health and healthy living. Speck (2006) on the other hand indicated that good hygienic practices deal with safety and suitability requirements to be followed world-wide and concluded that good hygienic practices include all practices regarding the conditions and measures necessary to ensure it.

2.4.1 Food Hygiene

According to Paola and Allan (2010), there are some essential principles of food hygiene to achieve the goal of ensuring that food is safe and suitable for human consumption. Food hygiene is the conditions and measures necessary to ensure the safety of food from production to consumption. Food can become contaminated at any point during slaughtering or harvesting, processing, storage, distribution, transportation and preparation (Paola & Allan, 2010). Poor food safety practices can lead to food borne illness. Symptoms of food borne illnesses vary to usually include stomach problems or stomach upset. Food borne illnesses may be severe and fatal. Young children, older adults, pregnant women, and people who have a weakened immune system are especially at risk (Laura & Carol, 2005).

Good food hygiene is essential to ensure that the food you and your family eats is safe. Poor hygiene procedures in your home can put you at risk. Harmful germs that because food poisoning can spread very easily, so you need to make sure that you do everything you can to prevent this. Good food hygiene is essential for you to make or sell food that

is safe to eat. It is very important for catering staff to understand what good food hygiene is all about (Paola & Allan, 2010).

2.4.2 Food Hygienic Practices

According to Mulugeta and Bayeh (2012), food hygiene practices are the set of requirements to prevent contamination of food in order to provide safe food to the consumers. Food borne illnesses can result from contamination due to improper practices. To assist food operators to upkeep their hygiene standards, NRAEF (2004) has developed a set of educational materials and guidelines for food operators to implement the listed guidelines to ensure that the food served to public is wholesome and safe for consumption. To NRAEF (2004), food operators should apply the hygienic practices set out in this document to:

- Ensure that food is safe and suitable for consumption;
- To ensure that consumers have clear and easily understandable information, through labeling and other appropriate means, to enable them to protect their food from contamination and growth or survival of pathogens to create in food by storage, processing and preparation in an appropriate manner;
- Have confidence in food trading.

According to Pilling and Roberts (2008), all consumers have the right to expect safe, hygienically prepared and good quality food. This is the reason that the handling of food requires care to prevent the hazards. Good Hygiene Practices are the set of requirements to prevent contamination of food in order to provide safe food to the consumers. Food

borne illnesses can result from contamination due to improper practices like when there is:

- lack of environmental hygiene and poor sanitation
- mixed and inappropriate transportation
- poor storage
- poor personal hygiene,
- unsafe source of food

Bryan (2008) indicated that hygienic practices should reduce the likelihood of introducing hazards that may be difficult or impossible to control at later stages of the food chain. According to Bryan (2008) good food hygiene helps caterers to: obey the food preparation laws, reduce the risk of food poisoning among your customers and also protect your business's reputation. Legnani and Alvaro (2004) added that good food hygiene is all about controlling harmful bacteria, which can cause serious illness Legnani and Alvaro (2004) emphasized that any business that produces or sells food is required by law to follow food safety regulations. These regulations, appropriate to food hygiene courses, are designed to provide guidance and rules for everything from farms to butchers to restaurants that deal with food, ensuring that what consumers eat is safe to consume. Kinfe and Abera (2007) expressed that it is important for caterers to put these regulations into practice if they want to be successful and keep their customers coming back and added that consumers probably have noticed the food hygiene rating posters displayed in cafés and takeaways, and a less than perfect rating can easily make customers think twice about eating there.

Jarmila and Babak (2010) on the other hand indicated that food hygiene practice is a practice of proper preparation, washing, cooking, storing and preservation of food in ways that prevent cross contamination and spread of bacteria which could lead to food poisoning. Microorganisms often look for conducive environment to settle and especially on foods, and they can easily contaminate foods as soon as they enter; these can be present in foods in form yeast, moulds and bacteria (Jarmila & Babak, 2010). Foods like fruits, jams, tomatoes, cabbage, meat, jellies etc. are easily contaminated, however, avoiding cross contamination between raw foods and ready to eat foods is an important aspect of food hygiene practices. According to Jarmila and Babak (2010), there are certain things to do to ensure a good food hygiene practice and noted the following food hygiene practices tips:

1. Practice personal hygiene
2. Refrigerate foods that can be easily destroyed by heat
3. Raw foods should be well stored from the cooked ones.
4. Wash fruits and vegetables with salt or vinegar.
5. Use appropriate kitchen tools for food preparation
6. Keep grains, powdered and dried foods away from each other and from liquid
7. Cook food to an appropriate temperature to destroy bacteria
8. Keep insects and pests away from food areas.
9. Use clean water to prepare food always.
10. Clean the kitchen counter and mop the floor after each food preparation.
11. Keep food that has been contaminated with pathogen from spreading to people and pets.

12. Washing of kitchen towels and racks.

According to NRAEF (2004), there are four main things good food hygiene practices and these are:

- Cross-contamination
- Cleaning
- Chilling
- Cooking

NRAEF (2004) termed them as 4 Cs and recommended them to be followed by food operators to help prevent the most common food safety problems.

Cross-contamination: Cross-contamination is when bacteria are spread between food, surfaces or equipment. It is most likely to happen when raw food touches (or drips onto) ready-to-eat food, equipment or surfaces. Cross-contamination is one of the most common causes of food poisoning. Do the following things to avoid it:

- Clean and disinfect work surfaces, chopping boards and equipment thoroughly before you start preparing food and after you have used them to prepare raw food.
- Use different equipment (including chopping boards and knives) for raw meat/poultry and ready-to-eat food unless they can be heat disinfected in, for example, a commercial dishwasher.
- Wash your hands before preparing food.
- Wash your hands thoroughly after touching raw food.

- Keep raw and ready-to-eat food apart at all times, including packaging material for ready-to-eat food.
- Store raw food below ready-to-eat food in the fridge. If possible, use separate fridges for raw and ready-to-eat food.
- Provide separate working areas, storage facilities, clothing and staff for the handling of ready-to-eat food.
- Use separate machinery and equipment, such as vacuum packing machines and slicers for raw and ready-to-eat food.
- Separate cleaning materials, including cloths, sponges and mops, should be used in areas where ready-to-eat foods are stored, handled and prepared.
- Make sure that the cooking staff know how to avoid cross-contamination.

Cleaning: According to NRAEF (2004) effective cleaning gets rid of bacteria on hands, equipment and surfaces. So it helps to stop harmful bacteria from spreading onto food.

Caterers or any food operator should do the following things:

- Make sure that all your staff wash and dry their hands thoroughly before handling food.
- Clean and disinfect food areas and equipment between different tasks, especially after handling raw food.
- Clear and clean as you go. Clear away used equipment, spilt food etc. as you work and clean work surfaces thoroughly.
- Use cleaning and disinfection products that are suitable for the job, and follow the manufacturer's instructions.

- Do not let food waste build up

Chilling: Chilling food properly helps to stop harmful bacteria from growing. Some food needs to be kept chilled to keep it safe, for example food with a ‘use by’ date, cooked dishes and other ready-to-eat food such as prepared salads and desserts (NRAEF, 2004). NRAEF (2004) emphasized that it is very important not to leave these types of food standing around at room temperature and suggested that caterers make sure they do the following things:

- Check chilled food on delivery to make sure it is cold enough.
- Put food that needs to be kept chilled in the fridge straight away.
- Cool cooked food as quickly as possible and then put it in the fridge.
- Keep chilled food out of the fridge for the shortest time possible during preparation.
- Check regularly that your fridge and display units are cold enough.

Cooking: Thorough cooking kills harmful bacteria in food. So it is extremely important to make sure that food is cooked properly (NRAEF, 2004). When cooking or reheating food, NRAEF (2004) indicated that caterers should always check that it is steaming hot all the way through. It is especially important to make sure that you thoroughly cook poultry, pork, rolled joints and products made from minced meat, such as burgers and sausages. This is because there could be bacteria in the middle of these types of products. They should not be served pink or rare and should be steaming hot all the way through. Whole cuts of beef and lamb, such as steaks, cutlets

and whole joints, can be served pink/rare as long as they are fully sealed on the outside.

2.5 The Practice of Food Hygiene

According to Pilling and Roberts (2008), many studies have been conducted assessing consumers' knowledge, awareness and attitudes on issues regarding food safety and hygiene. Pilling and Roberts (2008) assessed food handlers' food safety knowledge on areas such as hand washing, temperature control, cross contamination, food storage, and some aspects of food microbiology and noted the following as the practices of food hygienic practices:

a) Practice personal hygiene: Personal hygiene is a practice every one should imbibe, as long as food has an effect on our healthy, it is important to always wash our hand with soap and water before handling food to prepare, our plates, spoons and cups need to wash as well before using them to serve food. Pilling and Roberts (2008) further added that personal hygiene included the following:

- **Health status** of employees must be checked for communicable diseases and surface injuries, especially to hands or other parts of the body that come in direct contact with food items.
- **Personal cleanliness:** Clothing must be clean, head covered, face mask, gloves and different footwear must be supplied for wearing inside processing area. Nails and hair must be short and clipped regularly.

- **Personal behaviour:** smoking, spitting, chewing, sneezing, coughing, and eating near food preparation areas must be discouraged and never overlooked.

b) Refrigerates foods that can easily be destroyed by heat: There are certain foods that can't withstand environmental heat for a longer time (meat, fish, leafy vegetables and the likes), such foods need to be properly chilled in the refrigerator to preserve them longer and to keep away harmful organisms growing on them.

c) Raw foods should be kept separate from dried or cooked foods: There is no way you can keep cooked foods together with the raw once without reining both, foods like meat, fish and fruits, soup and stew should be frozen in different sealed containers and they should be kept in a different compartment of the fridge to avoid cross contamination which can occur through dripping. After marinating fish or meat, do not use the same bowl or plate to serve food or place another food into it, you can only use the sauce to cook food but not to serve as food because it is raw and it will be unhealthy for your consumption.

d) Wash fruit and vegetables with salt or vinegar: Most fruits and vegetable are freshly purchased from the farm, store or market; these foods do contain sand, insect and residues in them, it is very important to rinse vegetables and fruit with water, salt or vinegar before storing them in the food rack.

e) Use appropriate kitchen tools for food preparation: There are various kinds of kitchen tools/utensils designed for different purposes, make sure you use the right tool at

the right time. For instance, a meat chopping board can easily serve as a growth medium for bacteria and mould, this can be seen growing on the surface or the edges if not properly washed after usage, use a different chopping board for cutting vegetables and other sensitive foods to prevent food poisoning and always wash and disinfect cutting tools.

f) Keep grains, powdered and dried foods away from liquid: Food safety should be applied on grains, dried and powdered foods storage. Wet food attracts moulds easily, Moulds grow in filaments forming a tough mass and this can be very visible to the eye. Grains, powdered, baked, and dried foods should be properly stored away from liquid, as moulds can easily grow on them causing illness, allergy and food poisoning to both adults and kids.

g) Cook food to an appropriate temperature to destroy bacteria: Cooking food to the required temperature is an important food safety practice, as raw foods like egg and meat can easily result to salmonella infections if not properly cooked. Foods like pork, chicken, beef and sausage should be cooked longer until there are no traces of pink on the flesh, joints and bones of such meat because germs can easily settle in such parts.

h) Keep insects and pests away from food areas: Insects and pests control is another important food safety tip to be taken into consideration, as these creatures are often seen in our houses, especially in places like the fridge corners, kitchen cupboard, shelves and at dark corners of the kitchen. Cockroaches, flies and rodents as we know are very terrible insects and pest; they can carry pathogen from one surface to another, while pecking on food items which can lead to food borne illness, for this reason, it is wise to

always cover the pots containing foods, spray the shelves, clean our refrigerator when you notice any foul smell and dripping.

i) Use clean water to prepare food always: Food safety is also important practice to be carried out when washing, mixing and cooking food. Dirty water has many ways of affecting our systems and our general health. Foods that are prepared with dirty water can easily lead to vomiting, diarrhoea, stomach upsets, cancer (leukaemia) and skin rashes among other dangerous effects, therefore, it is important to always use clean water to wash and cook food.

j) Clean the kitchen counter and mop the floor after each food preparation: Food safety and hygiene can also be put to check by making sure that our kitchen slabs or surfaces are cleaned and disinfected after food preparation. By doing this, you have kept away flies, ants and cockroaches from coming in contact with your foods as they love to dance around food particles which are left untidy on such places. The stove or gas top should be properly wiped before you go to bed, it is when everywhere is quiet that these insects come out of their hiding places to eat of the remnants, and if you can locate their holes, it is wise you spray with insecticide to eliminate them totally.

k) Keep food that has been contaminated with pathogen away from spreading to people and pets: This is a very important food safety tip which is related to both humans and pets, once you notice that a particular food item has formed moulds throw it away and don't try to save cost by eating such or feeding it to your pet. If dried foods are not properly kept or have been kept for too long they can form aflatoxin— a poisonous and cancer causing chemical formed in contaminated foods and feeds which can be very

dangerous to humans and animals. This food poisoning can also be found in poultry feeds and other livestock feeds especially if the foods are not properly stored.

l) Washing of kitchen towels and racks: As long as food hygiene is concerned, the kitchen and every tool or equipment in it needs to be washed and sanitized always. Kitchen towels or racks are very important items in the kitchen; we make use these towels on a daily basis to open hot lids, to remove foods from micro wave or oven, to bring down boiling soup from heat and to wipe of food or water from our wet hands. Often times while using these towels, they get wet in the process which means that microorganisms can harbour on these damp surfaces, so it will be very proper to wash and sanitize and properly sundry our kitchen towels to prevent bacteria from being spread from one item and surface to another, and these towels should be kept separated from other items like apron and hand cloves

2.6 Importance of food hygiene practices

Good food hygiene is an important practice that we need to observe to ensure our food is safe for consumption, without this healthy practice, harmful germs that cause food poisoning can spread very easily during food preparation process, it is therefore our full responsibility to keep the food that we and our loved ones eat very clean and safe during and after preparation on a daily basis (Grassi & Osella, 2008).

Food is any edible substance that is consumed to provide support and strength to the body, food helps the body to grow, provides the body with the needed energy to carry out daily activities and it keeps the body in good condition. Food can be said to be hygienic and non-hygienic, safe and un-safe for consumption. Food can be very tasty and

flavourful and at the same time can be dangerous to human health if not properly prepared, kept or eaten, however, no human can really survive without eating food and many human's health have been destroyed and risked due to eating unhealthy foods, and this leads us to what is known as food safety and hygiene (Laura and Vincent, 2007).

Food safety has a broad meaning, it is not just about eating freshly made food outside your house, but something you should do more often at home and outside. Food safety has a lot to do with eating clean food, handling food, storing food and maintaining personal hygiene on a daily basis and this cut across to food handlers, businesses (food businesses) as both the food handlers and food business dealers have the responsibility of ensuring that foods are kept healthy and void of contamination. However, kitchen hygiene is an important key to keeping food safe for consumption hygiene (Laura & Vincent, 2007).

World Health Organization (WHO) (2006) also noted the following as importance of food hygiene practices:

1. Food hygiene and safety prevent germs from multiplying in foods and reaching dangerous levels.
2. Food hygiene ensures daily healthy family living.
3. It keeps one healthy and prevents extra cost of buying drugs and medical check-up.
4. It minimises the spread of micro-organisms from being spread from surfaces to humans
5. It minimises the rate at which one can contract food poisoning.

6. Since washing of hands is an important personal hygiene practice, it helps minimize and prevent the spread of bacteria on foods and on kitchen tools.
7. Proper food hygiene and safety keeps insects and rodents out of our entire house as kitchen is seen as one of the breeding grounds for such apart from the toilet.
8. Ready to eat foods are advice to be chilled in the fridge; by keeping such food in the fridge, bacteria are not allowed to grow on them. Such foods include salad, yoghurt, milk and deserts.
9. Food safety and proper hygiene on business wise is also very necessary especially when dealing with public consumers, by practicing good hygiene, it goes a long way in protecting consumer's health and they tend to develop confidence regarding your products and foods. When they have develop confidence in the food you are providing for the them, they keep coming back to you and your business certainly will have a good reputation and longer life span.

2.7 Definition and Scope of Food Safety

Food safety is a vital issue both in developed and developing countries; given that food borne illnesses cause a lot of distress and thousands of deaths each year (Laura & Vincent, 2007). In view of this, the issue of food safety is becoming a key public health priority considering the large number of people who take their meals outside the home. As a result of this change in lifestyle, many people are exposed to food borne illnesses that originate from food stands, restaurants and other food outlets. Food service employees are a very crucial link between food and consumers (Laura& Vincent, 2007), as there are high contamination tendencies on their part. World Health Organization (2004) has established five main keys to safer food including keeping clean hands,

separating raw and cooked food, cooking thoroughly, keeping food at safe temperatures, and using safe water and raw materials. These five keys to safer food are of utmost importance in developing countries, and equipping food vendors in countries with such information could impact significantly on food safety. Food is vital for life but can only serve such an important purpose if it is safe and secure to ingest. Food can be defined as edible substances whether in natural or manufactured state which, from a public health perspective form part of the human diet (Seaman, 2009). Understanding the necessity of access to healthy and nutritionally sound foods is important for all.

Food safety is a broader term, which means an assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use. 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, 2006). 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. Basic kitchen sanitation guidelines are an important component of any food safety strategy (Tinker, 2007). Food elaborated with satisfactory hygienic standards is one of the essential conditions for promoting and preserving health, and inadequate control is one of the factors responsible for the occurrence of food borne disease outbreaks (Tinker, 2007). Inadequate food safety is a significant contributor to the burden of disease in developing countries including Kenya, and should be addressed as the food system develops and

along with related investments in public health. The heavy burden of food borne diseases imposes substantial economic losses to individual, households, health systems and entire nations. Economic losses as a result of rejected food exports due to shortcomings in food safety are also often very significant (WHO, 2006).

2.8 Food safety knowledge of Caterers

Winarno and Allain (2001) defined food safety as the inverse of food risk - the probability of not suffering some hazard from consuming a specific food. Food safety is considered as a concept of central importance because it plays an essential public health function (WHO, 2006). The attitude of food vendors also has a big important impact on food safety issues, which are themes of interest to food producers and retailers, public authorities and health educators. This interest has been reflected in discussions about how food safety should be defined and how consumers perceive food safety and choose food. The comparatively lower number of studies conducted on consumer attitudes towards food safety in the third world countries suggests that this issue may not be of as much interest (Winarno & Allain, 2001).

This reduced interest towards food safety may be due to a lack of consumer education and training, and a low consumer impact on food safety. In general, it is assumed that the majority of consumers probably do not understand the crucial role of food safety regulations. In order to offer supportive benefits to consumers, it is important to first examine their attitudes toward food safety. Attitudes, which are relatively permanent and stable evaluative summaries about an item, are an important psychological construct because they have been found to influence and predict behaviors (Bas & Kivanc, 2006).

Chapman, McLaurin and Powell, 2011) indicate that food vendors attitudes towards food safety in general differ according to demographic and socio-economic factors such as gender, age, educational level and economic status. Chukuezi (2010) found that men were more likely to report risky practices than women. Chukuezi (2010) further indicated that the prevalence of risky behaviors increased with increasing socio-economic status. Tones, Tilford and Robinson (2001) on the other hand found that food vendors had an acceptable awareness of appropriate safety practices; however, a considerable number of them did not attribute certain illnesses to being food-borne and believed that it was possibly due to their own actions.

According to Chukuezi (2010), knowledge is defined as a complex process of remembering, relating, or judging an idea or abstract phenomenon (cognitive abilities). Knowledge of the street food vendors has a crucial impact on food safety. In addition to this is the fact that street food vendors are often unlicensed, untrained in food hygiene and sanitation and work under crude unsanitary conditions (Tones et al., (2001). According to the WHO (2006), street food vendors in most developing countries should be educated as they are currently not sufficiently organized and responsive to undertake the responsibility of their own training. Food vendors should be adequately educated on the role of food in disease transmission as well as on rules of personal hygiene and approved practices in handling street food.

According to the WHO (2000), education of food handlers and consumers is considered as an effective strategy for reducing food-borne illness and economic losses associated

with food-borne diseases (WHO, 2000). In particular, the education programmes should focus on microbiological, chemical and physical food risks so that consumers and vendors will change their behaviour associated with poor food hygiene practice. For examples, generic educational materials on safe food handling and food-borne diseases, a five keys manual entitled 'Bringing Food Safety Home' could be considered as an effective guidance for food safety training(WHO, 2000). Moreover, caterers' education should focus on the safe practices in good food hygiene, common causes as well as related factors to food-borne illness, basic safety of food-handling principles such as cross-contamination (WHO, 2000).

According to WHO (2000), facilities that directly or indirectly impact food safety must be strictly adhered and indicated the following:

- **Water quality:** water should be potable grade for food processing and water must not become the source of contamination during cleaning. Pipes should be clearly marked to indicate potable or non-potable water
- **Air quality:** ventilation systems natural and /or mechanical including air filters, exhaust fans must be designed and constructed so that air does not flow from contaminated areas to clean areas.
- **Drainage and waste disposal:** disposal of sewage and effluents (solid, liquid and gas) must conform to requirements of Factory / Environment Pollution Control Board. drainage, waste disposal system should be constructed in such manner that there is no risk of contamination to food or water

- **Temperature control:** facility for transporting and storing food under temperature control must be provided. Cold storage facility must be available if required
- **Personal hygiene facilities:** all food handlers must have adequate and suitable clean protective clothing, head covering, face mask and gloves. There must be adequate hand wash facility
- **Lighting:** natural or artificial lighting must be adequate to enable the employees/workers to operate in a hygienic manner. Lighting fixtures must wherever appropriate, be protected to ensure that food is not contaminated by breakages of electrical fittings.
- **Storage:** ensure effective protection from contamination during storage. Segregate storage for raw, processed, rejected, recalled or returned materials or products which will be distinguishably marked and secured. Separate areas for storing raw materials and food printed packaging materials, stationary, hardware and cleaning materials / chemicals.

2.9 Challenges to Food hygiene and Safety Practices

European Food Information Council (2006) opined that the potential for food to become contaminated with chemical substances or microorganisms starts from the time it is harvested and continues right through until the time it is eaten. In general, the risks to food safety fall into two broad categories:

- Microbiological contamination (eg: bacteria, fungi, viruses or parasites). This category results in most cases in acute symptoms.

- Chemical contaminants, comprising environmental chemicals, veterinary drug residues, heavy metals or other residues unintentionally or accidentally introduced into the food supply during farming, processing, shipping or packing.

Whether a contaminant will pose a health hazard or not depends on many factors including the absorption and toxicity of the substance, the level of the contaminant present in the food, the amount of contaminated food that is consumed and the duration of exposure. Besides, individuals differ in their sensitivity to contaminants and other factors in the diet can have an impact on the contaminant's toxic consequences (European Food Information Council, 2006). Food safety challenges differ by region, due to differences in income level, diets, local conditions, and government infrastructures. In developing countries, the food producer and the consumer often have a close connection. There are fewer processed and packaged foods; most fresh food is traded in traditional markets; and street vendors supply much of the food consumed outside the home. Perishable food is often prepared and consumed immediately, and there is minimal storage of prepared foods (Centre for Science in the Public Interest, 2005).

Yapp and Fairman (2004) reiterated that previous research examining barriers to food safety compliance implies that SMEs are generally sceptical of the relevance and importance of certain legal requirements in food safety and that this may contribute to poor levels of compliance. In the food SMEs case studies, it was found that 83% of SMEs demonstrated an active lack of trust in both the environmental health protection and in legislative requirements. In using the term active, it is meant that this mistrust led to

actual behavioural changes in the SME, whereby SMEs made a conscious decision not to comply with food safety legislation.

The restaurant and catering industry, like many industries, has reported experiencing significant skills and labour shortages in recent years. Skill shortages result in employers being unable to fill, or having considerable difficulty filling, vacancies for a skilled occupation at the current levels of remuneration and conditions of employment, and a reasonably accessible location. Labour shortages relate to an insufficient supply of unskilled persons wanting to enter the workforce. Both skill and labour shortages can occur as a result of high economic growth and low unemployment. Skill shortages can also be the result of a mismatch between the skills available and the skills demanded (ABS, 2006).

2.10 Strategies to ensure Hygienic practices among Caterers

According to Chukuezi (2010), some caterers are often poorly educated and untrained in food safety. They often work under unsanitary conditions with little or no infrastructure support. However research has shown that the majority of food-related illnesses and death could be controlled, or eliminated, by the use of proper food handling techniques (World Health Organization, 2002). Therefore, education and training of street-food vendors may offer the most cost-effective way to reduce the incidence of food borne disease. While some countries have conducted training programmes to educate vendors on food safety, the development of training materials for vendors has to be tailored to meet their needs and situations. WHO (2002) noted the following as effective means of improving caterers hygienic practices:

Handling: According to WHO (2002), most food contamination occurs during food handling, and is entirely preventable. For the catering industry, it's recommended that each member of the team should be certified in order to ensure everyone is properly trained in food safe practices, but it's not mandatory. The biggest concern in food handling is separation of foods to prevent cross contamination. Cross contamination happens when harmful germs are spread between foods, surfaces, and equipment. Make sure you keep raw meats and poultry separate from fresh produce. Use different chopping boards. Disinfect and wipe down surfaces after handling any raw foods, and wash all equipment in hot, soapy water before using again. Most importantly, wash your hands regularly. If you're using gloves to prep food, you may not keep safe practices in mind - because you may not feel the contaminants on your hands - so it's important to change your gloves routinely, especially after handling raw foods.

Preparation: Just as mentioned in regards to cross contamination dangers, prepare vegetables and meats on separate boards. In catering, the caterers often need to prepare food ahead of time, but if they are chilling and storing that food, make sure you know the correct temperatures at which to store the food, and use correct storage methods. Never prepare foods so far ahead of time that they spoil. Spoiled food should be discarded as not to make people sick, even if it looks and smells fine (Smith, 2004). Always use a chopping board to chop food otherwise knicks and cuts in your food prep surface can harbour germs. Use separate boards for raw meat, vegetables, and ready to use foods, and wash boards with hot soapy water between uses (Smith, 2004).

Storage: According to Liddle (2003), caterers should be educated to store raw or cooked foods at correct temperatures in correct containers. Liddle (2003) added that chill and

refrigerate all items promptly and to avoid overfilling fridge as air needs to circulate to keep the correct internal temperature. Brannon (2008) added that caterers should be educated that food should be kept in airtight containers and meat and poultry should be at the bottom of the fridge to prevent drips onto other foods, which will cause cross contamination and encourage the growth and spread of harmful bacteria.

Brannon (2008) expressed that caterers should be educated that some fruits need to ripen out of the fridge or it affects taste. Make sure these fruits are kept in a cool room. They should be educated not to keep uncooked potatoes in the fridge because when stored in the fridge, the potato starch is converted to sugar, and then when baked or fried, these sugars combine with the amino acid, asparagine, producing the chemical acrylamide (a genotoxic carcinogen), which is considered harmful (Brannon, 2008).

Personal Hygiene: According to Rennie (2004), most caterers know how to keep a hygienic kitchen and serving station, but with the rush of an event, hygiene can slip in favour of fast service. However, it is important to wash hands and surfaces often, keep away pests, and make sure all dish cloths and tea towels are washed regularly. Disinfect and clean all surfaces before and after use as is best practice. Clean areas prevent bacteria spread, and when you're catering events it's crucial. Make sure all cutlery, glassware, serving ware, pots, pans, and everything that will touch the guest's mouths and hands - and the caterers is clean (Rennie, 2004).

Transport of food: According to Park, Kwak and Chang (2010) transport of food is the term which refers to the distance food is transported from the time of its production until it reaches the consumer. Food miles are one factor used when assessing the

environmental impact of food, including the effect of CO₂ on the food. Park, et, al., (2010) noted that caterers should be educated on the transport of food as exposed CO₂ becomes less nutritious and that caterers should be educated on efficient food transport. Park, et, al., (2010) indicated that:

- Vehicles and containers used to transport food must be kept clean and in good repair.
- Food must be wrapped, covered or placed in sealed washable containers, and kept separate from any other items being carried in the vehicle.
- Ready-to-eat foods must be kept separate from raw foods to prevent cross-contamination.

Rowitz (2009) expressed the caterers should be educated on the following. That caterers should: Always remember to wash your hands before handling food, and after using the toilet or after handling raw foods or waste

- Wear clean clothing, footwear and over clothing
- You will need separate aprons when handling raw foods and cooked/ready to eat foods – colour coded are the best idea.
- Ensure cuts and sores are covered with a coloured waterproof dressing
- Avoid unnecessary handling of food, and never cough or sneeze over food
- Do not smoke or eat near food.
- If you have an illness that could be transmitted through food, eg sickness and diarrhoea, you should not be working in a food handling environment.

Rowitz (2009) indicated that caterers should be educated to wash their hands, the food is correctly stored and heated, the final consideration is footwear and clothing. Martins (2006) added all catering staff must have clean, unsoiled clothes and shoes as contaminants can live in fabrics too, keeping their catering uniforms clean, and make sure of having water-resistant, easily cleaned, slip – resistant shoes where the shoes must be regularly washed and disinfected too.



CHAPTER THREE

METHODOLOGY

3.1 Introduction

The purpose of this chapter is to present the methodological procedures employed in the study. This includes the research design, the population from which the sample for the study was collected, sampling techniques and sample size as well as the data collection instruments.

3.2 Research Design

The design for the study was a survey because the main purpose of the research was to assess the hygienic practices of caterers in the schools feeding programme of basic schools in the Ahafo Ano-North municipal. The design also describes the prevailing situation of caterers, pupils and teacher's personal experiences of the manner the caterers prepare and serve the meals. This research study combines both qualitative and quantitative methods. The researcher drew valid general principles from the results for future application.

3.3 Population

The population for the study included all caterers in the school feeding programme, pupils and teachers of the schools where the feeding programme is runned. The reason for selecting these groups of people was that they are directly involved with the preparation, service and consumption of the meals prepared. The teachers and pupils are at the receiving end since they consume the meals prepared by the caterers and may

sometimes be affected either positively or negatively but do not get the right channel to bring out their views as well as their grievances.

3.4 Sampling techniques and Sample size

To achieve a favourable sample size for the study, 14 caterers from the selected schools with the school feeding programme in the Ahafo-Ano North Municipality were selected. The convenience (accidental) sampling method or technique was used to select pupils. In all, a total of one hundred and fifteen (115) teachers, 14 caterers and 50 pupils were selected for the study. A stratified sampling technique on the other hand was used in selecting 115 teachers, 14 caterers using an adopted mathematical formular from Brewer and Miller (2003) which states:

$$\text{Where } n = \frac{N}{1+N(\alpha)^2}$$

N= sample frame

α = 10% margin of error



The selection of individuals were stratified to ensure that all stakeholders within the population had the chance of been selected among the sample.

3.5 Data Collection Instruments

3.5.1 Questionnaire

Two sets of questionnaire were designed for the study; which were for the caterers and the teachers. The questionnaire included both close-ended questions and open-ended questions. The close-ended questions gave respondents limited answers whilst the open-ended ones gave them the opportunity to bring out their own views concerning the topic.

The data collected for the study was in different categories. The questionnaire was administered to the teachers since they are literate and they were allowed to express their own views freely. The other set of questionnaire was given to the caterers and some of them were semi-illiterates so with this the questions from the questionnaire were read and interpreted by the researcher for them to react and respond to the questions. An interview guide was also structured for the pupils to respond

3.5.2 Interview

An interview guide was also designed for the pupils to respond. The information sought from respondents dwelt mostly on their knowledge on hygienic practices of food preparation and how it is served. Some of the issues raised in the interview were to find out whether food served to them were hot, as to whether they find strange materials in the food served, the availability of soap to wash their hands before and after eating and whether they fall sick when they eat the food. In doing so the interview whether scheduled during break periods to avoid the situation where contact hours were affected.

3.5.3 Observation

Observation was also made on the conditions under which meals were prepared and served to the pupils. These methods were used because they served as highly appropriate methods capable of generating and gathering the necessary information for the purpose of the study. To achieve this, 7 food preparation sites for the various schools were visited and pictures taken to buttress evidence of food hygiene and safety practices by the caterers. In addition to this, pictures of how food were served at the various schools were

captured to know the true situation of safety issues on the ground. Moreover, the cooking and serving environment were also taken into consideration.

3.6 Pilot Study

In order to ensure that the questionnaires and interviews that would be conducted would be more accurate, reliable and credible, a pilot study was conducted to test the nature of questions framed. Piloting was done after writing the questionnaire at Bechem who were not part of the actual test sample which included four (4) caterers, one teacher and a pupil each. The pretesting was done to enable the researcher to assess the clarity of the question, modify, restructure and eliminate any ambiguous items and to determine the time required, as it was important that they were completed on time. Copies of the questionnaire for both the caterers and teachers and interview guide for the pupils are provided at Appendices I, II, III and IV respectively.

3.7 Data Analysis

Both descriptive and inferential statistical techniques were used to analyse the data. Descriptive statistics such as mean, percentages were employed to present the responses obtained from the respondents. Also tables and a chart were used for data presentation. The use of descriptive statistics that concerns the presentation of facts as they are without necessarily going beyond its existence are employed. In view of this, the results obtained from the data gathered are presented per the outcome without any other additions or omissions. This facilitated the discussion of the study. To ensure effective, accurate, consistency and reliable results, the data were thoroughly checked for possible errors and

if any, corrected before making the final presentation of the findings in the form of tables, graphs and charts.

3.8 Ethical Consideration

The researcher made the objectives of the study known to the respondents and sought informed consent for their participation. The researcher assured respondents of anonymity of their identities and confidentiality of the data that the researcher got from them. The researcher also promised to assign them pseudonyms during the writing of the report. All the respondents agreed before the researcher commenced the administering of the questionnaires and interview.



CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This Chapter presents results obtained from the following; demographic characteristics of respondents, questionnaires on the hygienic practices of caterers, questionnaires for teachers opinion on hygienic practices of caterers, interview guide for pupils and observation results observed in five school out of the fourteen schools in the school feeding programme in the Ahafo Ano North Municipal in Ashanti Region.

4.2 Results of Questionnaires

4.2.1 Results of Questionnaires from Teachers

Demographic characteristics of Teachers

From the study, respondents' demographic characteristics include their gender, age, educational background, and number of years served in the Ghana Education Service.

Gender of Respondents

The results indicate that 63% of respondents were females whiles 37% constituted males. This shows that there were more female respondents than male counterparts during the survey.

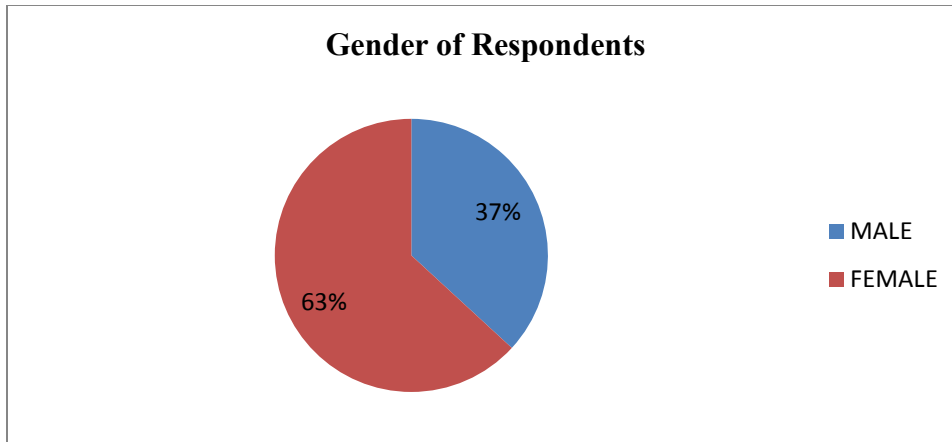


Figure 4.1: Gender characteristic of respondents

Source: Field Survey, 2018

Age of Respondents

It was found that 53% are within the age bracket of 31-40years. Next to this were respondents with 41-50years who constituted 21%. Some of respondents are less than 30years and constituted 11% and 15% happen to be those who had attained 51+. The result shows majority of workers selected were in their youthful ages.

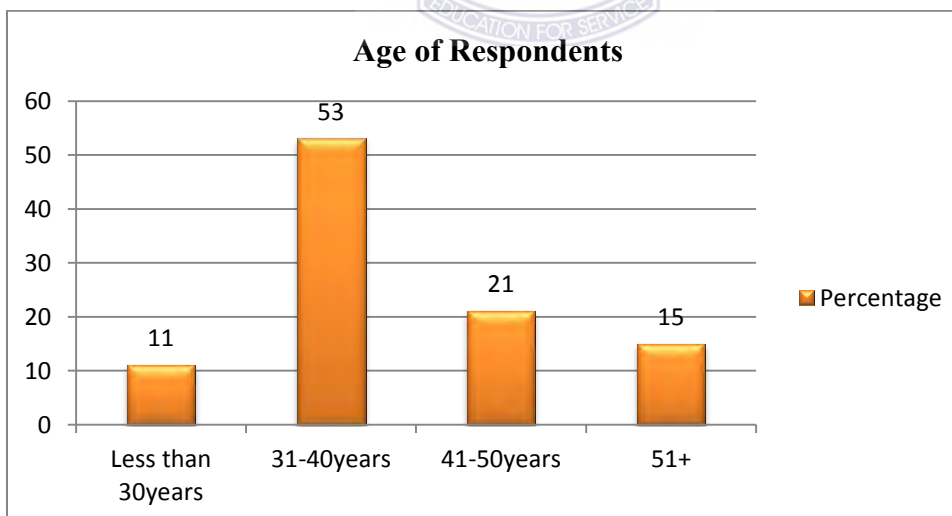


Figure 4.2: Age of the respondents

Source: Field Survey, 2018

Number of Years served in the Educational Sector

This section presents number of years workers had served in the educational sector. It is evidenced that majority of respondents (34%) had worked for 11-15years. Some of the respondents were found to have served for 5-10years and 16-20years and obtained 24% each. The least happens to be workers with less than 5years working experience. This shows that most of the workers had acquired adequate experience on the job and are capable of dealing with issues at the various schools selected for the survey.

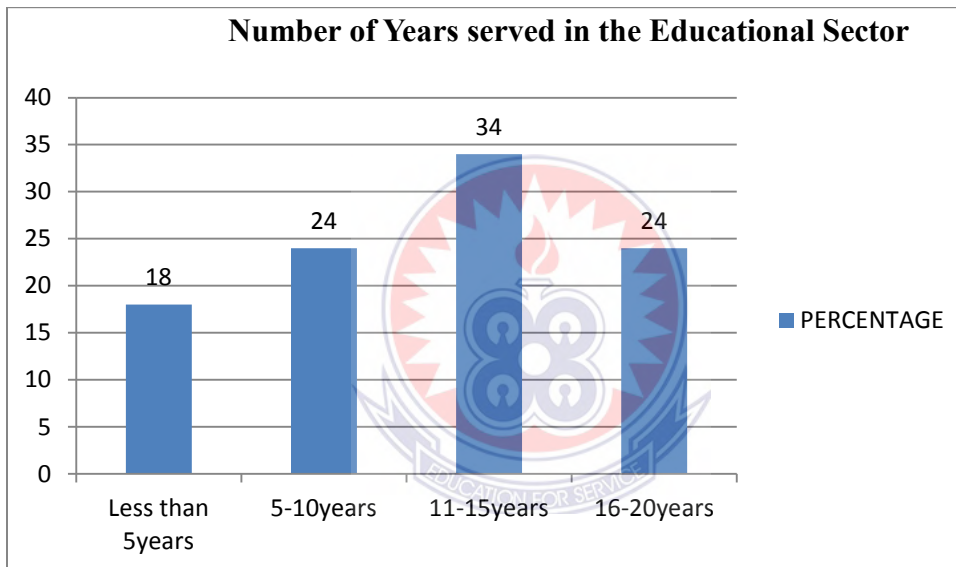


Figure 4.3: Respondents years served in the educational sector

Source: Field Survey, 2018

Educational background of Respondent

It was shown that 53% had attained 1st degree. Some respondents have attained Diploma/HND and constituted 22% and 20% found to have attained Postgraduate degree. The least were those with SSCE/WASSCE who constituted 5%. The results indicate that majority of respondents have moderate level of formal education. Good educational

background have the potential of influencing respondents knowledge on the subject understudy.

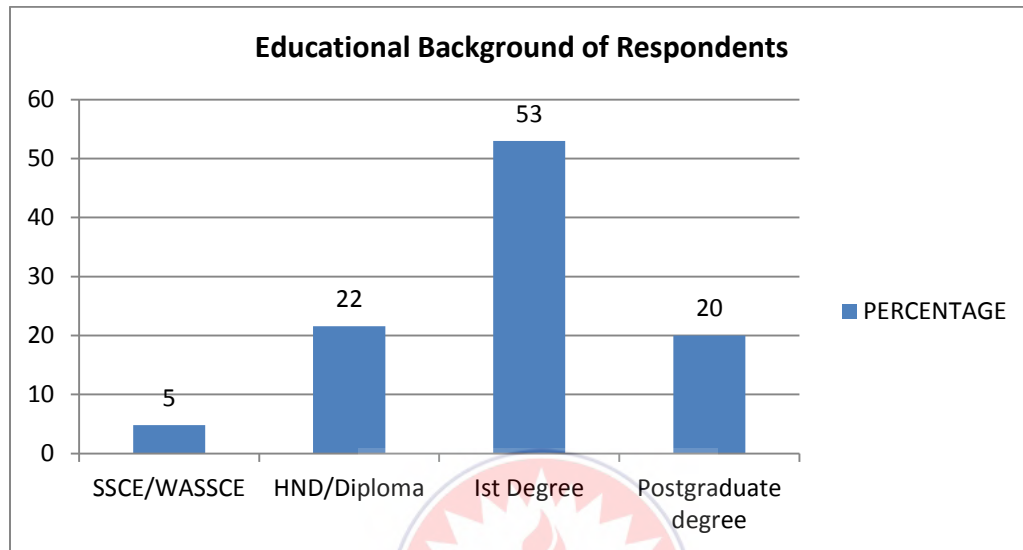


Figure 4.4: Educational background of respondents

Source: Field Survey, 2018

Caterers washing their hands with soap (Teachers opinion)

It was realized that most caterers (84%) used soap in washing their hands. The use of soap in washing helps enhance killing of germs and bacteria which might have come in contact with the caterer. The soap component is vital in fighting any germ likely to contaminate food and lead to food poisoning. However, it was found that 16% of caterers did not wash their hands with soap.

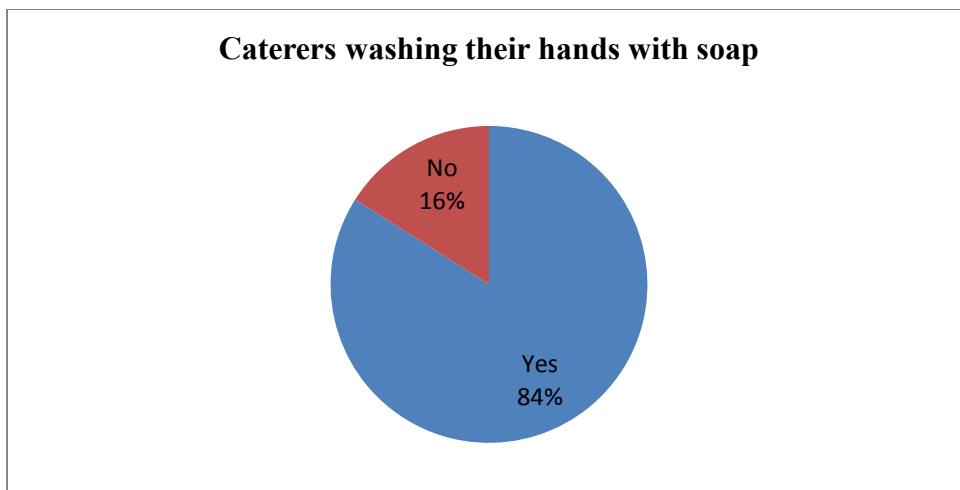


Figure 4.5: Caterers washing their hands with soap

Source: Field Survey, 2018

Personal hygienic practices among Caterers (Teachers opinion)

This section presents teachers opinion on hygiene practices adopted by caterers of selected schools for the study. It was found that most caterers wash their hands before preparing food for pupils (Mean= 3.86, SD= 0.897). Washing of hands is one of the crucial factor expected of caterers in discharging their duties. Washing of hands before and after cooking ensure prevention of contamination of food. Rowitz (2009) expressed that caterers should always remember to wash their hands before handling food. In addition to this, bathing was regarded as the next factor undertaken usually by caterers (Mean= 3.79, SD= 0.862). Regular bathing was indicated to be common practices adopted by most caterers. Bathing enables caterers to be fresh free from bad body odour and other form of unpleasant smells from food handlers. Bathing is essential to achieving good personal hygiene since it fights germs and other related micro-organisms that can contaminate food. It was found that dishing out of food through ladle/spoon during serving in most of the selected schools for the survey (Mean= 3.76, SD= 0.795). The use

of ladle and spoon to serve food limits the likelihood of food contamination that arises out of body contact with food. This is an effective means to achieve proper hygiene practices among caterers when the ladle or spoons are clean.

Table 4.1: Personal hygienic practices among Caterers (Teachers opinion)

Personal hygiene	Mean	SD
Hair cover	3.62	0.738
Cutting of finger nails	3.18	0.625
Washing of hands	3.86	0.897
Cover of mouth and nose	2.79	0.506
Touching of ears	2.84	0.521
Bathing	3.79	0.862
Cover of cut	3.58	0.702
Spitting	2.73	0.501
Clean kitchen before cooking	3.42	0.687
Serve food away from dust and flies	2.68	0.408
Dishing out of food through bare hand	2.53	0.402
Dishing out of food through ladle/spoon	3.76	0.795

Source: Field survey, 2018

Challenges to hygiene practices among Caterers (Teachers opinion)

One of the major hindrance to effective hygiene practices by caterers was no formal training for caterers who handle food (Mean=3.93, SD=0.860). Lack of adequate training for caterers on best practices towards food and personal hygiene practices have been a

worrying trend in the Ahafo-Ano North Municipality. Lack of effective training for caterers does not offer them the opportunity to be abreast with effective and prudent measures on hygiene practices. It does not promote knowledge acquisition on best practices on hygiene practices. Lack of training for caterers hinder their ability to improve upon skills to enhance good food handling. It was emphasized by one of the caterers that:

“ the absence of training deprive us the opportunity to know expected rules and regulations on food safety and hygiene practices. This situation is not helping us at all”
the caterer lamented.

Aside lack of training, lack of adequate inspection by health inspectors was regarded as the second most challenging factor (Mean= 3.84, SD= 0.822). Failure of health inspector to monitor and supervise activities of caterers was another worrying factor which ought to be addressed. It emerge that health inspectors mandated to enforce compliance are not delivering up to task. This situation has led to impunity of some caterers not following hygiene and safety standards in their course of duty. Ineffective supervision curtails the possibility of sanctioning caterers who fall foul to safety and hygiene rules in food handling. Moreover, unsanitary waste disposal and overcrowding was the third most challenging factor which affects good hygiene practices among caterers in the selected schools. Poor disposal of waste create avenue for insect and rodents occurrence on food handling site. This has the possibility of attracting flies which can easily contaminate food.

Table 4.2: Challenges to hygiene practices among Caterers (Teachers opinion)

Challenges	Mean	SD
The inappropriate combination of ingredients in the diet	2.90	0.586
Poor water supply and poor drainage systems	3.67	0.761
Unsanitary waste disposal and overcrowding	3.78	0.795
There is no formal training for caterers who handle food	3.93	0.860
Lack of adequate inspection by health inspectors	3.84	0.822
Unhygienic surroundings	3.46	0.652
Inadequate storage of food	3.04	0.613

Source: Field survey, 2018

Occurrence of foreign material in the meals served to pupils

The respondents were probed further to ascertain whether food served to pupils contain foreign materials. As captured in Figure 4.6, it was realized that most teachers insisted on finding foreign items in food served to pupils. Some of the materials were usually human hair, small stones and sometimes rubber. This result exposes ineffective covering of hair as claimed by most caterers. This means that a lot of education should be centred on the needed for caterers and other food handlers to cover their hair properly to avoid contamination.

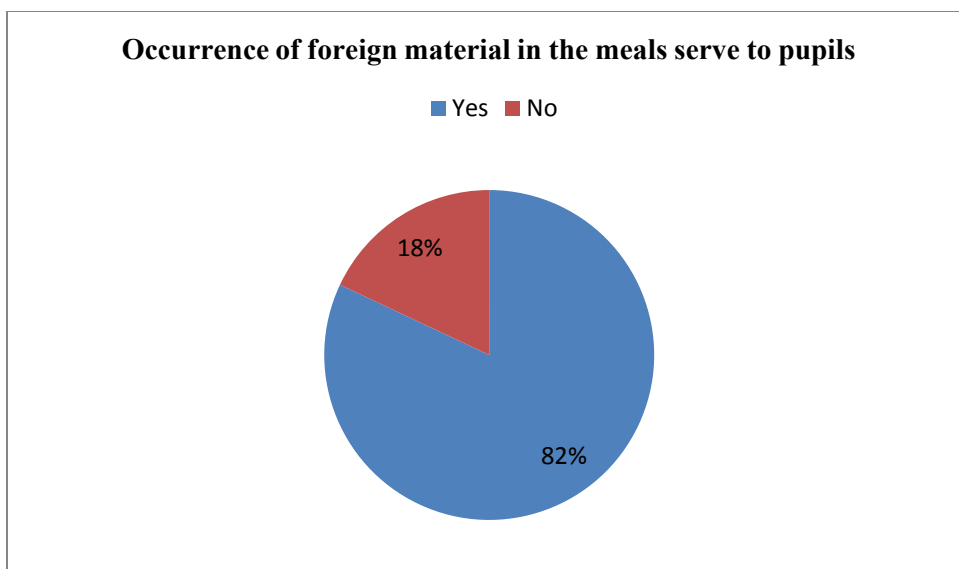


Figure 4.6: Occurrence of foreign material in the meals serve to pupils

Source: Field survey, 2018

Foodborne illness as a result of contaminated food (Teachers opinion)

This part of the study presents responses on whether pupils fell ill as a result of contaminated food eaten in school. Most teachers who responded (59%) asserted that pupils were affected by foodborne illness whenever food served are unhygienic. Contaminated food have caused several health problems to consumers. From the interview, one student stated that:

“ I have suffered from stomach upset before when I ate food prepared under unhygienic condition. I vomited profusely the second time I ate the food since the stew was not good”

Laura and Carol (2005) indicated poor food safety practices can lead to foodborne illness such as stomach problems or stomach upset and can weaken immune system. Mulugeta and Bayeh (2012) noted that foodborne illnesses can result from contamination due to improper practices.

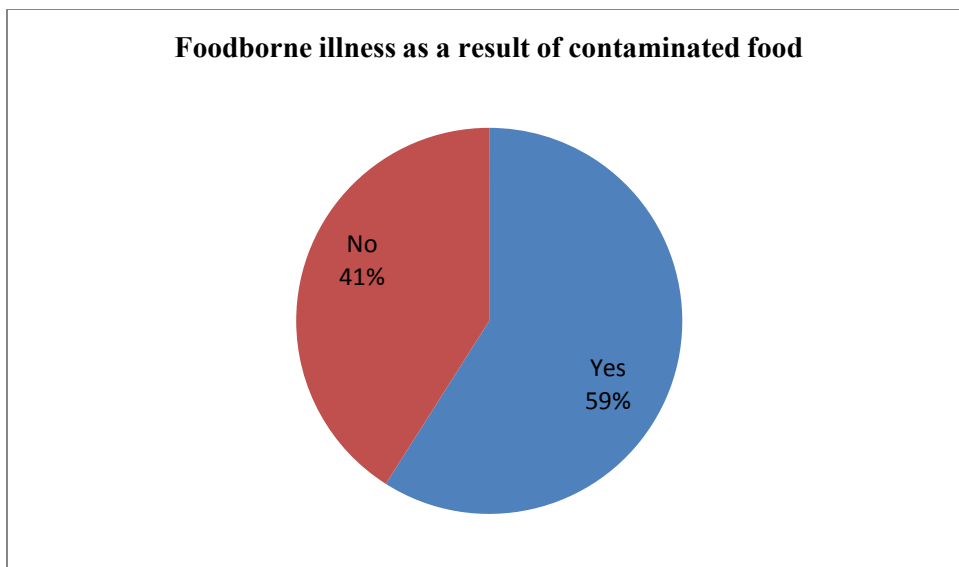


Figure 4.7 Foodborne illness as a result of contaminated food (Student)

Source: Field Survey, 2018

Rating quality of food/meals served by caterers (Teachers opinion)

Respondents in rating the quality of food served by caterers as posited by majority indicated it was poor (52%). Some respondents alluded it was moderate (33%) whereas 8% noted it was good and 7% very good respectively. The overall implication to this study indicate that food prepared under the School Feeding Programme was not satisfactory based on quality.

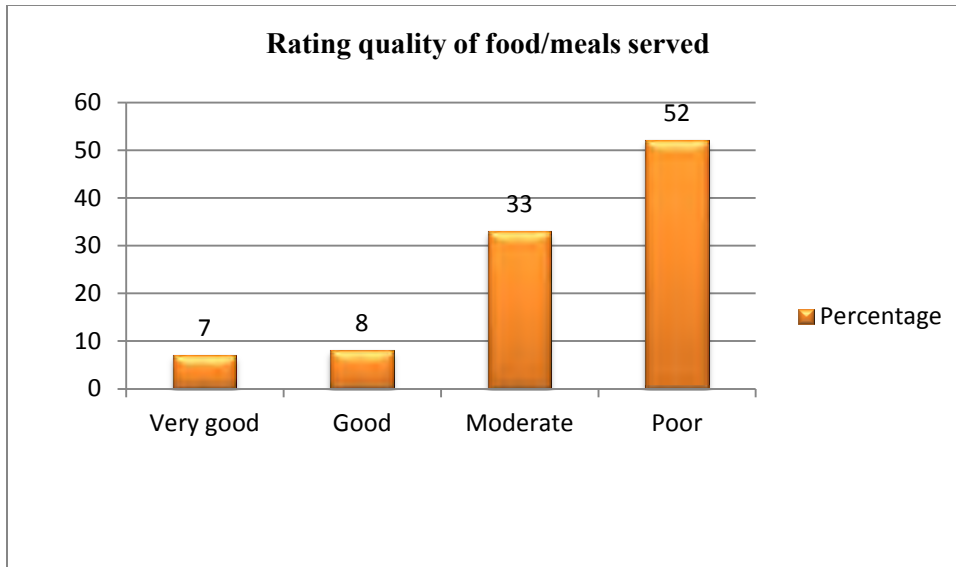


Figure 4.8: Rating quality of food/meals served by caterers (Teachers opinion)

Source: Field survey, 2018

4.2.2 Results of Questionnaire from Caterers

Food hygienic practices among of Caterers (Caterers opinion)

This section presents various practices of personal hygiene by School Feeding Programme caterers in the selected schools within the Ahafo-Ano North Municipality. ‘I wash my hand after handling the garbage’ was regarded as one of the major practices by most caterers who responded (RII=0.942). It was found that most caterers alluded that they often wash their hands after handling garbage. This was meant to prevent food contamination and subsequent poisoning likely to emanate from unwholesome particles and hazards. Garbage mostly contains bacteria and fungi due to the nature and untidy elements present in them. The failure of caterers to wash their hands after their handling can easily spread the bacteria and germs to the food cooked. This is mostly dangerous during food serving since contamination can easily occur from the caterer to pupils. It was emphasized by Alale (2014) that washing of hands was appropriate in ensuring

prevention of food contamination and poisoning. Bryan (2008) also did indicate that good food hygiene helps caterers to obey food preparation laws, reduce the risk of food poisoning among consumers.

The respondents further agreed strongly on the assertion that “They use clean towel to wipe my hand” (RII = 0.842). The use of clean towel by caterers to wipe their hands during food preparation and serving is a step in right direction. Dirty and unclean towel are likely to contain hazardous materials not suitable for enhancing good food hygienic practices. Caterers who use unclean towel to wipe their hands are prone to contamination than their counterparts who adopt clean ones to undertake their activities during food preparation chain processes. Pilling and Roberts (2008) in their submission further added that personal hygiene included the use of clean towel by food handlers during food preparation. It was observed that more than half of the caterers who responded to the study used clean towel to wipe their hands during food preparation.

Most of the respondents posited that they wash their hands before preparing meals for the pupils (RII = 0.815). The habit of most caterers washing their hands before preparing food ought to be commended. The washing of hands before touching food items especially raw foods like fruits and vegetables is crucial in the quest to prevent possible contamination. This attitude was observed during the researcher’s visit to many schools selected for the survey. It was observed that one of the caterers during the visit

’’ instructed her cooks to wash their hands well before cutting tomatoes and onions meant for the stew preparation’’

One of the recommendations made by NRAEF (2004) to be followed by food operators to help prevent the most common food safety problems was washing of hands before preparing food. Jarmila and Babak (2010) on the other hand indicated that food hygiene practice is a practice of proper washing and preservation of food were effective ways that prevent cross contamination and spread of bacteria which could lead to food poisoning.

Table 4.3: Food hygienic practices among of Caterers

Statement	Mean	RII	Ranking
I wear gloves before touching the ready-to-eat food product	2.65	0.442	9 th
I wear clean uniform during preparation of food	3.54	0.794	6 th
I served food with fork ,spoon and food thongs	3.74	0.810	5 th
I wash my hand after handling the garbage	3.98	0.942	1 st
I wash my hand before preparing meals	3.88	0.831	3 rd
I wash my hand after cleaning table	3.79	0.810	5 th
I wash my hand after meal	3.82	0.815	4 th
I used mouth cover during food handling	2.68	0.431	10 th
I use plate which is covered with plastic to serve the food	3.40	0.736	7 ^h
I wash my hand after handling money	2.75	0.489	8 th
I use clean towel to wipe my hand	3.94	0.842	2 nd

Source: Field survey, 2018

Key: Where X= Weighted Mean, 4= Strongly Agree, 3=Agree, 2= Disagree1=Strongly disagree. Where 1-1.5= Strongly disagree, 1.6-2.5=Disagree, 2.6-3.5=Agree and 3.5-4.0= Strongly agree and RII= Relative Importance Index

Serving food hot to pupils (Caterers opinion)

In responding to the issue of how food is served to pupils of the selected schools, it was emphasized by most caterers that food were served hot to pupils. This assertion was backed by a percentage of 61. As captured in Figure 4.9, 27% of caterers held the position that it was sometimes hot. The reason to this was when foods are prepared much earlier than dinning time of pupils. However, 12% indicated that the food served were not all that hot due to the timeframe from which the preparation is done. It was observed that; *‘a lot of the foods served were sometimes not hot and this attract flies which can lead to contamination with its associated consequences on pupils health’*.

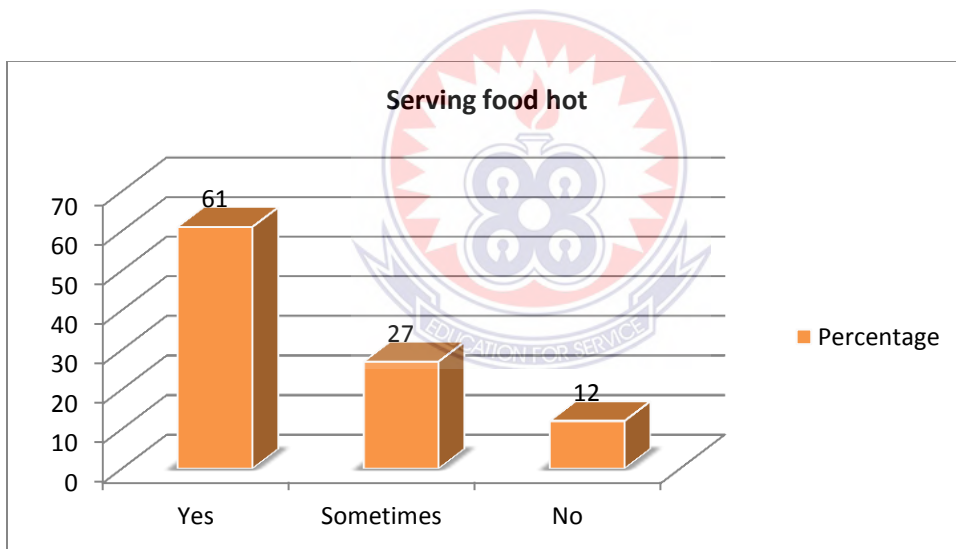


Figure 4.9: Serving food hot to pupils

Source: Field survey, 2018

Covering of hair during cooking (Caterers opinion)

The caterers were probed further to ascertain their views on what they use in covering their hair during cooking. It was evidenced in Figure 4.10 that 53% indicated they cover their hair with net. However 30% noted otherwise and claimed that they tie it with rubber band whereas 15% do nothing with at all. Despite these claims made by the caterers who responded, some of the pupils indicated otherwise during the interview. One of them indicated that:

‘‘ I sometimes see some particles in the food which happens to be human hair and I had to report it to my teacher one of the instances’’.

The covering of hair was necessary for caters to abide since it protects hair from entering food prepared which has negative health implication for consumers. It has the possibility of leading to stomach upset. Pilling and Roberts (2008) posits that hair of food handlers should be covered well to ensure food prepared are not contaminated.

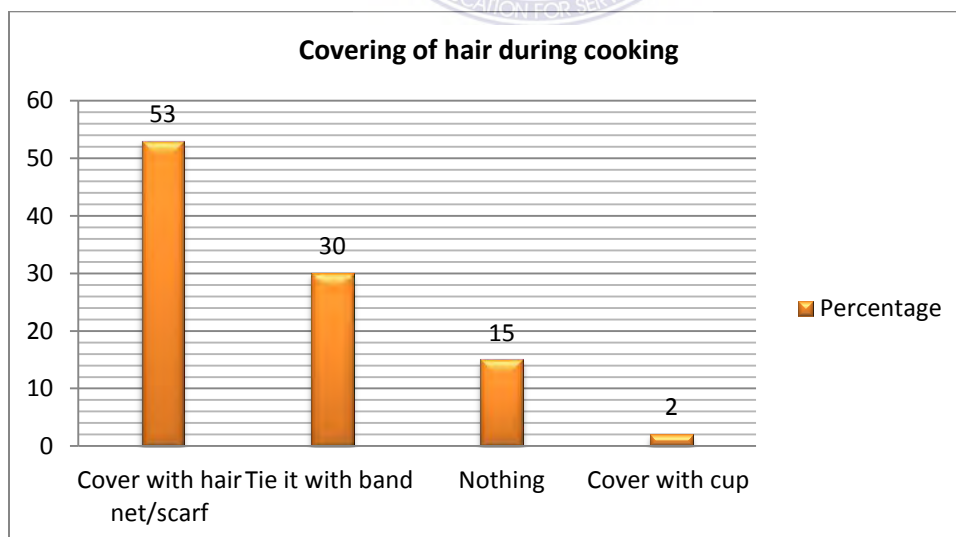


Figure 4.10 Covering of hair during cooking

Source: Field survey, 2018

Medium through which serving dishes cleaned

In order to get respondents view on how materials used to serve food are cleaned, opportunity was given to caterers to provide how they practice such acts. As can be seen from Figure 4.11, majority of caterers (67%) were of the view that warm water were used. Moreover, it was evidenced that 22% of caterers posited the use of cold water while 11% held the view that hot water was used. Among the three, hot water is the most preferable medium of ensuring safe cleaning but was unfortunately the least adopted by most caterers. This means that plates and bowls used for serving foods to pupils were not subjected to effective cleaning. Rowitz (2009) indicated that utensils meant for serving food should be properly washed to prevent contamination. It was observed in one of the schools that:

“some pupils washed their hands in the same bowl of water used for cleaning utensils for serving food”.

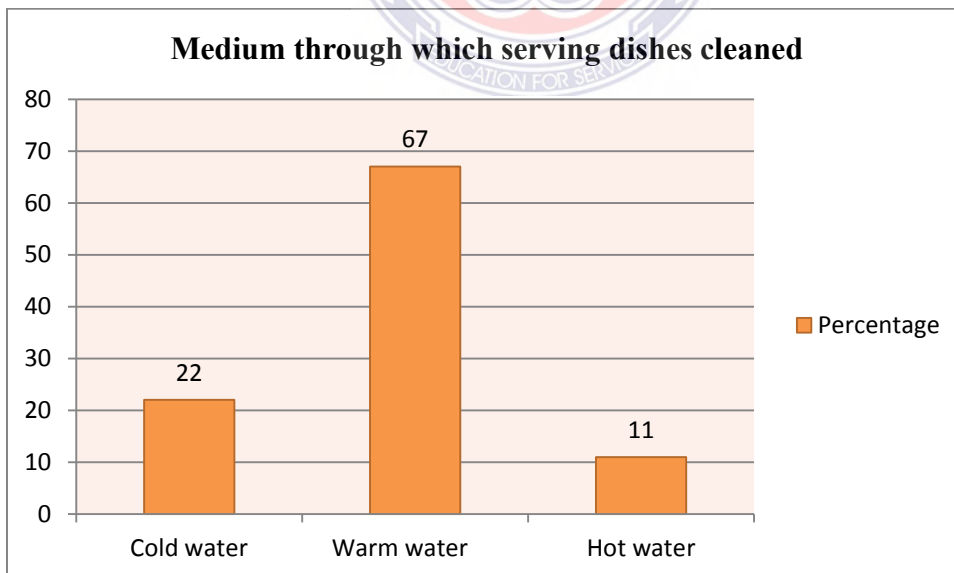


Figure 4.11: Medium through which serving dishes cleaned

Source: Field survey, 2018

Medium through which plates, pans etc are kept after service

The researcher probed further to find out the medium through which washed plates and bowls are kept by the caterers. The results shown in Figure 4.12 indicate 57% of caterers shared the same view that bowls and plates were put in a basket or uncovered containers. However 29% held the position that washed bowls and plates were stacked on a table. Exposing the washed items on table make it prone to dust and subsequent germ contamination. This in itself is not a proper practice since the bowls and plates can be easily contaminated by agents such as flies and rodents which lead to foodborne diseases. However, 14% of the caterers maintained that their items were kept in a covered container.

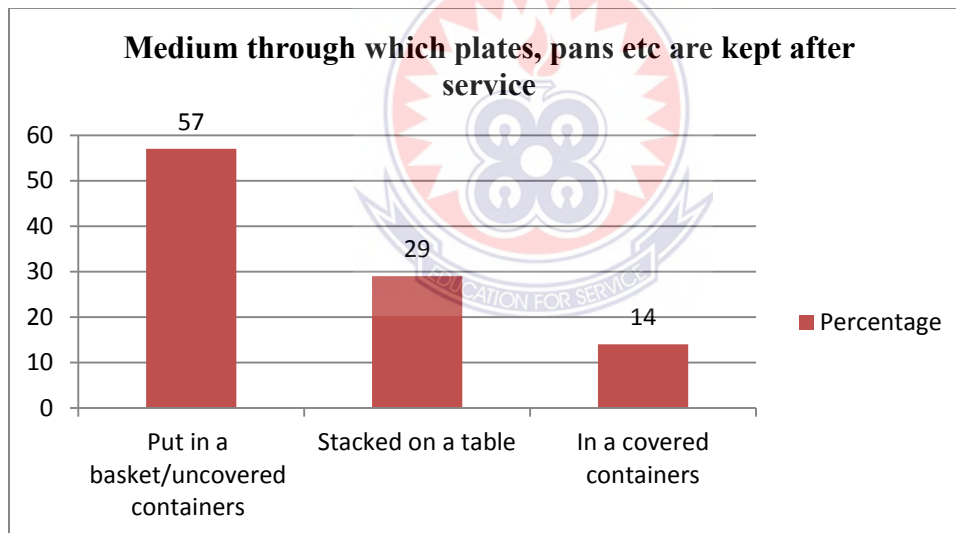


Figure 4.12: Medium through which plates, pans etc are kept after service

Source: Field survey, 2018

Regular laundering of kitchen napkins in a week

In ascertaining whether how often kitchen napkins were laundered within a week, it was found as captured in Figure 4.13 that 50% of respondents indicated they wash them as often as dirty. This practice is indeed a proper way to deal with cleanliness taken into consideration napkins. Some caterers indicated they washed napkins twice in a week and 12% alluded once a day. Pilling and Roberts (2008) posits as long as food hygiene is concerned, the kitchen and every tool or equipment in it needs to be washed and sanitized always

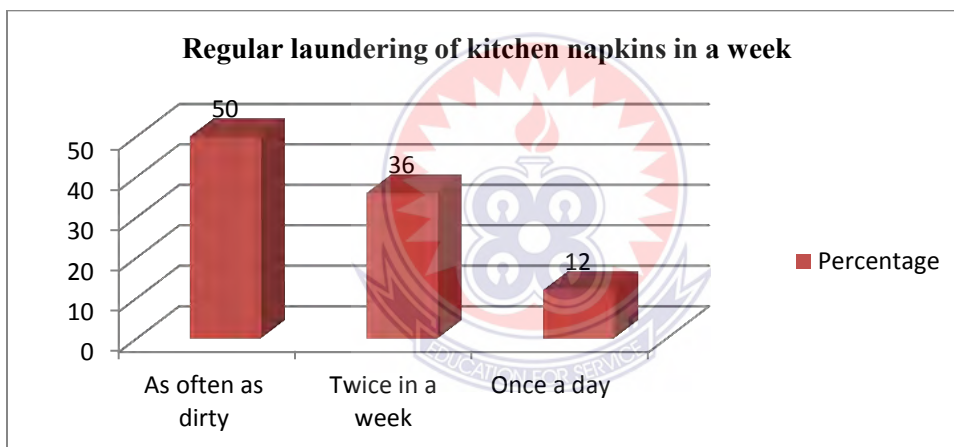


Figure 4.13: Regular laundering of kitchen napkins in a week

Source: Field survey, 2018

Periodic medical examinations for Caterers

It was found that most caterers (50%) undertaking the School Feeding Programme rarely went for medical checkups. This situation is appalling since, most caterers would not get the benefit of knowing their health status and deal with it accordingly. With such occurrence, it is likely to get caterers who may be suffering from some hidden illness who may not be aware and serve food with such condition. This can lead to spread of

diseases. Moreover, 29% indicated that they go for medical checkups occasionally whereas 21% posit they undertake it always. Pilling and Roberts (2008) suggested it was appropriate for food handlers to make regular checkups on communicable diseases to prevent its spreading.

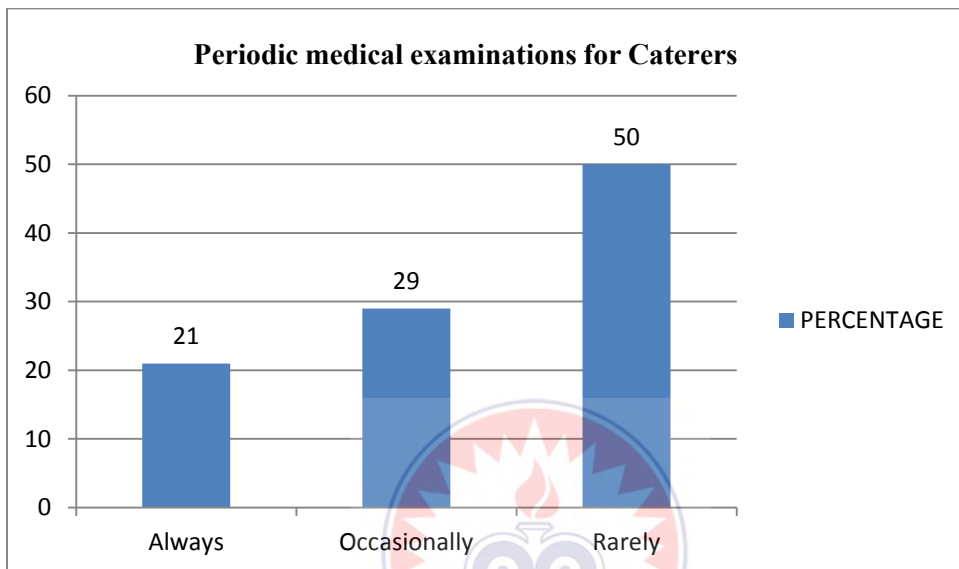


Figure 4.14: Periodic medical examinations for Caterers

Source: Field survey, 2018

Washing of hand before touching cooked food

In responding to the issue of washing of hand before caterers touch cooked food, it was shown in Figure 4.15 that most caterers (57%) held the position that they wash their hands before touching cooked food. Some caterers (29%) noted occasionally they wash their hands whereas 14% indicated otherwise. It is basic requirement for food handlers to maintain clean hands when handling cooked food since it can be easily get contaminated. The overall implication to this result indicates fair and appreciable proper handling of cooked food to pupils. NRAEF (2004) and Jarmila and Babak (2010) shared similar

view that washing of hand properly with soap was an effective way of preventing cross contamination and spread of bacteria which could lead to food poisoning.

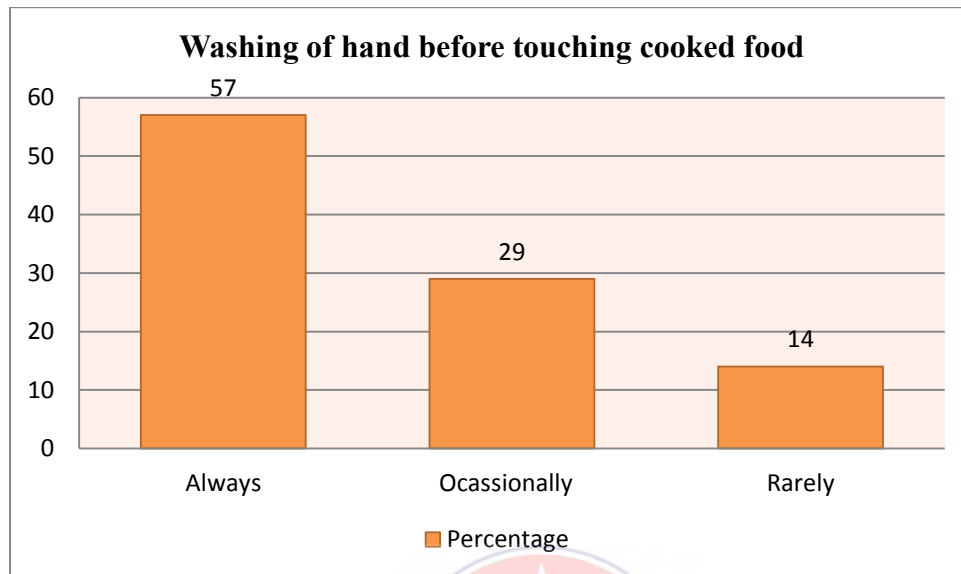


Figure 4.15: Washing of hand before touching cooked food

Source: Field survey, 2018

Fumigation of food production area

It was established that fumigation exercise do not occur at all and this assertion was backed by half of the caterers (50%) who responded to the survey. This indeed was troubling since it exposes food preparation site to cross contamination. Fumigation helps in fighting bacteria, germs, fungi and other agents likely to promote food poisoning. Failure to fumigate food preparation site attracts rodents, cockroaches and other flies which contaminate food and cause severe health problems to consumers.

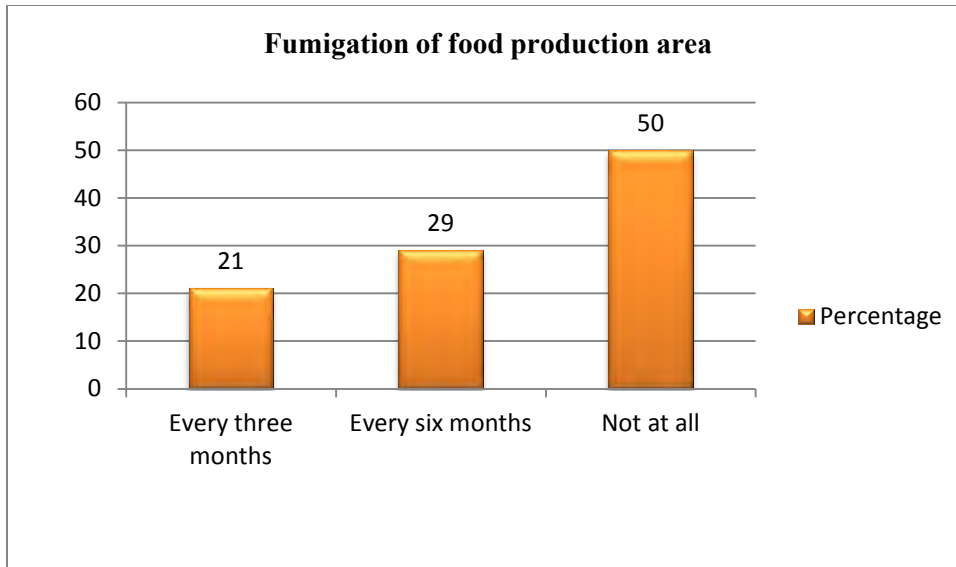


Figure 4.16 Fumigation of food production area

Source: Field survey, 2018

4.3 Results of Observation

It was observed from the survey that most of the caterers were not neatly dressed during serving of food to the pupils. There was no conscious effort by the caterers in question to even tidy the environment. As established from Table 4.4, it was observed that most caterers were not enthused with the zeal to enhance cleanliness in terms of their dressing.



Plate 1: Poor dressing and failure to use apron at Tapa D/A Primary/KG

As captured in Plate 1, it can be clearly seen that the dresses used for the food preparation was the same one used by the caterers for serving the pupils. Moreover, failure by some of the caterers to cover their hair make the food prone to contamination which can further result to food poisoning and its related consequences on the health of the pupils.



Plate 2: Serving food without cover at Akwasiase D/A Primary/KG

The nature of the feeding programme was also questionable in some of the schools since the caterers exposed the foods to flies and dust. As captured in Plate 2, the food were without cover and this made it possible for the foods to be contaminated with dust thereby causing illness when pupils take them. It was realized that most of the bowls used by the pupils were not properly washed with soap and this was a threat to their health since it has the possibility of containing micro-organisms which can affect them negatively.



Plate 3: Exposing food served to flies and lack of comfortable chairs and tables for pupils at Oldmankrom D/A Primary/KG

It was observed that there was the presence of houseflies at the place where foods were served to pupils. The presence of flies has the capability of contaminating food and thereby causing diseases such as diarrhea and cholera. Some of these observations attest to the fact that most caterers did not undertake good hygiene practices in the process of preparing and serving foods to the pupils.



Plate 4: Washed cooking utensils exposed to dust at Mabang Presby Primary/KG

As can be seen in Plate 4, it was clear that some of the caterers did not keep their cooking utensils at proper place but rather exposed them to filthy environment. This has the possibility of causing possible contamination as a result of this negative and poor practices as has been exhibited.



Plate 5: Food consumed on bare floor by pupils at Tewa E/A 'A' Primary/KG

As can be observed from Plate 5, the pupils were not provided with good and comfortable place to consume their foods. This made them prone to contamination since the availability of dust itself can cause micro-organisms to infect the food.

Table 4.4: Results of Observation on hygiene practices among caterers

Item	Yes (%)	No (%)
Neatly dressed	47	53
Clean environment where food is served	42	58
Proper waste disposal facilities	54	46
Clean finger nails	48	52
Use of apron	59	41
Presence of portable water	36	64
Availability of washing soap	62	38
Using of gloves	34	66
Presence of houseflies in the stalls or shade where food is served	73	27
Regular wiping of eating table	38	62
Use of clean water for washing hands and plates	65	35

Source: Field data, 2018

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of key findings which emanated from the study, conclusions deduced from findings and various recommendations made as well as suggestions for future studies.

5.2 Summary of Findings

- It was found from the study that widely practiced food hygiene by caterers undertaking School Feeding Programme was washing of hands before and after cooking, served food with ladle and spoon, covered hair with net, washed hand after handling garbage and clean towel to wipe their hand during food preparation.
- Among the most common personal hygiene practices by most caterers were proper bathing, cutting of nails short and cover of cuts. It was realized that food were mostly served hot. Bowls and plates for serving food were found to be washed using warm water and cold in most cases and were stored in a basket or uncovered containers. This exposes the bowls and plates to frequent contamination.
- It was evidenced that most caterers do not undergo frequent medical checkups which is necessary to identify possible illness caterers might be confronted with. Health inspectors on the other hand, were found to be poorly supervising activities of the vendors.

- Fumigation on food preparation site was found to be rarely done thereby exposing the environment to insect and rodents which can contaminate food. There was evidence of reported cases of foreign materials (human hair, small stones) found in served foods to pupils and this has subsequently lead to health problems such as vomiting, headache and stomach upset.
- Among the challenges confronting caterers on hygiene practices were no formal training for caterers who handle food, lack of adequate inspection by health inspectors and unsanitary waste disposal and overcrowding.

5.3 Conclusion

The food and personal hygiene practices of majority of caterers in the selected schools have not been encouraging. Their personal hygiene practices were appalling due to the lack of knowledge of most proper measures acceptable to regulating bodies. The persistent poor monitoring and supervision by health inspectors on catering practices can be partly blamed for occurrence of poor hygiene methods adopted by most caterers. This is coupled with lack of adequate training for caterers on best practices to achieving better hygiene conditions during food preparation and serving. In view of these, it can be stated that the poor hygiene practices by caterers are attitudinal, poor knowledge, ignorance and non-enforcement from health inspectors.

5.4 Recommendations

The following recommendations were given:

- It is imperative for health inspectors to ensure that there are regular visits to various food preparation and serving sites in the various schools benefiting from

the School Feeding Programme. It is appropriate for caterers to ensure that the right attitude and lifestyles are adopted to ensure good practices of food hygiene. It is imperative for caterers to have adequate knowledge on basic food safety and personal hygiene practices.

- Bowls and plates should be washed using appropriate soaps and washing powder. Pupils should not wash their hands in the same water basin that utensils are cleaned. This would prevent contamination of the water. Fruits, vegetables and other food commodities should be carefully cleaned before they are peeled and eaten raw.
- It is incumbent on food handlers to ensure that foods are prepared at well cleaned areas free from dust and other containable materials.
- It is appropriate for the Ministry of Education to organize adequate training for caterers on how to comply with hygienic methods during food preparation and serving. The training will equip caterers with the necessary skills on best practices towards food and personal hygiene. This will reduce occurrence of foodborne diseases to pupils who consume contaminated foods.
- Proper infrastructure such as dining hall, kitchen should be provided in schools enrolled in the free school feeding programme. The government through the Ministry of Education, Benevolent Organizations and the Parent Teacher Association (PTA) should also support in building proper dining halls and kitchen for the schools.

5.5 Suggestions for Further Studies

The study was limited to only caterers within Ahafo-Ano North Municipality. It is recommended that future studies can concentrate on food safety practices among food vendors and catering firms in the Ashanti Region.



REFERENCES

- Afoakwa, O. E. (2009). *Home Grown School Feeding Programme – The Ghanaian Model as Icon for Africa*. University of Ghana, Legon – Accra, Ghana.
- Amin, M.E. (2005). *Social science research: Conception. Methodology and analysis*. Uganda , Kampala, Makerere university.
- Babbie, E. (2001). *The practice of social research*. 9th edition. Belmont: Wordsworth
- Bas, M., & Kivanc, G. (2006). The evaluation of food hygiene knowledge, attitudes, and practices of food handlers in food businesses in Turkey. *Food Control*, 17, 317-322.
- Brannon, A. (2008). Food safety training and foodservice employees' knowledge and behaviour. *Food Prot. Trends* 28:252-260.
- Bryan, F. (2008). Risk associated with practices, procedures and processes that lead to outbreaks of foodborne diseases. *J Food Prot.* 51(8), 663-73.
- Bryman, A. (2006). *Mixed methods: A four-volume set*. Thousand Oaks, CA: Sage
- Bryman, A. (2012). *Social research methods 4th edition*. New York: Oxford University Press
- Chapman, B., McLaurin, T., & Powell, D. (2011). Food safety infosheets. *British Food Journal*, 113(2), 160–186.
- Chukuezi, C.O. 2010). Food safety and hygienic practices of street food vendors in Owerri, Nigeria. *Stud. Sociol. Sci.*, 1, 50–57.

Creswell, J.W. (2007). *Qualitative Inquiry and Research Design, Choosing among Five Approaches*. London: Sage Publication.

Creswell, J. W. (2013). *Qualitative Inquiry and Design: Choosing Among Five Approaches*. Los Angeles: SAGE Publications.

European Union Food Information Council, (2006). *Food Safety*. Retrieved February 13, 2018, from <http://www.eufic.org/article/en/expid/basics-food-safety/>

Ghana News Agency, (2014). School Feeding Program under Threat. [News Article] GhanaSchool Feeding Programme 2014.

Ghana School Feeding Programme (2008). District operations manual. *Accra: Edo Printing*.

Grassi, M. A., & Osella, E. (2008). Analysis of food safety and hygiene in mass catering establishments. *Journal of Industrie Alimentari*, 47(480), 471-478

Jarmila, S., & Babak, V. (2010). Microbial contamination after sanitation of food contact surfaces in dairy and meat processing plants. *Czech J. of food Science*, 28(5), 450-461

Kinfe, Z., & Abera, K. (2007). Assessment of the sanitary condition of food and drink establishments in Mekele town. *Ethiop. J. Health Dev.* 21(1), 3-11

Koul, L. (2002). *Methodology of educational research*. (3rd ed.). New Delhi: Vikas Publishing House PVT ltd.

Laura, R. G., & Carol, S. (2005). Factors impacting food workers' and managers' safe food preparation practices: A qualitative study. *J. of food Protection Trends*, 25(12), 981-990

- Laura, R. G., & Vincent, R. (2007). Factors related to food workers hand hygiene practices. *J. of Food Protection Trends*, 70(3), 661-666
- Legnani, P., & Alvaro, N.(2004). Hygienic control of mass catering establishments, microbiological monitoring of food and equipment. *Food Control*.15(3):205-11.
- Liddle, A. J.(2003). Chains upgrade to online training, downgrade teaching expenses. *Nation's Restaurant News*, 62-63.
- Mulugeta, K., & Bayeh, A. (2012). The sanitary condition of food service establishments and food safety knowledge and practices of food handlers in Bahir dar town. *Ethiop J Health Sci*. 22(1), 27-35.
- NEPAD School Feeding Programme (2005). *NEPAD School Feeding Programme; Annual Operating Plan*.
- National Restaurant Association Educational Foundation. (2004). *Servsafe coursebook* (3rd ed.). Chicago, IL: Wiley.
- Paola P. & Allan O. (2010). Employees' food safety knowledge and practices in foodservice operations serving high risk populations. *J. of the American Dietetic Association*; 120(10), 1-10.
- Pilling, V. K., & Roberts, K. R. (2008). Identifying specific beliefs to target to improve restaurant employees' intentions for performing three important food safety behaviors. *American Dietetic Association*, 108(6), 991-997.
- Punch, K. F. (2007). *Introduction to social research* (2nd ed.). London: SAGE Publications Ltd.

- Quaye, W., Essegbey, G., Frempong, G., & Ruivenkamp, G. (2010). Understanding the concept of School Feeding Programme. *International Review of Sociology*, 20(3), 427-444.
- Seaman, P. (2009). Food hygiene training: Introducing the food hygiene training model. *Food Control*, 21, 381-387.
- Smith, R. (2004). Food hygiene training: The chance to create a coherent policy. *British Food Journal*, 96 (7), 41-45.
- Speck, M. (2006) Compendium of methods for microbiological examination of food. Washington DC. *American Pub Health Assoc.* 417-23 p
- Tauxe, R. V. (2002). Emerging foodborne pathogens. *Int J Food Microbiol.* 78(1-2):31-41.
- Tinker, I. (2007). Street foods. *Current Sociology*, 35, 1-110.
- Tones, K., Tilford, S., & Robinson, Y. (2001). *Health Education Effectiveness and Efficiency*. Chapman & Hall. London.
- UNESCO, (1990). *World Food Programme Handbook Rome UNESCO*, Printing Press.
- WFP, (2004). *School Feeding Programs: Why They Should Be Scaled Up Now*.
- Winarno, F.G. & Allain, A. (2001). *Street Food in Developing Countries: Lessons from Asia*. Food, Nutrition and Agriculture – Food for the Future. FAO.
- World Health Organization. (2000). *Foodborne disease: A focus for health education*. Geneva, Switzerland: World Health Organization.
- World Health Organization (WHO) (2002). *Food Safety Issues: Essential Safety Requirements for Street Vended Food (Revised edition)*. World Health Organization. Geneva.

World Health Organization (WHO) (2006). *Five Keys to Safer Food Manual*.

World Health Organization, Geneva, Switzerland.

Yapp, C., & Fairman, R. (2004). *Factors affecting food safety compliance within small and medium-sized enterprises: implications for regulatory and enforcement strategies*, Kings College, UK.



APPENDIX A

ADMINISTERED QUESTIONNAIRE FOR STUDY RESPONDENTS

Name of School:.....

Dear Respondent,

I am a student from the University of education Winneba-Kumasi campus, pursuing a Master's programme in Technology in Education Catering, Hospitality and Tourism

I am carrying out a study on the topic “ *Assessing the Hygienic Practices of Caterers in the School Feeding Programme in the Ahafo-Ano North Municipal*”. You have been randomly selected to participate in the research by completing the questionnaire. It would thus be very helpful if you assist by answering the questionnaire as per instructions at the beginning of each section. You are required to provide the most appropriate answer in your opinion. Your responses will be kept confidential. In any case the questionnaire is anonymous. Thank you.

Please help us classify your response by expressing your opinion on the raised issues by ticking an appropriate box.

Yours faithfully,

.....

Researcher

**QUESTIONNAIRE FOR CATERERS IN THE SCHOOL FEEDING
PROGRAMME.**

FOOD HYGIENIC PRACTICES OF CATERERS

1. Rank the following components of **food hygienic practices of Caterers** in the Ahafo -Ano North in a range of one (1) to five (5), with one (1) being the agreement or disagreement.

NO	Food hygiene practices	RESPONSES				
		1	2	3	4	5
1	I wash my hand after handling money					
2	I wash my hand after meal					
3	I wear gloves before touching the ready-to-eat food product					
4	I wash my hand after cleaning table					
5	I wash my hand before preparing meals					
6	I wash my hand after handling the garbage					
7	I wear clean uniform during preparation of food					
8	I use clean towel to wipe my hand					
9	I used mouth cover during food handling					
10	I use plate which is covered with plastic to serve the food					
11	I served food with fork ,spoon and food thongs					

2. Do you serve foods hot?

a. Yes b. No c. sometimes

3. How are the foods conveyed from the kitchen to the students?

.....
PERSONAL HYGIENIC PRACTICES OF CATERERS

1. How do you treat fresh cuts and wounds?
.....
.....

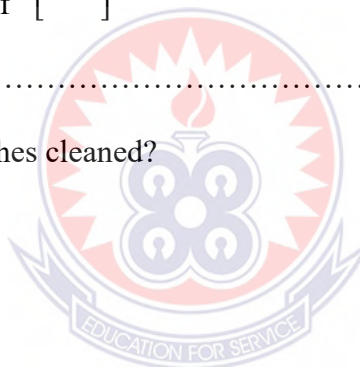
2. What do you do to your hair when cooking?

- a. Nothing []
- b. Cover with cup []
- c. Tie it with band []
- d. Cover with hair net/scarf []

Any other specify.....

3. How are the serving dishes cleaned?

- a. Hot water []
- b. Warm water []
- c. Cold water []
- d. Disinfectant []



KITCHEN HYGIENIC PRACTICES OF CATERERS

1. How are the plates, pans etc kept after service?

- a. Stacked on a table []
- b. Put in a basket/uncovered containers []
- c. In a covered containers []
- d. Disinfectant []

Any other specify

2. How regularly are the kitchen napkins laundered in a week?

- a. Once a day []
- b. Twice a day []
- c. Every other day []
- d. As often as dirty []

3. Do you have periodic medical examinations?

- a. Always []
- b. Occasionally []
- c. Rarely []

4. Do you wash your hands before touching cooked food?

- a. Always []
- b. Occasionally []
- c. Rarely []



5. How often do you fumigate your food production area?

- a. monthly
- b. every three months
- c. every six months
- d. yearly
- e. not at all

CHALLENGES AND SAFETY MEASURES ADOPTED BY THE CATERERS

1. What challenges do you face as far as running this programme is concern

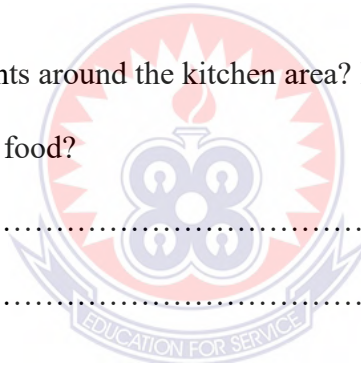
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2. What measures can be taken into action to improve hygienew practices among caterers?.....

.....
.....

3. Do you see pest or redents around the kitchen area? If yes how do you get rid of them without contaminating the food?

.....
.....



APPENDIX B

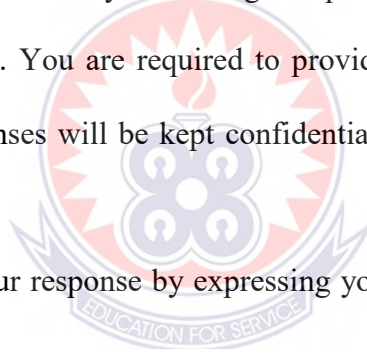
QUESTIONNAIRE FOR TEACHERS

Name of School:.....

Dear Respondent,

I am a student from the University of education Winneba-Kumasi campus, pursuing a Master's programme in Technology in Education Catering, Hospitality and Tourism

I am carrying out a study on the topic “ *Assessing the Hygienic Practices of Caterers in the School Feeding Programme in the Ahafo-Ano North Municipal*”. You have been randomly selected to participate in the research by completing the questionnaire. It would thus be very helpful if you assist by answering the questionnaire as per instructions at the beginning of each section. You are required to provide the most appropriate answer in your opinion. Your responses will be kept confidential. In any case the questionnaire is anonymous. Thank you.



Please help us classify your response by expressing your opinion on the raised issues by ticking an appropriate box.

Yours faithfully,

.....

Researcher

**QUESTIONNAIRE FOR TEACHERS FROM SCHOOLS IN THE SCHOOL
FEEDING PROGRAMME.**

TEACHERS OPINION ABOUT CATERERS FOODHYGIENIC PRACTICES

1. Have you ever found any foreign material in the meals the caterers prepare and serve the pupils? a. Yes b. No

If yes what was it?

2. Has any of the pupils ever suffer from any food borne illness as a result of eating the caterer's meals before? a. Yes b. No

If yes, which of the following diseases:

a. stomach pain

b. vomiting

c. Diarrhea

d. Headache

3. Do you see the caterers use soap when washing hands?

a. Yes b. No

Give reasons for your answer



TEACHERS OPINION ABOUT CATERERS PERSONAL HYGIENIC PRACTICES

Rank the following components of **Practices Personal Hygiene** by caterers in the Ahafo-Ano North in a range of one (1) to five (5), with one (1) being the agreement or disagreement. Just tick (✓) the blank space for the answer, which is right to you.

NO	PERSONAL HYGIENE	RESPONSES				
		1	2	3	4	5
1	Hair cover					
2	Cutting of finger nails					
3	Washing of hands					
4	Cover of mouth and nose					
5	Touching of ears					
6	Bathing					
7	Cover of cut					
8	Spitting					
9	Clean kitchen before cooking.					
10	Serve food away from dust and flies					
11	Dishing out of food through bare hand					
12	Dishing out of food through ladle/spoon					
13	Wash my hand after handling money					

FACTORS HINDERING HYGIENIC PRACTICES OF CATERERS

Rank the following components of Factors hindering hygienic practices of Caterers by food vendors in the Ahafo-Ano North in a range of one (1) to five (5), with one (1) being the agreement or disagreement.

Factors hindering hygienic practices of Caterers in the Ahafo-Ano North

Municipality

NO	CHALLENGES	RESPONSES				
		1	2	3	4	5
1	The inappropriate combination of ingredients in the diet					
2	Poor water supply and poor drainage systems					
3	Unsanitary waste disposal and overcrowding					
4	There is no formal training for caterers who handle food					
5	Lack of adequate inspection by health inspectors					
6	Unhygienic surroundings and limited water supply					
7	Inadequate storage of food and drinks					

1. How would you rate the quality of food/meals served by the caterer?

- a. very good b. good c. moderate d. poor
 e. very poor

2. What measures can be taken into action to improve hygienew practices among caterers?.....

.....

APPENDIX C

INTERVIEW GUIDE FOR THE PUPILS

1. Are the food/meals served hot at dinning?

A. Yes B. No

2. Do you find any fringe materials in your food?

A. Yes B. No

3. Do you see the cooks put on apron and hair coverings when cooking?

A. Yes B. No C. Sometimes

4. Are you provided with soap and water to wash hands?

A. Yes B. No C. At times

5. When do you wash your hands?

After and before eating After eating Before eating

6. Where do your meals always served?

Classroom Outside the classroom Misfit structure
Kitchen

7. Where do you sit to take or have your meals?

Classroom Outside the classroom Dinning hall Kitchen

APPENDIX D

OBSERVATIONAL GUIDE

Check list for observing caterers hygienic practices in the selected schools

1. Neatly dressed Yes [] No []
2. Clean environment where food is served Yes [] No []
3. Proper waste disposal facilities Yes [] No []
4. Clean fingernails Yes [] No []
5. Use of apron Yes [] No []
6. Presence of portable water Yes [] No []
7. Availability of washing soap Yes [] No []
8. Using of gloves Yes [] No []
9. Presence of houseflies in the stalls or shade where food is served Yes { } No { }
10. Regular wiping of eating table Yes { } No { }
11. Availability of portable water Yes { } No { }
12. Use of clean water for washing hands and plates Yes { } No { }
13. Water container covered Yes { } No { }
14. Hair covered Yes { } No { }
15. Talking while serving food Yes { } No { }
16. Availability of appropriate kitchen Yes { } No { }
17. Availability of appropriate dining hall Yes { } No { }