

**AKENTEN APPIAH-MENKA UNIVERSITY OF SKILLS TRAINING AND  
ENTREPRENEURIAL DEVELOPMENT**

**DETERMINING THE PREVAILING CAUSES AND PREVENTIVE  
PRACTICES OF FOOD POISONING AMONG STUDENTS IN  
BOLGATANGA VOCATIONAL TECHNICAL INSTITUTE**

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Hospitality and Tourism of Akenten Appiah-Menka University of Skills Training  
and Entrepreneurial Development to fulfill the requirement for the award of  
Master of Technology (Catering and Hospitality)**

**2023**

**DECLARATION**

**STUDENT’S DECLARATION**

I, DIANA KWAKYE MARFO, hereby declare that this thesis is the result of my own effort and that no part of it has been presented for another certificate in the university or elsewhere.

SIGNATURE.....

DATE.....

**SUPERVISOR’S DECLARATION**

I hereby declare that the preparation and presentation of this thesis was supervised in accordance with the guidelines on supervision of the thesis laid down by the Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development.

SIGNATURE.....

DATE.....

DR. DOREEN DEDO ADI

## **DEDICATION**

I dedicate this project to the Almighty God for giving me the enabling grace, wisdom and understanding to come with a well refined thesis.

I also dedicate this work to my lovely husband and children; Reynold, Roney and Raynell.

## **ACKNOWLEDGMENT**

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## ABSTRACT

This study sought to ascertain the prevailing causes and the preventive practices of food poisoning among students in Bolgatanga Vocational/ Technical institute. The study targeted a population of 2357 out of which 500 students were sampled with random sampling technique used to select the sampling. The study adopted deductive design and descriptive research design to study the variables. Food poisoning in developing countries is said to be because with many factors such as traditional processing methods, inappropriate holding temperature, poor hygienic practices, the prevalence is intertwined with other economic issues, and enforcement mechanisms. In African, the incidence of foodborne diseases is estimated at 3.3-4.1 episode per person per year, both food and water borne diarrheal diseases is estimated to cause between 450,000-700,000 death in African annually with many sporadic cases unrecorded. In Ghana context, students particularly in the boarding houses in recent times are challenged in increasing foodborne infection, food poisoning cases are due to the consumption of unhygienic foods, pesticides residue in foods or water and inappropriate storage condition which the Bolgatanga Vocational/ Technical Institute in the Upper East Region is of no exception. The provision of safe food for students is of great concern to government and other stakeholders as it improves health, growth and development of beneficiaries and encourages continued education to developing countries. Therefore, there is the need for this study to contribute policy development in tackling food poisoning among students, workers both in public and private institutions in the country at large and Bolgatanga especially. The study concluded that the hygienic practices in the overall students is abysmally inadequate, and therefore recommend that management of Ghana Health Service, Management of various educational institutions must organize sensitization programs on food poisoning and the importance of maintaining high standard of hygiene to lessen the prevalent incidence of food poisoning

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Background to the Study**

In recent times, cases of outbreaks of food-borne illnesses have been high both in developed as well as developing countries (Osaili, Jamous, Obeidat, Bawadi, Tayyem & Subih, 2013). This problem is more exacerbated in developing countries due to economic reasons, poverty, lack of adequate health care facilities, and the dearth of data regarding food-borne diseases (Monney, Agyei & Owusu, 2013). Food contamination in developing countries is said to be caused by many factors such as traditional food processing methods, inappropriate holding temperatures and poor personal hygiene (Feglo & Sakyi, 2012). Further, the prevalence of food-borne illnesses in developing countries is intertwined with other economic and developmental issues, namely, legislation, infrastructure and enforcement mechanisms. Specifically, according to Lam, Remais, Fung, Xu and Sun (2013), inadequacy of food safety laws, laxity in regulatory enforcements and the lack of education for food handlers and individual citizens.

In Africa, the incidence of foodborne diseases is estimated at 3.3-4.1 episodes per person per year in and food and water-borne diarrhoeal diseases are estimated to cause between 450,000-700,000 deaths in Africa annually, with many more sporadic cases going unrecorded (Santos, Nogueira, Patarata & Mayan, 2008). Globally, poor food hygiene knowledge and practices have been observed among many people, leading to increased food-borne disease burden (Odo & Onoh, 2018). The provision of safe food for students is of great concern to governments and other stake holders as it improves health, growth and development of beneficiaries and encourages continued education

in developing countries (Santana, Almeida, Ferreira & Almeida, 2009; Oranusi, Galadima, Umoh & Nwanze, 2007; WHO, 2002).

In the Ghanaian context, students particularly those in the boarding houses thus highly depend on food served in the school for their growth, wellbeing and general healthy lifestyle (Mugabo, Afoakwa, Annor & Rwubatse, 2017). However, the consumption of food by students in schools in the recent times is being challenged with increasing foodborne infection. Foodborne diseases, being an outcome of poor hygiene practices (Dablood, Fouad & Mihdhi, 2014; Sumner, Brown, Frick, Stone, Carpenter & Bushnell, 2011) is conveyed internationally in schools which tends to defeat the aims of quality food provision by school authorities. Further, in many instances, the confined nature of the school environment favours direct transmission of diseases among individuals.

According to Ababio, Taylor, Swainson and Daramola (2016), foodborne diseases in Ghana are generally reported to have killed 90,692 71 people with 297,104 reported cases at Outpatient departments in hospitals costing the government GHC 594,208.00 and approximately 594,279 productive days in 2006. The Esena and Owusu (2013) also indicated that 1 in every 40 Ghanaians suffers serious foodborne diseases annually. This situation is alarming in the recent times in some parts of the country. Although, the number of studies on food safety culture is growing, it seems that this issue needs to be explored further, especially when it comes to the experiences of food companies.

Thus, it can be stressed that, poor food safety culture is increasingly recognised as a risk for foodborne illness outbreaks in the food industry. In spite of the growing awareness of food poisoning in recent times, there is a lack of previous studies to measure the knowledge of people on food hygiene, attitude, and hygienic and

preventive practice of food poisoning among students which Ghana is no exception especially in the Bolgatanga in the Upper East Region of Ghana. Therefore, there is the need for this study to contribute policy development in tackling food poisoning among students and workers both in public and private institutions in the country at large and Bolgatanga in particular.

## **1.2 Statement of the Problem**

Globally, in recent decades, food poisoning has become a growing public health problem both in developed and developing countries (Fukuda, 2015; Grace, 2015). Scientifically, food contaminated with many pathogenic and toxigenic agents are considered as food poisoning (Kadariya, Smith & Thapaliya, 2014). Thus, according to the Centers for Disease Control and Prevention (CDC, 2016), food poisoning is defined as a variety of illnesses acquired by consumption of contaminated foods or water, with a variety of causes ranging from infective organisms such as bacteria, viruses and parasites, poisonous chemicals, radioactive substances and other harmful substances leading to more than 250 different food-borne diseases ranging from diarrhea to cancers. Moreover, this phenomenon has been known to be caused by many risk factors (Zyoud, Shalabi, Imran, Ayaseh, Radwany, Salameh, Sa'dalden, Sharif, Sweileh, Awang & Al-Jabi, 2019). For instance, in developing countries, many food poisoning cases are due to the consumption of unhygienic foods, pesticide residues in foods or water, and inappropriate food storage conditions (Zyoud et al., 2019).

It can be indicated that, approximately, 50% of food-borne illness cases are related to improper storage or reheating, with 45% associated with inappropriate food storage and 39% with cross contamination (Bean & Griffin, 2018). This is serious especially in

developing countries of which Ghana is no exception (Mekonnen, Solomon & Yosef, 2021; Nartey, Gamor & Mensah, 2017). For instance, CDC in 2020 indicated that, each year, 48 million people get sick from foodborne illness, 128,000 are hospitalised and 3,000 die. Additionally, according to WHO (2019), coarsely 600 million, almost 1 in 10 people globally, fall sick after consuming contaminated food, and 420, 000 die every year, giving rise to the loss of 33 million healthy life years.

Thus, food poisoning presents a global health risk putting everyone at risk, whether infants, young children, pregnant women, the elderly, and those with an underlying illness are highly susceptible (Mshelia, Osman & Misni, 2022). Further, every year, 220 million children develop food poisoning and 96 000 dies. Besides, the other serious aspect of food poisoning is that, it can lead to longer-term illnesses like cancer, kidney failure, liver damage, brain and neural disorders. More importantly, the fear emerges when students are exposed to the risks of food poisoning illness (Bakar, Abdullah, Yusof & Ishak, 2021). In the Ghanaian context, the case is not different as food poisoning is becoming prevalent especially among students (Nartey et al., 2017).

For instance, according to Ameme, Alomatu, Antobre-Boateng, Zakaria, Addai, Fianko, Janneh, Afari, Nyarko, Sackey and Wurapa (2016), a group of students from a Senior High School in Fantekwa district were brought to the emergency unit of the district hospital with complaints of abdominal pain, vomiting and bloody mucoid diarrhea due to food poisoning. However, in Ghana, foodborne diseases as a result of food poisoning are hardly reported and outbreaks therefore go undetected partly because of non-existence of a dedicated foodborne disease surveillance system (Nartey et al., 2017). Despite this, a few foodborne disease outbreaks have been investigated in

the country (Mekonnen, Solomon & Yosef, 2021; Besufekad et al., 2017; Nartey et al., 2017; Aovare, 2017; Ameme et al., 2016; Malm, Nyarko, Yawson, Gogo, Lawson & Afari, 2015), and none in the Bolgatanga specifically on food poisoning, hence, the need for this research.

Additionally, according to Offei-Akoto (2015), sanitation in Bolgatanga is questionable with a dire need for considerations since there are deteriorating sanitary conditions in many educational institutions and places where food vendors operate. This is tantamount to food poisoning and subsequent foodborne outbreak diseases which needs research to be done on that. However, to the best of the research knowledge, no study has been done on food poisoning among students with focus Bolgatanga Vocational Institute. Looking at the nature of the phenomenon in question, there is the need to undertake this current study in order to highlight the actual prevailing causes, knowledge of students on food hygiene and hygienic practices in relation to food poisoning for the purposes of policy development.

### **1.3 Purpose of the Study**

The main aim of this current study is to examine the prevailing causes and preventive practices of food poisoning among students in the Bolgatanga Vocational/Technical Institute.

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

The study seeks to achieve the following specific objectives:

1. To explore the prevailing causes of food poisoning among students in the Bolgatanga Vocational/Technical Institute.

2. To measure the food hygiene knowledge among students in the Bolgatanga Vocational/Technical Institute.
3. To evaluate the hygienic practices among students and workers in the Bolgatanga Vocational/Technical Institute.

### **1.5 Research Questions**

The following research questions will be answered based on the stated specific objectives:

1. What are the prevailing causes of food poisoning among students in the Bolgatanga Vocational /Technical Institute?
2. What is the food hygiene knowledge among students in the Bolgatanga Vocational /Technical Institute?
3. What are the hygienic practices among students and workers in the Bolgatanga Vocational/Technical Institute?

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

This proposed study needs to be undertaken in the context of Bolgatanga looking at the picture illustrated above to provide measures for deeply tackling food poisoning since it is becoming prevalent especially among students. The findings of the study will help public health officials and municipal assemblies to be aware of the effectiveness of the operational licensing for caterers in educational institutions, restaurants and food vendors and the effectiveness of their monitoring roles in the Bolgatanga municipality through the findings of this study. Also, there are instances of food poisoning and foodborne diseases in the country which comes as a result of non-adherence to proper food safety culture. Therefore, the outcome of the study will inform Food and Drug Authority and other policy makers to enforce strict food safety practices. Also, the

outcome of the study will inform school authorities and the general public on causes and preventives measures of food poisoning. It will also inform school authorities to frequently embark on clean up exercises for descent learning environment. The outcome of the study will educate caterers, small and medium scale food sellers and the general public appropriate methods to the prevention of food poisoning. The academic world and other stake holders will also benefit from this study sine it may serve as a basis for more research in this area, the food industry. Finally, the study will contribute to the existing literature and also serve as a reference material for future researchers.

### **1.7 Scope/Delimitations of the Study**

Geographically, this current study is focused on Bolgatanga in the Upper East Region of Ghana. The choice of the area is informed by proximity and some frequent occurrences of foodborne diseases or outbreaks in the Municipality. Due to this reason, only Bolgatanga Vocational /Technical Institute will be considered. Here, the target respondents will be the students and workers in the institute who will be contacted to volunteer information to achieve the objectives of the study. Due to the time and resources involved in an extensive study, the study considers only this area.

### **1.8 Organisation of the study**

This current study comprises five chapters. The first chapter being chapter one is the introduction consisting of the background of the study, statement of the problem, purpose of the study, research objectives, research questions, delimitations, limitations, and organisation of the study. Chapter two deals with both theoretical and empirical literature which will be done in relation to the stated objectives. Here, some key concepts relating to the topic will be explained. Chapter three presents the research

methodology, comprising the research approach, research design, study area, population, sampling procedures, data collection instrument, data collection procedures, sources of data, reliability and validity tests, ethical considerations and data processing and analysis tools. Chapter four presents results and discussion of the study. Chapter five focuses on summary, conclusions and recommendations as well as suggestions for further research.

## **CHAPTER TWO**

### **REVIEW OF RELATED LITERATURE**

#### **2.0 Overview**

This chapter presented the review of relevant literature in relation to examining the prevailing causes and preventive practices of food poisoning among students in the Bolgatanga Vocational /Technical Institute. It sets out the theoretical foundation of the study into three sections. The first section presents the conceptual base including the definition of food poisoning, causes of food poisoning as preventive measures of food poisoning. The second section sets out the theoretical foundations regarding the relevant theories to shape the focus of the study. The third section also examines empirical literature of interest to the topic, and whiles the last section draws conclusions from both the theoretical and empirical literature.

#### **2.1 Review of Conceptual Base**

##### **2.1.1 Food Poisoning**

Food poisoning, often known as a foodborne illness, is an ailment brought on by consuming tainted food. The most frequent causes of food poisoning are infectious organisms or their toxins, such as bacteria, viruses, and parasites. Food can get contaminated by infectious organisms or their poisons at any stage of processing or production. If food is handled or cooked improperly at home, contamination can also happen. Symptoms of food poisoning, which can appear hours after consuming tainted food, frequently include nausea, vomiting, and diarrhea. Food poisoning usually only causes mild symptoms that go away on their own. However, some patients require hospitalization (Chamberlain, Sauver, Rutten, Fan, Jacobson, Wilson & Rocca, 2022).

### **2.1.2 Causes of Food Poisoning**

Food poisoning is said to be caused by some risk factors. Food can get contaminated at any stage of production, including planting, harvesting, processing, storing, transporting, and preparation. The cause is frequently cross-contamination, which is the movement of dangerous organisms from one surface to another. This is particularly problematic for meals that are raw and ready to consume, such as salads or other produce. These foods are not cooked, thus dangerous microorganisms are not eliminated before consumption and can result in food poisoning. Food poisoning can be caused by a variety of bacteria, viruses, or parasites. Thus, infections with microbes such as viruses, bacteria, and parasites can cause most food poisoning. Also, harmful chemicals can cause some cases of food poisoning. Microbes can spread to food at any time while the food is grown, harvested or slaughtered, processed, stored, shipped, or prepared.

### **2.1.3 Risk Factors**

It can be said that, whether you become ill after eating contaminated food depends on the organism, the amount of exposure, your age and your health. According to Chamberlain et al. (2022), high-risk groups include: for older adults, here, as you get older, your immune system may not respond as quickly and as effectively to infectious organisms as when you were younger. Regarding pregnant women, during pregnancy, changes in metabolism and circulation may increase the risk of food poisoning. Your reaction may be more severe during pregnancy. Rarely, your baby may get sick, too. For infants and young children, here, their immune systems have not fully developed. In addition, for people with chronic disease, having a chronic condition such as diabetes, liver disease or AIDS or receiving chemotherapy or radiation therapy for cancer reduces your immune response.

#### 2.1.4 Preventive Practices

According to Chamberlain et al. (2022), the following preventive practices are important, especially at home.

- 1) **Wash your hands, utensils and food surfaces often.** Wash your hands well with warm, soapy water before and after handling or preparing food. Use hot, soapy water to wash utensils, cutting boards and other surfaces you use.
- 2) **Keep raw foods separate from ready-to-eat foods.** When shopping, preparing food or storing food, keep raw meat, poultry, fish and shellfish away from other foods. This prevents cross-contamination.
- 3) **Cook foods to a safe temperature.** The best way to tell if foods are cooked to a safe temperature is to use a food thermometer. You can kill harmful organisms in most foods by cooking them to the right temperature.
- 4) **Cook ground beef to 160 F (71.1 C);** steaks, roasts and chops, such as lamb, pork and veal, to at least 145 F (62.8 C). Cook chicken and turkey to 165 F (73.9 C). Make sure fish and shellfish are cooked thoroughly.
- 5) **Refrigerate or freeze perishable foods promptly**-within two hours of purchasing or preparing them. If the room temperature is above 90 F (32.2 C), refrigerate perishable foods within one hour.
- 6) **Defrost food safely.** Don't thaw food at room temperature. The safest way to thaw food is to defrost it in the refrigerator. If you microwave frozen food using the "defrost" or "50% power" setting, be sure to cook it immediately.
- 7) **Throw it out when in doubt.** If you aren't sure if a food has been prepared, served or stored safely, discard it. Food left at room temperature too long may contain bacteria or toxins that can't be destroyed by cooking. Do not taste foods

that you are unsure about-just throw them out. Even if it looks and smells fine, it may not be safe to eat.

## **2.2 Review of Theoretical Literature**

This section presents the theories that underpin the study. The theories are deemed appropriate for the study and are in relation to the existing literature. This study dwells on the theory of planned behaviour and social control theory due to their ability to explain food safety and poisoning.

### **2.2.1 Theory of Planned Behaviour**

The Theory of Planned Behaviour by Ajzen (1991) has its root in the Theory of Reasoned Action proposed by Ajzen and Fishbein (1980). According to the planned behaviour theory, an individual's behavioural intents and beliefs connecting the behavior to various outcomes and other traits are shaped by their attitude toward behaviour, subjective norms, and perceived behavioural control. A person's attitude is defined as their favorable or negative assessment of their self-performance of a certain behaviour, which is based on the entire range of available options.

According to Ajzen (1991), a person's perspective of certain behaviour is influenced by the opinions of significant individuals, such as parents, spouses, friends, and teachers. According to Fishben and Ajzen (2005), the third core idea in the theory of planned behaviour is perceived behavioural control, which refers to a person's perception of the perceived ease or difficulty of carrying out a specific behaviour. In terms of food vending hygiene practices, the theory suggests that the vendor's personal attitude towards hygiene would determine the sanitary practices adopted by the vendor. In addition, the vendor's perception, such as the necessity for safe sanitary practices, the

health implications of certain cooking methods, and the dietary implications of the choices of cooking ingredients, which has been formed from the influence of others, would also influence the sanitary quality of vending. Moreover, the ease with which the vendor can practice safe hygiene measures is also a determinant of intended or actual food vending practices.

This theory is also criticised for its failure to fully mediate the influence of past behaviour, particularly given a meta-analysis conducted by Armitage and Conner (1999) revealed that past behaviour accounted for an additional 13 percent of variance in behaviour. These limitations are taken into account by the current study. The emotional influence, such as feeling guilt, happiness, or approval of certain vending habits will be accounted for in the analysis. Moreover, the influence of past vending practices on current practices will also be considered.

### **2.2.2 Social Control Theory**

According to this theory, food hygiene practices by food vendors can also be established in the framework of institutional control. This is because food vendors often have to conform to municipal directives of handling and sales of food, where noncompliance amounts to a criminal offence punishable by law (Chirag et al., 2015). In line with this, some studies have argued that enforcing compliance with accepted standards of food hygiene practices is founded in the social control theory which was established by Hirschi and Gottman (1994). Hirschi and Gottman (1994) advanced the proposition that people tend to engage in wayward or criminal behaviour unless strong moral, social, and/or retributive deterrents are in effect. In other words, people will engage in malpractices if they know they would not have to pay the cost of deviance.

The Control Theory is of the view that people refrain from deviant behaviour because of diverse factors that control their impulses to break social norms. Control theory therefore explains why some people do not act on deviant impulses and why others do. In the social context, some controls are internal, such as a person's conscience and motivation, whereas others are external, such as parents, friends, and legal codes. Control theory links nondeviant behaviour to social bonds, and Hirschi and Gottman (1994) advanced the proposition that weak bonds between the individual and society allow people to deviate. In other words, weak links between the populace and the regulatory institutions would encourage deviant behaviour. This is established in studies where weak regulations have encouraged food handling malpractices among food vendors (Anglo, Boateng & Boateng, 2014; Monney et al., 2013). The theory is relevant to this study by indicating the causes of food poisoning and what needs to be done to prevent it.

### **2.3 Review of Empirical Literature**

This section presents the empirical literature comprising the review of studies relating to the area of understudy. This helps to establish the basis for the problem statement of the study. This is based on the objectives of the study.

Mekonnen, Solomon and Josef (2021) assessed the knowledge, attitude, practice and food poisoning associated factors among parents in the selected health centers of Bench-Sheko Zone in Ethiopia within a descriptive research design. This was a cross-section study based on a quantitative research approach. Here, data collection was done using a structured questionnaire. The study found a positive correlation between

knowledge and attitudes of parents with food poisoning ( $r= 0.321, P < 0.026$ ), between knowledge and practices of parents towards food poisoning ( $r= 0.312, P < 0.001$ ) and between attitude and practices result towards food poisoning ( $r= 0.224, p < 0.031$ ). Also, it was found that, parents with a higher education level, employed and who live in a city were the factors significantly associated with higher knowledge scores ( $p < 0.05$ ). Finally, improved attitude was seen as educational level increased ( $p < 0.05$ ). However, the study did not indicate any sample size and sampling technique.

Mshelia, Osman, and Misni (2022) determined the knowledge, attitude, and practice of food poisoning and its factors among postgraduate students in University Putra Malaysia using a descriptive research design. Here, 212 respondents were selected based on a simple random sampling and data was collected using a self-administered questionnaire. Analysis was done using regression and the study revealed that, it revealed that being married, awareness of food poisoning outbreak, and previous history of food poisoning illness are predictors for good knowledge. Female respondents and awareness of food poisoning outbreak are predictors for acceptable attitude.

Tuglo, Agordoh, Tekpor, Pan, Agbanyo and Chu (2021) undertaking a cross-sectional study assessed the knowledge, attitude, and hygiene practices (KAP) of food safety among street-cooked food handlers (SCFHs) in North Dayi District, Ghana. The study employed a descriptive research design and data collection was done using questionnaire based on a sample size of 407 respondents. Multivariate logistic regression models were adopted by the study. The study found that, over half of the SCFHs had good levels of KAP of food safety and registering as SCFH was significantly associated with good knowledge and hygiene practices of food safety.

Here, the study did indicate any research approach, and the basis for selecting the sample size.

Iwu, Uwakwe, Duru, Diwe, Chineke, Merenu and Ohale (2017) assessed the knowledge, attitude and hygienic practices of food vendors in Owerri town of Imo State, Nigeria under a cross-sectional study. The study adopted a descriptive research design in relation to a proportionate convenience sampling technique to select a sample size of 200 food vendors from the three Local Government Areas (LGAs) in Owerri town. Here, data collection was done using a pretested semi-structured questionnaire. Data analyses were done based on frequencies and summary statistics. Chi square statistics were computed to determine significant relationships and p value was set at 0.05 significant level. The study revealed that, majority of the respondents had a good level of knowledge (81%) and positive attitude (71%) about food hygiene, only 37% of the respondents had a good level of hygienic practice. It was revealed that 32% and 46% of the respondents received training on food hygiene and environmental health worker inspection respectively. It was also revealed that, there were statistically significant relationships between knowledge ( $p = 0.001$ ), attitude ( $p = 0.000$ ), formal training on food hygiene ( $p = 0.000$ ) and the level of food hygienic practices. Nevertheless, no research approach was indicated as well as sampling technique.

## **2.4 Conclusion**

The main of this chapter was to review literature of related studies on the prevailing causes and preventive practices of food poisoning among students in the Bolgatanga Vocational / Technical Institute. Here, views of different researchers have been presented in order to establish what is known that is relevant for the current study. On both the theoretical and empirical side, the literature revealed that food poisoning is a

serious matter and it is caused by some factors through micro- organisms. However, research in this globally was limited as well as in the study area with focus on the educational institutions. In addition, empirical studies in thus area using a quantitative approach for Ghanaian case have been very elusive.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 Overview**

This chapter deals with the procedure to be employed to achieve the objectives of the study. The purpose is to state how this study is carried out and to provide evidence that the study goes through the appropriate scientific method of investigation. The chapter consists of sub-topics such as the overview, research philosophy, research approach, research design, population, sampling procedure, data collection instrument, data collection procedures, data processing and analysis as well as summary of the chapter.

#### **3.1 Research Philosophy**

Research philosophy deals with the source, nature and development of knowledge (Bajpai, 2011). Thus, research philosophy is belief about the ways in which data about a phenomenon should be collected, analysed and used. The study follows the positivist paradigm within the framework of classical and neoclassical economics. The positivist philosophy favours the use of quantitative approach to research used in this study. Also, this philosophy is suitable for any development of mathematical models to measure relationship between quantitative measurements (Bahmani-Oskooee & Ratha, 2004). Therefore, quantitative method will be used in this study.

#### **3.2 Research Approach**

The research approach suitable for this study is quantitative approach. The quantitative approach is usually associated with deductive approach (Saunders, Lewis & Thornhill, 2003; Bell & Bryman, 2007). The emphasis on quantitative methods is to have objective “outsider view” and a distance from data. One of the advantages of quantitative research

approach is that it allows the study of relationship between the variables under study in a highly economical way.

### **3.3 Research Setting**

The Bolgatanga Vocational /Technical Institute is the case study institution located in the Bolgatanga Municipal Assembly. The institute came into being in 1985 to offer skill acquisition programmes in the Municipality. In addition, the institute has the core responsibility of offering career-focus and skill-based education, research and training with emphasis on experience and entrepreneurship development to the people of the Municipality. The institute has a student population of 2357 out of which 764 are SHS 1 students, 778 are in SHS 2 and 815 are in SHS 3. It is made up of many sections, each having its own mandate to help achieve the course objective of the institution. This institution was specifically chosen for this study because of proximity and also the recent poisoning cases reported in the institute which this study attempts to investigate. Also, its leadership-student structure will make it easy for soliciting information needed to achieve the objectives of the study.

### **3.4 Research Design**

This study will employ a descriptive research design due to the nature of the study. This research design is a very useful way of investigation into the social phenomena. This research design fits the objectives of the study. Thus, the descriptive research design is used to gather information relating to the objectives of the study. According to Babbie and Rubin (2010), this is probably the best method available to social scientists who are interested in collecting original data for describing a population too

large to be observed directly, as in this study. Research tools like questionnaires were used to gather primary data for the research.

### **3.5 Population of the Study**

This is the entire set of units for which the survey data are to be used to make inferences. Thus, the target population defines those units for which the findings of the survey are meant to be generalised. The target population considered in the study included all form one (1) catering students totaling 70, non-catering students totaling 425 as well as cook totaling 5, all making up of 500 of which a sample was drawn from it.

### **3.6 Sample and Sampling Procedures**

The selection of elements from a big population is according to Krejcie and Morgan (1970) method of sample size determination. This section deals with how to get the sample from the population and the number of respondents used in the study. The sampling technique is a scheme that is used to select the sample from the population. For the purpose of the study, simple random sampling technique was used to select the participants. The reason for choosing this technique is that it gives the respondents equal chance of being select for the study and can help achieve the objectives of the study. This method is chosen to enable the study to elicit vital and quality information from respondents who have reasonable knowledge about the issues under investigation and are in position to provide the information needed for the study. This sampling procedure involves the lottery basis to select the participants. The method is used to select one two hundred and seventy (270) respondents for the study. This was made up of 59 catering students, 206 non-catering students and 5 cook. This sample selection is based on the Krejcie and Morgan (1970) sample determination table.

### **3.7 Source of Data**

Here, only primary data source will be used for the study. This data will be sourced from the questionnaires from the field specifically from the respondents.

### **3.8 Data Collection Tools**

In this study, both structured and unstructured questionnaires as primary data collection methods are used to collect the data. Questionnaires are data collection instruments that enable the researcher to pose questions to subjects in his/her search for answers to the research questions. The questionnaires will contain both closed and opened ended questions. A covering letter will be attached to the questionnaires to assure respondents of their anonymity. A consent form will be also attached to the questionnaires. In addition, the rating scale format will be used. A rating scale format involves the use of a special rating scale that asks respondents to indicate the range to which they agree with a series of statements about a given subject (Sekaran, 2003). However, the questionnaires will first be pretested on a smaller size of the sampled respondents for the research. This is to ensure that the questionnaires designed solicit the appropriate responses from the respondents to answer the research questions for the achievement of research stated objectives. The use of closed ended as well as opened ended questions allows the researcher to make easy categorisation and analysis.

### **3.9 Data Collection Procedures**

To extract the maximum attention and involvement of the respondents in the study, data will be collected by administering the questionnaires to the participants at their workstation. The procedure involves the steps below. First a letter of consent will be dispatched to seek the approval of the study. The participants will not only be briefed

on the purpose of the study with no use of deception but also informed on the academic purpose of the study hence encourage to provide their candid information on the questions. A period of about two weeks will be set for the data collection exercise with these stakeholders.

### **3.10 Pre-Testing**

The data collection instrument as indicated above will be pre-tested in order achieve accuracy and precision in the measures used. This is important to check whether the instruments are able to measure the variables under study. This involves reliability and validity tests.

### **3.11 Reliability and Validity**

Thus, reliability and validity are necessary in research especially involving field studies. When results from a study are not reliable and valid, the conclusions and recommendations are void. To achieve reliability of the results, the study will follow the widely used statistical test known as Cronbach's alpha to assess the level of reliability. Here, according to Pallant (2020), even though studies do not have a specific Cronbach alpha score, a score of closer to 0.7 and above is assumed to be relatively reliable. The study will also rely on both theoretical indicators and empirical measurements which have been validated to design the questionnaire to enhance the validity. In addition, pre-test will be conducted to ascertain any shortcomings in the instrument and subsequently review the instruments to reflect the needed changes.

### **3.12 Data Processing and Analysis**

The responses to the questionnaires will first be captured to form a data set and thereafter the responses will be processed using the latest version of the Statistical Package for Social Science (SPSS) version 21 for Windows. Analysis will be done using descriptive statistics such as frequencies, means, standard deviation etc. to depict the stated objectives.

### **3.13 Ethical considerations**

The study will rely on the responses of respondents. This study seeks to comply with ethical standards devoid of any liabilities to the respondents and also administer clear questionnaires intended to derive the needed responses. Thus, the study will assure the respondents that whatever they say by way of information will remain confidential. The purpose of the study will be explained to the respondents. This is done to avoid deception. Not only the above, the study also seeks to consent of the appropriate authorities before collecting the data. As a result, the respondents will give out information voluntarily for the study. The goal of ethics in research is to ensure that no one is harmed or suffered adverse consequences from participating in research activities.

### **3.14 Conclusion**

This chapter presented the research methodology appropriate for conducting the study. This study follows the standard literature to design the appropriate research instrument for the study. Questionnaires will be used for collecting the data from the field. The study uses only primary data where a sample size of 2407 respondents will be selected

for the study. Simple random sampling technique will be used. Furthermore, the study will adopt a deductive approach and used a descriptive research design to study the variables. Lastly, the data will be processed using the Statistical Product for Social Sciences (SPSS) software and analysis will be done using descriptive analysis.

## **CHAPTER FOUR**

### **RESULTS AND DISCUSSIONS**

#### **4.0 Introduction**

This chapter presents the analysis of the data collected from the field. Specifically, it presents the findings of the study. Thus, the chapter gives a description of the data gathered from the different respondents. This chapter is divided into sections. The first section deals with the demographics of the respondents while the second, third and fourth sections deal with the objectives of the study.

#### **4.1 Socio-Demographic Information of the Respondents**

This section of the chapter presents the socio-demographics of the respondents contacted during the data collection exercise. Table 1 presents the demographics of the respondents (catering students, non-catering students and the cooks). Here, it can be indicated that, in relation to gender, for the catering students, all of them were females (59), representing (100%). For non-catering students, 108 of them, representing (52.4%) were females and 98 of them, representing (47.6%) were males. Thus, majority of them were females, implying that the males are the minority among the form one (1) non-catering students in the institute. Regarding the cook, all of them were also females (5), representing (100%).

Table 1 further show that, majority of the catering students (20), representing (33.9%) were between the ages of 15 to 17 years, followed by 14 students, representing (23.7%) were between the ages of 18 to 20 years. In addition, 13 of them, representing (22.0%) were between the ages of 12 to 14 years and lastly 12 of them, representing (20.3%) were 20years and above. For non-catering students, 76 of them, representing (36.9%) were between the ages 15 to 17years, followed by 55 of them, representing (26.7%)

were between the ages of 18 to 20 years. Additionally, 40 of them, representing (19.4%) were above 20years.

**Table 4.1: Demographics of the Respondents**

<b>Variable</b>	<b>Frequency</b>	<b>Percent</b>	<b>Total</b>
<b>Gender</b>			
<b>Catering Students</b>			
Male	-	-	-
Female	59	100	59
<b>Non-Catering Students</b>			
Male	98	47.6	98
Female	108	52.4	108
<b>Cook</b>			
Male	-	-	-
Female	5	100	5
<b>Age</b>			
<b>Catering Students</b>			
12-14years	13	22.0	13
15-17years	20	33.9	20
18-20years	14	23.7	14
Above 20 years	12	20.3	12
<b>Non-Catering Students</b>			
12-14years	35	17.0	35
15-17years	76	36.9	76
18-20years	55	26.7	55
Above 20 years	40	19.4	40
<b>Cook</b>			
Below 31years	1	20	1
31-40years	3	60	3
41-50 years	1	20	1
Above 50years	-	-	-

Source: Field data, 2022

Moreover, 35 of them, representing (17.0%) were between the ages of 12 to 14 years. For the cook, majority of them, representing (60%) were between the ages of 31 to 40 years whereas 1,1 of them, representing (20%, 20%) respectively were below 31 years and between 41-50 years. However, no respondent was above 50years. From the results

in Table 1, it can be said, majority of the respondents were females and the for both catering and non-catering students, majority of them were between the ages of 15 to 17years and for the cook, majority of them were the ages of 31 to 40 years.

#### **4.2 Exploring the Prevailing Causes of Food Poisoning among Students in the Bolgatanga Vocational /Technical Institute**

This section presents the results concerning exploring the prevailing causes of food poisoning among students in the Bolgatanga Vocational /Technical Institute which addressed the study's first objective and the first research question. Here, both catering and non-catering students as well as the cook in the institution were considered. In achieving the objective, the respondents were first asked to indicate whether they have any knowledge about food poisoning or not by responding "yes" or "No" to the question and the results are presented in Table 2. From Table 2, the results indicate that, all the catering students (59), representing (100%) responded 'yes' suggesting that, they have knowledge about food poisoning in the institute as well as the cook (5), representing (100%) who responded 'yes' implying that, they have knowledge about food poisoning. The results implied that, the respondents being catering and the cook have sufficient knowledge concerning the subject matter which is very important for preventing food poisoning and practicing good hygienic practices.

The results are in line the findings by Tuglo et al. (2021), Iwu et al. (2017). However, in the case of non-catering students, majority of them (140), representing (68.0%) responded 'yes' showing that, they have knowledge about food poisoning whereas 66 of them, representing (32.0%) said 'no' implying that they have no knowledge about food poisoning. From the results, it can be pointed out that, both catering students and cook in the institution have sufficient knowledge about food poisoning which is good

food proper hygienic practices in the school. Even though majority of the non-catering students have knowledge concerning food poisoning, some of them have insufficient in the knowledge of it which serious for health implications. Thus, lack of this knowledge is tantamount to many foods borne diseases in schools as indicated by Mshelia et al. (2022) and Mekonnen et al. (2021).

**Table 4.2: Food Poisoning Knowledge of Respondents**

Respondent	Response		Response		Total
	Yes	%	No	%	
Catering Students	59	100	-	-	59
Non-Catering Students	140	68.0	66	32.0	206
Cook	5	100	-	-	5

Source: Field data, 2022

Furthermore, the respondents were asked give their responses on the causes of food poisoning by choosing from the categories below. The results are presented in Table 3.

**Table 4.3: Causes of Food Poisoning**

Cause	Frequency	%
Bacteria	60	22.2
Viruses	56	20.7
Parasites	50	18.5
Harmful chemicals	40	14.8
Total	270	100

Source: Field data, 2022

From Table 3, the results show that, majority of the respondents (60), representing (22.2%) indicated that, the main cause of food poisoning is bacteria, followed by viruses of which 56 respondents representing (20.7%) indicated that it is the main cause. Also, 50 of them, representing indicated that, parasites are main the cause. Finally, 40 of them, representing (14.8%) responded that, harmful chemicals are the main cause.

The results implied that, cases of food poisoning are mostly caused by bacteria of which the finding is in line with the studies by Chamberlain et al. (2022) and Kadariya et al. (2014). In support of food poisoning causing by harmful chemicals, the result is in line with a study by Zyoud et al. (2019).

#### **4.3 Measuring the Food Hygiene Knowledge among Students in the Bolgatanga Vocational /Technical Institute**

This section also presents the results concerning measuring the food hygiene knowledge among catering students, non-catering and the cook in the Bolgatanga Vocational /Technical Institute which addressed the study's second objective and the second research question. Here, first of all, the respondents were asked to indicate whether they have sufficient knowledge or not concerning food hygiene. The results are presented in Table 4. The results pointed out that, all the catering students (59) representing (100%) in the institute have sufficient about knowledge food hygiene as compared to 190 non-catering students, representing (92.2) who have insufficient knowledge about food hygiene. Here, only 16 of them (non-catering students), representing (7.8%) said they have sufficient knowledge about the food hygiene. Surprisingly, 4 of the cooks in the institute, representing (80%) indicated they sufficient knowledge while 1 of them, representing (20%) she has insufficient knowledge about the subject. Here, the results are in line with studies by Tuglo et al. (2021) who indicated many workers and students have food hygiene knowledge.

**Table 4.4: Food Hygiene Knowledge of Respondents**

<b>Respondent</b>	<b>Response Sufficient Knowledge</b>		<b>Response Insufficient Knowledge</b>		<b>Total</b>
		<b>%</b>		<b>%</b>	
Catering Students	59	100	-	-	59
Non-Catering Students	16	7.8	190	92.2	206
Cooks	4	80	1	20	5

Source: Field data, 2022

To further achieve this, the respondents who responded ‘yes’ were asked to indicate the source of the knowledge gained by choosing from the categories specified and the results are presented in Table 5. From Table 5, out of the 79 respondents comprising catering students, non-catering and the cook 59 of them, representing (74.7%) indicated that they gained the knowledge from tutors. This is mostly the catering students. Also, the 10 of them, representing (12.7%) said they obtained the knowledge from television broadcast, while 6 of them, representing (7.6%) said they obtained the knowledge from listening to a radio broadcast. In addition, 3 respondents, representing (3.8%) obtained the knowledge from health workers who gave a talk on that while 1 person being a cook said she obtained from a community information centre. The results implied that, catering students fully obtain the food hygiene information from their tutors which is good for practicability purposes and to share with people for them to practice proper food hygiene in the communities they find themselves. The findings support the studies by Iwu et al. (2017) and Mshelia et al. (2022) determined who indicated that information on food hygiene is of importance.

**Table 4.5: Information Source on Food Hygiene**

<b>Source</b>	<b>Frequency</b>	<b>%</b>
Television	10	12.7
Radio	6	7.6
Health workers	3	3.8
community information centre	1	1.3
Tutors	59	74.7
<b>Total</b>	<b>79</b>	<b>100</b>

Source: Field data, 2022

The respondents were further asked to indicate their views on whether lack of knowledge on food hygiene can cause disease or not by responding ‘yes’ or ‘no’ to the question. The results are presented in Table 6. Here, all the respondents from the various categories indicated ‘yes’ implying that, lack of knowledge of food hygiene can cause diseases. This is what sometimes happen in most communities in the Upper East Region of Ghana, where lack of knowledge of this food hygiene causes a lot food borne diseases and food poisoning. Hence, knowledge of it is very important.

**Table 4.6: Lack of Food Hygiene Knowledge Causing Diseases**

<b>Respondent</b>	<b>Response</b>		<b>Response</b>		<b>Total</b>
	<b>Yes</b>	<b>%</b>	<b>No</b>	<b>%</b>	
Catering Students	59	100	-	-	59
Non-Catering Students	206	100	-	-	206
Cooks	5	100	-	-	5

Source: Field data, 2022

Finally on this objective, the respondents were asked to indicate their views on the possible food borne diseases that can be caused by poor food hygiene. The results are depicted in Table 7. Here, all the respondents were asked to share their views on the question and the results show that 90 of the respondents, representing (37.0%) said, poor food hygiene mostly cause diarrhea, while 90 of them, representing (33.3%) indicated typhoid as the cause of poor food hygiene.

**Table 4.7: Food Borne Diseases Caused Poor Food Hygiene**

<b>Disease</b>	<b>Frequency</b>	<b>%</b>
Diarrhea	100	37.0
Typhoid	90	33.3
Abdominal pain	50	18.5
Fever	30	11.1
Total	270	100

Source: Field data, 2022

Additionally, the results show that, 50 of the respondents, representing (18.5%) considered abdominal pain to be caused by poor food hygiene while 30 of them, representing (11.1%) said poor food hygiene can cause fever. Thus, the results implied that, majority of the respondents consider diarrhea to be caused by poor food hygiene which is common in the study area. According to Osaili et al. (2013), poor food hygiene can cause outbreak of food borne diseases. Monney et al. (2013) also supported this view which are in line this the results. Thus, the respondents were able to indicate that, poor food hygiene can be dangerous and this presupposes that, much attention must be paid to it especially by students and cook in the various institutions of which the institution in question is not exceptional.

#### **4.4 Evaluating the Hygiene Practices among the Catering Students in the Bolgatanga Vocational /Technical Institute**

First of all, to be able to evaluate the hygiene practices of the catering students in the institute, some forms of observational activities were conducted two (2) times at the dining hall of the school when the students were taking their meals in the afternoon and evening. During the time, about 480 form 1 students were presents of which the sampled students were included. The main aim was to determine whether catering students wash their hands before and after eating their meals as part of their hygiene practices. Fortunately, that was the time the students were taking meals they were

supposed to use their hands (i.e. afternoon time was beans stew with cooked yam and the evening was ground nut soup with banku).

Moreover, it was found in the afternoon meal that when the students were about to eat, handwashing was done and after eating too it was done. Those who ate their meals in the dining hall washed their plates before leaving. This also happened during the evening meal taking too. However, one thing that was observed was the fact that, some students secretly took their meals to their dormitories which made it difficult to observe them concerning the subject matter. It was also observed that, some students did not clean their hands with handkerchiefs or napkins after washing the hands. On the part of the cook some observation was done, it was found that, handwashing was practiced during cooking. In all, it was specifically found that, about 80 percent out of the 70 catering students practice personal and food hygiene.

Further, the respondents were asked other questions concerning their hygiene practices and the results are in Tables 8, 9 and 10 covering catering, non-catering and the cook in the institute. Table 8 dealt with the catering students' hygiene practices where the students were asked to response based on the categories, 1= always, 2= often, 3= sometimes, 4= hardly and 5= never. From the results, it can be shown that, majority of the catering students do under take hygiene practices in terms of washing of hands before and after eating, washing of plates after eating, cleaning of the environment, washing of hands after using the toilet etc. and the least was washing of hands after coughing and sneezing. Thus, hygiene practices among the catering students in the institute is said to be very effective which is good for preventing food borne diseases and food poisoning. The results found here are in line with studies by Nartey, Owusu,

Gamor and Mensah (2017) and Oranusi et al. (2007) who indicated that, the hygiene practices among individuals with hygienic knowledge are at the appreciable level.

Table 9 also presents the results concerning hygiene practices among the non-catering students in the institute based on the same likert scale categories. The results in Table 9 indicate that, the hygiene practices among the non-catering students in the institute have not been all that effective compared to the catering students since students' conducts in terms of washing of hands before and after eating, washing of plates after eating, cleaning of the environment, washing of hands after using the toilet, washing of hands after coughing and sneezing etc. have been low as depicted by the results. This implied that, catering students practice good hygiene in the institute compared non-catering students. Since the non-catering students are more than the catering the situation is serious which can lead to food poisoning and food outbreak diseases. The finding supports the studies by Odo and Onoh (2018).

**Table 4.8: Hygiene Practices among Catering Students**

Practice	Always	Often	Sometimes	Hardly	Never
	Freq. %	Freq. %	Freq. %	Freq. %	Freq. %
Washing of hands with soap before and after eating	59 100	- -	- -	- -	- -
Washing of plates after eating	49 83.1	10 16.9	- -	- -	- -
Cleaning the environment	59 100	- -	- -	- -	- -
Washing of hands after using the toilet	59 100	- -	- -	- -	- -
Washing of hands after coughing and sneezing	25 42.4	15 25.4	10 16.9	9 15.3	- -
Heating food before eating when becomes cold	50 84.7	91 5.3	- -	- -	- -
Covering food when not eating immediately	59 100	- -	- -	- -	- -
Keeping of finger nails short and clean	40 67.8	11 18.6	8 13.6	- -	- -
Keeping foods in a safe place	55 93.2	4 6.7	- -	- -	- -

Source: Field data, 2022

**Table 4.9: Hygiene Practices among Non-Catering Students**

Practice	Always	Often	Sometimes		Hardly	Never
	Freq. %	Freq. %	Freq.	%	Freq. %	Freq. %
Washing of hands with soap before and after eating	20 9.7	30 14.6	50	24.3	60 29.1	40 19.4
Washing of plates after eating	71 34.5	88 42.7	40	19.4	7 3.4	- -
Cleaning the environment	190 92.2	16 7.8	-	-	-	-
Washing of hands after using the toilet	180 87.4	26 12.6	-	-	-	-
Washing of hands after coughing and sneezing	6 2.9	20 9.7	15	7.3	59 28.6	100 48.5
Heating food before eating when becomes cold	80 38.8	120 53.3	6	2.9	-	-
Covering food when not eating immediately	100 48.5	102 49.5	4	1.9	-	-
Keeping of finger nails short and clean	30 14.6	20 9.7	110	53.4	40 19.4	6 2.9
Keeping foods in a safe place	50 24.3	90 43.7	60	29.1	6 2.9	-

Source: Field data, 2022

In addition, opinion was sought on the hygiene practices among the cooks in the institute and the results are presented in Table 10.

**Table 4.10: Hygiene Practices among Non-Catering Students**

<b>Practice</b>	<b>Always Freq. %</b>	<b>Often Freq. %</b>	<b>Sometimes Freq. %</b>	<b>Hardly Freq. %</b>	<b>Never Freq. %</b>
Washing of hands with soap before cooking	5 100	- -	- -	- -	- -
Washing of cooking utensils before and after cooking	5 100	- -	- -	- -	- -
Cleaning the environment	5 100	- -	- -	- -	- -
Washing of hands after visiting the toilet	5 100	- -	- -	- -	- -
Washing of hands after coughing and sneezing	4 80	1 20	- -	- -	- -
Heating of food when becomes cold	5 100	- -	- -	- -	- -
Covering food when not ready to serve	5 100	- -	- -	- -	- -
Keeping of finger nails short and clean	5 100	- -	- -	- -	- -
Keeping foods/food stuffs in a safe place	5 100	- -	- -	- -	- -
Keeping raw foods separate from ready-to-eat foods	5 100	- -	- -	- -	- -
Wearing protective clothing to prevent food borne illness	4 80	1 20	- -	- -	- -
Caring to use fresh raw materials in food preparation	4 80	1 20	- -	- -	- -
Not touching raw foods without wearing gloves	3 60	1 20	1 20	- -	- -
Refrigerating or freezing perishable foods promptly	5 100	- -	- -	- -	- -

Source: Field data, 2022

The results in Table 10 indicate that, the cook in the institute do not relent on their hygiene practices which is important in all both public and private institutions. The results further implied that, the cook have sufficient understanding of the hygiene practices indicated, with the exception of a few of them who said they often put into

practice washing of hands after coughing and sneezing, wearing of protective clothing to prevent food borne illness, caring to use fresh raw materials in food preparation, not touching raw foods without wearing gloves. They are very particular about washing of hands with soap before cooking, washing of cooking utensils before and after cooking, cleaning of the environment, heating of food when becomes cold, covering food when not ready to serve, keeping of finger nails short and clean, keeping foods/food stuffs in a safe place, keeping raw foods separate from ready-to-eat foods and refrigerating or freezing perishable foods promptly. The results are consistent with the findings by Iwu et al. (2017) and the theory of panned behaviour.

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.0 Introduction**

The purpose of this chapter is to present the summary of findings, conclusions and recommendations of this study. The summary presents an short overview of the research problem, objective, research methods and key findings made in the study. The conclusions presents the overall outcomes regarding the findings of the study in the light of the research questions. The recommendations also present specific remedies to be implemented by specific institutions.

#### **5.1 Summary of Findings**

As stressed early on, in recent times, cases of outbreaks of food-borne illnesses and food poisoning have been on the increase high both in developed and developing countries. This problem is more exacerbated in developing countries of which Ghana is no exception due to economic reasons, poverty, lack of adequate health care facilities, and the dearth of data regarding food-borne diseases. Further, the prevalence of food-borne illnesses and food poisoning in developing countries are intertwined with other economic and developmental issues and it very alarming. Even though research in this evolving, however limited work is noticed and this situation has further prompted this study for an investigation. Therefore, the main purpose of the study is to examine the prevailing causes and preventive practices of food poisoning among students in the Bolgatanga Vocational /Technical Institute.

The study employed descriptive statistics in analysing the data collected from the field. From the first objective, the study revealed that, majority of the respondents indicated that they have sufficient knowledge concerning food poisoning which is very important for preventing food poisoning and practicing good hygienic practices. However, some of them (non-catering students) have insufficient in the knowledge of it which serious for health implications. The results further indicated that, some of the causes of food poisoning are bacteria, viruses, parasites and harmful chemical, of which bacteria was considered to the main cause.

In the case of the second objective concerning measuring the food hygiene knowledge among the respondents in the Bolgatanga Vocational /Technical Institute, the results revealed that, all the catering students as well as the cooks in the institute have sufficient about knowledge food hygiene as compared to the non-catering students, who have insufficient knowledge about food hygiene. In addition, the major information sources on food hygiene knowledge are television, radio, health workers, community information centre and tutors. The study also revealed that, poor food hygiene mostly causes diarrhea and typhoid and at the minimal level abdominal pain and fever.

From the third objective of the study in relation to evaluating the food hygiene practices among the respondents, the results on the observational activity revealed that, catering students do wash their hands before and after eating their meals, however the situation was quite different with the non-catering students. The results further revealed that, hygiene practices among the catering students and the cook in the institute have been very effective compared to non-catering students which is good for preventing food borne diseases and food poisoning. This was in terms of washing of hands before and

after eating, washing of plates after eating, cleaning of the environment, washing of hands after using the toilet, washing of hands after coughing and sneezing etc.

## **5.2 Conclusion**

Based on the findings of the study, the following conclusions were drawn. From the first objective, the study revealed that, majority of the respondents especially catering and the cook indicated that they have sufficient knowledge concerning food poisoning and hygiene in contrast to many of the non-catering students. This implied that, non-catering students lack knowledge in the subject matter which is serious since this can lead to food borne outbreak diseases and food poisoning in the institute. The results further indicated that, some of the causes of food poisoning are bacteria, viruses, parasites and harmful chemical, of which bacteria was considered to be the main cause. In all, the results implied that, catering students in the institute as well as the cook have some sufficient food poisoning knowledge which is a signal. However, the insufficient knowledge on the part of the non-catering students is tantamount to food poisoning and food borne disease cases which needs to be tackled by the school authorities.

In the case of the second objective, the results revealed that, all the catering students as well as the cooks in the institute have sufficient knowledge about food hygiene as compared to the non-catering students, who have insufficient knowledge about food hygiene. Additionally, the study found that, the majority of the respondents have information on food hygiene especially catering students and the cook mostly from sources such as television, radio, health workers, community information centre and tutors. On the part of poor food hygiene, the study also revealed that, the resultant effects are diarrhea and typhoid being the major ones and at the minimal level abdominal pain

and fever which prevalent in the area. This implied that, consequences of poor food hygiene is very serious and needs critical attention in the institute.

From the third objective of the study in relation to evaluating the hygiene practices, the results revealed that, catering students in the institute do wash their hands before and after eating their meals, and the cook also do handwashing in their activities which is good for preventing food poisoning. However, the situation was quite different with the non-catering students. The results further revealed that, hygiene practices among the catering students and the cooks in the institute have been very effective compared to non-catering students. which is not good for preventing food borne diseases and food poisoning. This implied that, hygiene practices are not a problem for catering students compared to non-catering students and this is serious since the non-catering students are the majority in the institute. Thus, the result by implication suggests that, food borne outbreak diseases are a threat is proper care is taken in the institute.

### **5.3 Recommendations**

Based on the results obtained from the study, the following recommendations are made. In relation to the first objective, the study found insufficient knowledge in relation to causes of food poisoning and hygiene among the non-catering students who are the majority in the institute. It is suggested that, management of Ghana Health Service and Ghana Education Service must do well to organise some sensitisation programmes on food poisoning and hygiene to educate students in the various institutions in the country. Thus, more awareness programmes must be embarked on the concerned institutions. This can be done by the concerned institutions sending resource persons frequently to the educational institutions to educate the students. This can lessen the prevalent incidence of food borne diseases and food poisoning in the country.

Also, management of the various educational institutions in the country must entreat teachers to from time to time encourage students to practice good hygiene both in the school and home and this will help them to practice good personal hygiene which in the end prevent them from contracting diseases. Also, frequent inspection can be done on the cook in the various vocational and second cycle institutions to check the hygienic situation whether the workers are really practicalising what they claim to do and frequent check-ups should be required of the cook and the students in the various educational institutions. This will help to reveal any diseases that are unknown to them for immediate attention.

Finally, management of the vocational institution in particular and the various vocational institutions in general must enforce the teaching of food hygiene as well as encouraging students to practice proper hygiene. This can have a profound impact on the future life of the students and can prevent incidence of food poisoning as well as outbreak of food borne diseases such as diarrhea, typhoid, fever, abdominal pains and other diseases caused as a results of improper hygiene practices. Additionally, Institutional leaders must plan training sessions with educators in hospitality, food safety, and food technology for caterers so that they receive frequent instruction in topics like temperature and temperature controls to aid in their comprehension and production of wholesome meals for students. Also, to determine how their methods result in safe food production and consumption by students. Future research can examine the microbiological safety of the food and rigorous analysis on food poisoning using inferential statistics is recommended.

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## **APPENDIX 1**

### **AKENTEN APPIAH-MENKAH UNIVERSITY OF SKILL TRAINING AND ENTREPRENEURIAL DEVELOPMENT**

#### **KUMASI**

#### **DEPARTMENT OF HOSPITALITY AND TOURISM EDUCATION**

#### **QUESTIONNAIRE FOR CATERING STUDENTS**

Please, I am conducting a research work on the topic “**Determining the Prevailing Causes and Preventive Practices of Food Poisoning among Students in Bolgatanga Vocational/Technical Institute**”. Please I am contacting you to volunteer information for me to be able to achieve the purpose of the study since your views are very much important to the study. This research work is for academic purpose and that all the information you provide will remain highly confidential. Thanks for your support.

**INSTRUCTIONS:** Please, kindly tick your correct answer in the options or fill your answer as required.

#### **SECTION A: PERSONAL DATA**

1. Gender: a. Male [  ] b. Female [  ]
2. Age: a. 12-14 years [  ]      b. 15-17 [  ]  
c. 18-20 years [  ] d. above 20 years [  ]
3. Form: a. Form 1 [  ] b. Form 2 [  ] c. Form 3 [  ]

**SECTION B: EXPLORING THE PREVAILING CAUSES OF FOOD POISONING AMONG STUDENTS IN THE BOLGATANGA VOCATIONAL/ TECHNICAL INSTITUTE**

4. Do you have any knowledge about food poisoning? a. Yes [ ] b. No [ ]
5. Please which of the following are some of the causes of food poisoning? a. Bacteria [ ] b. Viruses [ ] c. Parasites [ ] d. Harmful chemicals [ ]

**SECTION C: MEASURING THE FOOD HYGIENE KNOWLEGE AMONG STUDENTS IN THE BOLGATANGA VOCATIONAL/TECHNICAL INSTITUTE**

6. How much knowledge do you have about food hygiene? a. Sufficient knowledge [ ] b. Insufficient knowledge [ ]
7. If yes, which information source did you get the knowledge? a. Television [ ] b. Radio [ ] c. Health workers [ ] d. community information centre [ ] e. Tutors [ ]
8. Does lack of good food hygiene a cause of diseases? a. Yes [ ] b. No [ ]
9. Which of the following food borne diseases can be caused by poor food hygiene? a. Diarrhea [ ] b. Typhoid [ ] c. Abdominal pain d. Fever [ ]

**SECTION D: EVALUATING THE HYGIENE PRACTICES AMONG STUDENTS IN THE BOLGATANGA VOCATIONAL/TECHNICAL INSTITUTE**

10. Please indicate your responses on the following hygiene practices using the likert scale below, 1= Always; 2= Often; 3= Sometimes; 4= Hardly; 5= Never.

<b>Practice</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
10a. Washing of hands with soap before and after eating					
10b. Washing of plates after eating					
10c. Cleaning the environment					
10d. Washing of hands after using the toilet					
10e. Washing of hands after coughing and sneezing					
10f. Heating food before eating when becomes cold					
10g. Covering food when not eating immediately					
10h. Keeping of finger nails short and clean					
10i. Keeping foods in a safe place					

## APPENDIX 2

### AKENTEN APPIAH-MENKAH UNIVERSITY OF SKILL TRAINING AND ENTREPRENEURIAL DEVELOPMENT

#### KUMASI

#### DEPARTMENT OF HOSPITALITY AND TOURISM EDUCATION

#### QUESTIONNAIRE FOR NON-CATERING STUDENTS

Please, I am conducting a research work on the topic “**Determining the Prevailing Causes and Preventive Practices of Food Poisoning among Students in Bolgatanga Vocational/Technical Institute**”. Please I am contacting you to volunteer information for me to be able to achieve the purpose of the study since your views are very much important to the study. This research work is for academic purpose and that all the information you provide will remain highly confidential. Thanks for your support.

**INSTRUCTIONS:** Please, kindly tick your correct answer in the options or fill your answer as required.

#### SECTION A: PERSONAL DATA

1. Gender: a. Male [ ] b. Female [ ]
2. Age: a. 12-14 years [ ] b. 15-17 [ ]  
c. 18-20 years [ ] d. above 20 years [ ]
3. Form: a. Form 1 [ ] b. Form 2 [ ] c. Form 3 [ ]

#### SECTION B: EXPLORING THE PREVAILING CAUSES OF FOOD POISONING AMONG STUDENTS IN THE BOLGATANGA VOCATIONAL/ TECHNICAL INSTITUTE

4. Do you have any knowledge about food poisoning? a. Yes [ ] b. No [ ]
5. Please which of the following are some of the causes of food poisoning? a.  
Bacteria [ ] b. Viruses [ ] c. Parasites [ ] d. Harmful chemicals [ ]

**SECTION C: MEASURING THE FOOD HYGIENE KNOWLEGE AMONG STUDENTS IN THE BOLGATANGA VOCATIONAL/ TECHNICAL INSTITUTE**

6. How much knowledge do you have about food hygiene? a. Sufficient knowledge [ ] b. Insufficient knowledge [ ]
7. If yes, which information source did you get the knowledge? a. Television [ ] b. Radio [ ] c. Health workers [ ] d. community information centre [ ] e. Tutors [ ]
8. Does lack of good food hygiene a cause of diseases? a. Yes [ ] b. No [ ]
9. Which of the following food borne diseases can be caused by poor food hygiene? a. Diarrhea [ ] b. Typhoid [ ] c. Abdominal pain d. Fever [ ]

**SECTION D: EVALUATING THE HYGIENE PRACTICES AMONG STUDENTS IN THE BOLGATANGA VOCATIONAL/TECHNICAL INSTITUTE**

10. Please indicate your responses on the following hygiene practices using the likert scale below, 1= Always; 2= Often; 3= Sometimes; 4= Hardly; 5= Never.

<b>Practice</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
10a. Washing of hands with soap before and after eating					
10b. Washing of plates after eating					
10c. Cleaning the environment					
10d. Washing of hands after using the toilet					
10e. Washing of hands after coughing and					
10f. Heating food before eating when					
10g. Covering food when not eating immediately					
10h. Keeping of finger nails short and clean					
10i. Keeping foods in a safe place					

### APPENDIX 3

AKENTEN APPIAH-MENKAH UNIVERSITY OF SKILL TRAINING AND

ENTREPRENEURIAL DEVELOPMENT

KUMASI

DEPARTMENT OF HOSPITALITY AND TOURISM EDUCATION

#### QUESTIONNAIRE FOR THE COOK

Please, I am conducting a research work on the topic “**Determining the Prevailing Causes and Preventive Practices of Food Poisoning among Students in Bolgatanga Vocational/ Technical Institute**”. Please I am contacting you to volunteer information for me to be able to achieve the purpose of the study since your views are very much important to the study. This research work is for academic purpose and that all the information you provide will remain highly confidential. Thanks for your support.

**INSTRUCTIONS:** Please, kindly tick your correct answer in the options or fill your answer as required.

#### SECTION A: PERSONAL DATA

1. Gender:      a. Male      [ ]      b. Female      [ ]
2. Age:      a. Below 31 years [ ]      b. 31-40 [ ]
- c. 41-50 years      [ ]      d. above 50      [ ]

**SECTION B: EXPLORING THE PREVAILING CAUSES OF FOOD POISONING AMONG THE COOK IN THE BOLGATANGA VOCATIONAL/ TECHNICAL INSTITUTE**

3. Do you have any knowledge about food poisoning? a. Yes [ ] b. No [ ]
4. Please which of the following are some of the causes of food poisoning? a. Bacteria [ ] b. Viruses [ ] c. Parasites [ ] d. Harmful chemicals [ ] e.[ ]

**SECTION C: MEASURING THE FOOD HYGIENE KNOWLEGE AMONG THE COOK IN THE BOLGATANGA VOCATIONAL/TECHNICAL INSTITUTE**

5. How much knowledge do you have about food hygiene? a. Sufficient knowledge [ ] b. Insufficient knowledge [ ]
6. If yes, which information source did you get the knowledge? a. Television [ ] b. Radio [ ] c. Health workers [ ] d. community information centre [ ] e. Others [ ]
7. Does lack of good food hygiene a cause of diseases? a. Yes [ ] b. No [ ]
8. Which of the following food borne diseases can be caused by poor food hygiene? a. Diarrhea [ ] b. Typhoid [ ] c. Abdominal pain d. Fever [ ]

**SECTION D: EVALUATING THE HYGIENE PRACTICES AMONG THE  
COOK IN THE BOLGATANGA VOCATIONAL/ TECHNICAL INSTITUTE**

9. Please indicate your responses on the following hygiene practices using the likert scale below, 1= Always; 2= Often; 3= Sometimes; 4= Hardly; 5= Never.

<b>Practice</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
10a. Washing of hands with soap before cooking					
10b. Washing of cooking utensils before and after cooking					
10c. Cleaning the environment					
10d. Washing of hands after using the toilet					
10e. Washing of hands after coughing and sneezing					
10f. Heating of food when becomes cold					
10g. Covering food when not ready to serve					
10h. Keeping of finger nails short and clean					
10i. Keeping foods/food stuffs in a safe place					
10j. Keeping raw foods separate from ready-to-eat foods					
10k. Wearing protective clothing to prevent food borne illness					
10l. Caring to use fresh raw materials in food preparation					
10m. Not touching raw foods without wearing gloves					
10n. Refrigerating or freezing perishable foods promptly					