

# Assessing the Level of Food Safety Knowledge and the Use of Personal Protective Equipment by Kitchen Staff In Selected Second Cycle Institutions of Sunyani Municipality

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**Abstract:** *The study aimed to assess the level of food safety knowledge and the use of personal protective equipment by kitchen staff in selected second-cycle institutions in Sunyani Municipality. The study employed the descriptive research design approach. A Semi-structured questionnaire was used to collect empirical data from 100 respondents working as kitchen staff in four selected second-cycle institutions. A simple random technique was used to conduct the study. Data were analysed using Statistical Package for Social Science (SPSS Version 16). The study revealed that 86% of respondents have prior knowledge of food hygiene. It was further revealed that more than 53% of the respondents do not pay much attention to the usage of the oven gloves when removing foods from the oven. It was concluded that the majority (55%) of the respondents had attained no-formal education and do not appreciate the importance of providing hygienic training on food safety and personal protective equipment in the kitchen. The study recommended that the Ghana Education Service Human Resource department employ caterers who have been adequately trained in food hygiene to minimize the rate at which food is contaminated in the kitchen.*

**Keywords:** Personal Hygiene, Food Hygiene, Food contamination, Food safety Knowledge, Oven gloves

## INTRODUCTION

Food production and consumption habits in the world have advanced dramatically in recent decades. Agricultural commodity networks, meanwhile, are inadequately regulated. Nowadays, customers spend a substantial amount of money eating food outside of their homes all around the world [1]. Consumers' growing spending power [2] and modern lifestyles [3] led to an increase in food service outlets such as cafeterias, school canteens, and restaurants [4]. Food is consumed in public areas such as hotels, restaurants, hospitals, boarding homes, and even common street vending outlets in developing nations such as Ghana. In the urban cities and towns of the United States, the trend of eating outside the home has spread rapidly across many kinds of people. The current state of digitalization has enticed numerous restaurants to join the eating-in craze. Outside dining is a common occurrence in everyday life, yet it is expected to be a major source of food-borne infections [5] [6]. Food service facilities were discovered to be the primary source of a variety of food-borne diseases, accounting for 61% of disease occurrence in European Union countries and 78% in the United States of America [7]. Food-borne diseases are thought to have afflicted more than a third of the world's population [8] [9]. Poor handling, inadequate surveillance, and fragmented control mechanisms, as well as a lack of trustworthy data on food safety issues, all contribute to the risk of such diseases in underdeveloped nations [10] [11].

Foodborne infections are linked to poor sanitary standards, insufficient regulatory systems, weak food safety legislation, unsuitable ambient temperature during food preservation, insufficient financial resources to invest on proper equipment, and insufficient education [12] [13] [14]. Inadequate temperature and timing control of food, as well as secondary contamination, can cause food poisoning outbreaks [14]. Many sections of the world [15] [16] have inadequate safety precautions, which can be linked to a lack of information, attitudes, and practices. Food handlers' food safety knowledge is mostly focused on proper food handling, storage, and preparation [17]. Learning about food safety is important because it can help prevent the spread of food-borne infections [18]. The attitudes and actions of food handlers are connected to their level of food safety expertise [19]. Their mindset is a critical aspect that might influence food safety practices and behavior [15] [17]. A cheerful attitude can help to convey safety knowledge and guarantee that everyone has access to safe meals [20].

A study conducted in Ethiopia found that food handling knowledge is significantly related to food handling practices [21] [22] [23], whereas studies conducted in India, Bangladesh, and Nigeria by [24] [25] [26], found that food handling practices are related to food handlers' educational status. Furthermore, according to [27], the type of site, filthy equipment, and work responsibility are all factors that influence food-handling procedures. Gender was also found to have an impact on the food-handling habits of street food sellers. Food poisoning develops when workplace environment, personal hygiene, and tools utilized by food handlers are not favorable [28]. In order to prevent pathogen microorganisms from making their way into the food, the staff should pay close attention to the surfaces of the tools used to prepare food and beverages, as well as the surfaces of the cooking and service fields, as well as the cleanliness of their hands, bodies, and clothing [29]. Touching prepared food with fingers, playing with his nose, scratching their head and their acne, tasting food with unwashed and dirty spoons, not washing their hands after touching their nose and mouth,

washing their hands in food preparation sinks, and touching the inside of plates and glasses with their hands are just a few of the worst habits that employees in the food and beverage industry have [30]. In order to protect consumers from food poisoning, kitchen workers working in hotels and vacation villages where more than 1,000 people eat at the same time must know and follow certain hygiene and sanitation requirements. Food handler training is one technique for improving food safety, with long-term benefits for the food business and sector [31].

Food service or catering facilities are common in both governmental and private establishments in Ghana, where meals are supplied to both personnel and clients. Schools, research institutes, hospitals, and jails are examples of such institutions. High standards of hygiene and safety measures by food handlers are vital aspects of an entire food safety program conducted by these institutions to prevent outbreaks of food-borne diseases. Despite the fact that institutional food handlers may have the necessary knowledge and abilities for food safety, human error is frequently identified as a cause of food-borne disease outbreaks. According to [32], around 97 percent of reported food poisoning cases are caused by inappropriate food handling by catering service workers. Food handlers' knowledge, attitudes, and practices have been documented in research from all around the world. This is due to the fact that the three aspects of food handler knowledge, attitude, and practice all play a significant influence in food safety in the food service business. Previous research has looked at food handlers' knowledge, attitudes, and procedures at a few Accra hotels, as well as street food sellers' food hygiene practices. Food handlers' knowledge, attitudes, and self-reported practices in institutional foodservice in Accra, Ghana, have recently been reported. All of these studies, however, were limited in scope because they only looked at Accra, Ghana's capital. There is currently no published report on the knowledge, attitude, and practice of food handlers at institutions from various geographic regions of Ghana. Such studies are significant, however, since they give a national assessment of training needs, behavioral changes, and the effectiveness of training and education in providing continual consumer assurance of food safety. Such investigations will also give researchers a better understanding of the linkages between current food safety knowledge, attitudes, and practices among food handlers across Ghana. The main purpose of the present study is to assess the level of food safety knowledge and the use of personal protective equipment by caterers/ kitchen staff in selected second cycle institution of Sunyani Municipality.

## METHODOLOGY

The city of Sunyani began as an outpost camp for elephant hunters during the 19th century, surrounded by the forested Southern Ashanti Uplands. Sunyani is derived from the Akan word "Osono," which means "elephant." Sunyani Municipality is one of the Brong Ahafo Region's twenty-two administrative districts. It is bordered to the north by Sunyani West District, to the west by Dormaa East District, to the south by Asutifi District, and to the east by Tano North District. It is located between latitudes 70 20' N and 70 05' N and longitudes 20 30'W and 20 10'W. The entire land area of the municipality is 829.3 square kilometers (320.1 square miles). It has a population of around 70,299 people. Sunyani is located about 105 kilometers from Kumasi, the Ashanti regional capital. The quantitative technique was chosen through the use of the descriptive research method known as a fact-finding study involving a clear and reliable account of the results in this community-based cross-sectional study. This research was carried out in St. James SHS, Notre Dame SHS, Sunyani SHS, and Odumaseman SHS, all of which are second cycle schools. Questionnaires were created to collect data on respondents' basic characteristics, food safety knowledge, training workshops, medical examinations, personal hygiene, food and kitchen hygiene, and techniques of preserving leftover foods. The questionnaires were presented to the kitchen staff at their workstations, and those who could not read were assisted in filling them out by study assistants. Within one month, a total of 100 people responded to the survey. During the data gathering, the sampling procedure was non-probability convenient sampling. The Statistical Package for Social Science (SPSS) version 20 was used to analyze the data.

## RESULTS AND DISCUSSION

Table 1 presents the educational levels of the respondents. Out of the number of respondents who responded to the questionnaire, 55% had no formal education. Basic education was attained by 29% of the population, secondary education by 15%, and higher education by 1%. The study reveals that more than half of the kitchen staff (55%) had no formal education while 1% had tertiary education. This could indicate that if kitchen staff are properly trained, they will be able to comprehend the fundamentals of food safety because respondents with formal education were more likely to practice good kitchen hygiene because they were more aware of the consequences of poor kitchen hygiene. The findings differed significantly ( $p < 0.05$ ) to those found in Malaysia among food handlers in residential colleges on food safety, where more than half of the respondents had completed high school (66.2%).

Table 1: Educational level of respondents

Variables	Frequency ( <i>f</i> )	Percentage (%)
Educational Level		

Basic School	29	29%
Secondary School	15	15%
No formal Education	55	55%
Tertiary Education	1	1%
<b>Total</b>	<b>100</b>	<b>100%</b>

### The Level of Knowledge with Respect to Hygiene by Respondents

Food handlers have insufficient understanding of the required procedures to prevent food borne disease, according to the literature, and adequate public awareness of food safety standards is needed [33]. The study wanted to determine if kitchen employees should be provided with hygienic training, and found that 70% of respondents were neither agreeing nor disagreeing, with a mean of 2.59. This demonstrates that the majority of respondents do not appreciate the importance of providing hygienic training to food handlers, which can have an impact on food safety and hygienic procedures in the kitchen. When asked if kitchen personnel should wash their hands with soap under running water, the majority (86%) of the respondents strongly agreed, with a mean of 1.18. A research by [34] found that some kitchen staff always washes their hands with soap under running water. Findings on cleaning and sanitizing cooking utensils after each use or when there is a potential of contamination received 100% acceptance by the kitchen staff with a mean of 1.88. This indicates that some respondents valued the importance of cleaning and sanitizing utensils and are likely to do so in the future. This is in accordance with the findings of [34], who found that surfaces and utensils used to make foods should be cleaned and disinfected on a frequent basis. When asked if raw food should be stored and cooked at a specific temperature, more than half said yes, with 54 % strongly agreeing, 12 % agreeing, 9 % neither agreeing nor disagreeing, 17 % disagreeing, and 8 % strongly disagreeing, with a mean of 2.13. This suggests that more than half of the respondents were aware of the advantages of cooking and keeping food at the proper temperature, which will improve their kitchen hygiene practices.

When it came to whether prepared food should be properly covered before being stored, 52 % strongly agreed, 28 % agreed, and 20 % disagreed, with a mean of 1.88. This demonstrates that respondents are aware of the importance of properly covering foods and are more inclined to do so during food preparation. Author [35] found that most food handlers at second-cycle institutions are highly careful in covering their cooked and raw meals. When asked whether meat should be kept in the freezer, 60 % highly agreed, 12 % very agreed, 8% strongly disagreed, and 20% strongly disagreed, with a mean of 2.16. This indicates that the majority of respondents had only a rudimentary understanding of the proper temperature for storing meat, which will have a severe impact on food safety and cleanliness. This, however, contradicts a study conducted by [36], which found that all meat utilized by food handlers was at the proper temperature.

**Table 2: The Level of Knowledge with Respect to Hygiene by Respondents**

STATEMENT	SA		A		NAD		D		SD		Mean x̄	Total
	f	%	f	%	f	%	f	f	%	f		
Staff should be given hygienic training	11	11.0	19	19.0	70	70.0	0	0	0	0	2.59	100
Kitchen staff should wash their hands with soap under running water after visiting the washroom	86	86.0	10	10	4	4.0	0	0	0	0	1.18	100
Fruits and vegetables should be washed thoroughly under running water to remove dirt and other contaminants	30	30.0	0	0	45	45.0	17	17.0	8	8.0	2.73	100
Raw food should be stored and cooked at the required temperature	54	54.0	12	12.0	9	9.0	17	17.0	8	8.0	2.13	100
cooking utensils should be cleaned and sanitized after each use or when there is a chance of other contamination	12	12.0	88	88.0	0	0	0	0	0	0	1.88	100
Cooks and raw foods must be kept apart and prepare on separate surfaces	75	75.0	14	14.0	6	6.0	5	5.0	0	0	1.41	100
Large quantities of food should be divided into smaller containers to cool the food more quickly	27	27.0	38	38.0	26	26.0	9	9.0	0	0	2.17	100

Prepared food should be covered correctly before storage	52	52.0	28	28.0	0	0	20	20.0	0	0	1.88	100
Meat should be stored in a freezer	60	60.0	12	12.0	0	0	8	8.0	20	20.0	2.16	100
Calibrated food scale should be used when weighing foods	44	44.0	11	11.0	18	18.0	18	18.0	9	9.0	2.37	100
Cooking equipment's should be clean with warm water	27	27.0	3	3.0	27	27.0	35	35.0	8	8.0	2.94	100

SA = Strongly Agreed A= Agreed NAD= Neither Agreed or Disagreed D= disagreed SD= Strongly Disagreed

### Ensuring good hygiene and the use of personal protective equipment (PPE) in the kitchen

Food handlers who had good knowledge of food safety had good food hygiene practices compared to those who had poor knowledge. This is in line with findings on whether fruit and vegetables should be handled using gloves revealed that 71% agreed, 9% strongly agreed and 20% disagreed, with 1.59 as the mean. This implies most respondents had prior knowledge of the importance of using gloves in handling foods and are likely to practice handling foods.

On the issue of whether hot foods in the oven should be removed using oven gloves, it was found that 53% disagreed, 18% agreed, 17% strongly agreed and 2% neither agreed nor disagreed, with 3.39 as the mean. This shows more than half of the respondents do not pay much attention to the usage of oven gloves when taking foods from the oven. This, however, will negatively affect their safety in the kitchen. With regard to the question that kitchen staff should be strictly adhered to the use of personal protective equipment (PPE) to prevent themselves from kitchen accidents and food contamination, 42% disagreed, 28% agreed, and 30% neither agreed nor disagreed, with a mean of 1.35. This shows respondents' low interest in using personal protective equipment and would affect hygiene and safety in the kitchen.

Previous studies have indicated that it is best for kitchen staff to bathe and wash their personal protective equipment with soap and water after a day's work. This is an effective way to prevent infection and contamination. Respondents were asked whether kitchen staff should take good care of their protective equipment. 92% strongly agreed and 8% agreed, with 1.08 as the mean. This means most of the respondents appreciated the importance of keeping themselves clean as well as their personal protective equipment and are likely to adhere to safety practices in the kitchen. This is in line with [10] who stated that the act of washing personal protective equipment before and after a day's work is a good step to prevent contamination. With regards to whether kitchen staff should check for insects and domestic animals that are normally found in the kitchen, 17% strongly agreed, 21% agreed, 35% neither agreed nor disagreed, and 27% disagreed, with a mean of 2.72. This is an indication that most of the respondents gave least attention to insects and other domestic animals that destroy foods in the kitchen, which will negatively affect food safety and hygiene. This is consistent with a study conducted by [37] who observed that most food handlers had no knowledge of the effect of insects and rodents on our foods. Findings on whether all kitchen staff should cover their hair when cooking to prevent pieces of hair dropping into their food revealed more than half of the 54% strongly agreed, 26% agreed and 20% disagreed, with 1.86 as the mean. This is an indication that more than half of the respondents always cover their hair during food preparation, which enhances hygiene and safety. With respect to whether kitchen staff should wash their hands after each refuse disposal, more than half strongly agreed, 34% agreed, and 14% neither agreed nor disagreed, with 1.62 as the mean. This implies most of the kitchen staff has been washing their hands after each refuse disposal. This, therefore, will positively help kitchen hygiene and safety. This finding is supported by [38], who stated that one of the best practices by kitchen staff is washing their hands.

**Table 3: Ensuring good hygiene and the use of personal protective equipment (PPE) in the kitchen**

STATEMENT	SA		A		NAD		D		SD		Mean - x	Total
	f	%	f	%	f	%	f	f	%	f		
Workers should tongs and spoons in handling foods instead of bear hands	19	19.0	71	71.0	6	6.0	4	4.0	0	0	1.95	100
Fruit and vegetables should be handle using gloves	9	9.0	71	71.0	0	0	20	20.0	0	0	1.59	100

Hot foods in the oven should be remove using oven gloves	0	0	18	18.0	2	2.0	53	53.0	17	17.0	3.39	100
Kitchen staff should wear protective shoes during cooking	9	92.0	8	8.0	0	0	0	0	0	0	1.08	100
Kitchen staff should take good care of their personal protective equipment	9	92.0	8	8.0	0	0	0	0	0	0	1.08	100
All kitchen staff should wear net to cover their hairs in order to prevent pieces of hair dropping in their foods	5	54.0	26	26.0	0	0	20	20.0	0	0	1.86	100
All kitchen staffs should have knowledge on food safety	9	9.0	17	17.0	3	38.0	27	27.0	9	9.0	3.1	100
There should be organized training or programing for kitchen staff	1	18.0	35	35.0	1	12.0	26	26.0	9	9.0	2.73	100
Kitchen staff should wash their hands after each refuse disposal	5	52.0	34	34.0	1	14.0	0	0	0	0	1.62	100
Kitchen staff should check for insects and other domestic animals	1	17.0	21	21.0	3	35.0	27	27.0	0	0	2.72	100
Kitchen staff should strictly adhere to the use of personal protective equipment (PPE)	8	81.0	3	3.0	1	16.0	0	0	0	0	1.35	100

SA = Strongly Agreed    A= Agreed    NAD= Neither Agreed nor Disagreed    D= disagreed    SD= Strongly Disagreed

**CONCLUSION**

The study revealed that 91% (70% agreed, 21% strongly agreed) of the kitchen staff understand the importance of keeping their kitchen equipment clean as this positively affects their hygienic practices during food preparations. An appreciable number of respondents were not adhering to the use of personal protective equipment (PPEs) as well as giving low attention to insects and other domestic animals that destroy foods in the kitchen. The majority (86%) of the respondents observe and practice hand washing before and after cooking. The study concludes that the majority (55%) of the respondents had attained no-formal education and also do not appreciate the importance of providing hygienic training on food safety and the use of personal protective equipment in the kitchen.

**RECOMMENDATIONS**

- i. Kitchen staff should maintain good hygienic environment and ensure the use of personal protective equipment (PPEs) in other to ensure high standard of good hygiene in their kitchen.
- ii. Institutional heads should continually examine the kitchen staff hygienic conditions, as well as encourage kitchen employees to adhere to strict food hygiene standards.
- iii. Ghana Education Service Human Resource department should employ caterers who have been adequately trained in food hygiene to minimize the rate of at which food is contaminated in the kitchen.

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