



AN ASSESSMENT OF FOOD HYGIENE PRACTICES AMONG FOOD VENDORS IN SOME SELECTED BASIC SCHOOLS IN THE BIRIM CENTRAL MUNICIPALITY

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ABSTRACT

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Keywords

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The study assessed food hygiene practices of food vendors in some selected basic schools in Birim Central Municipality in the Eastern Region-Ghana. A case study approach was used for this research. Questionnaire and an interview guide were the two main instruments used in the data collection. The study was conducted in Birim Central Municipality of the Eastern Region of Ghana and the large group was the basic schools. Random sampling technique was used to select basic 15 schools for the study. The list of names of all schools in the Municipality was collected from the Ghana Education Service (GES) office. Data was analysed using descriptive statistics, frequencies, ranges and prevalence rates of the study variables. It was found out that most of the vendors (92.3%) had low level of education but this did not affect their food hygiene practices. Also, majority of the vendors (91.39%) were found not to have storage facilities for uncooked food items. It was recommended that in-service training on food safety should be organized for food vendors on regular bases to improve on their food safety skills by their supervisors.

Contribution/Originality: This study contributes in the existing literature by examining the food hygiene practices among food vendors in selected basic schools in Brim Central Municipality.

1. INTRODUCTION

Food in whatever form when consumed plays an important role in the human body. Whether it is taken in as cooked or raw state, its value remains superior to mankind. Thus, whoever consumes food has some idea of expecting some form of satisfaction from it, in the same way food service providers also have role to play in ensuring the wholesomeness of the food they serve (Food and Drug Administration, 1997). This is even more crucial when the food is being provided to travelers as well as all who matter in the tourism industry (Ghana Tourist Board, 1996). Cooked food vendors play an important role in society by providing food for workers and individual outside home and in the home. Cooked food vendors are aware that before any socio-economic activities move on successfully in a country or society, the people need to be satisfied; hence they make sure they provide some food to them. In Ghana, just like many other developing countries, the food industry is playing a vital role in achieving socio-economic development goals. In tourism, services provided for guests include accommodation, food,

money exchange, transport and entertainment. Although all these services are important to make tourists comfortable and satisfied, some services such as accommodation and catering are rated high and deemed paramount (Ghana Tourist Board, 2003). Food hygiene then, has become an increasingly important public health issue, particularly, with the advent and increase in tourism where the lives of other visitors outside the destination area are involved. Regulatory aspects of food laws attempt to protect the health of consumers and to simplify trade at both domestic and international levels (Ihekoronye & Ngodd, 1985). Food laws have therefore been enacted to guide food providers to ensure that food served to the general public is wholesome; anything short of that will attract punishment. The government has given the Food and Drugs Authority mandate to bring to knowledge of food providers the food safety laws that are to be employed in food production. Food borne and water borne diseases are said to be leading causes of death globally, killing, 2.1 million people annually (WHO, 2001). Ghanaians have their own share of food borne diseases and their related cost of individuals and nation as a whole. Highlighted in the news in recent times are food and water borne diseases including the swine flu, bird flu, food borne infections in some schools where students had to be hospitalized, food labeling misinformation and recently the cholera epidemic that has already taken over 60 lives out over 4000 reported cases. According to the GNA (2010) a total number of outpatient cases reported with food borne diseases in Ghana was 420,000 per year and estimated at 35,000 reported cases per month costing a total of 69 million US dollars to economy. This is a problem that needs to be tackled head on.

Germs or bacteria are found in and on our bodies and our surroundings and can be transferred to anything which may come into contact with it. Cleanliness is essential to prevent germs getting on to food, some of these can cause illness and in some cases death. According to Kinton and Ceserani (1992) hygiene is the study of health and the prevention of diseases. Due to the dangers of food poisoning, particular attention from everyone who works in the food industry need to practice food hygiene at all time. It is of utmost importance that everyone who handles food or work at a place where food is handled should know that food must be both clean and safe before it is consumed (Kinton & Ceserani, 1992). Several studies have been done on similar topic of food safety and hygiene globally. A study by MacArthur (2007) in Cape Coast Municipality was based on food safety measures while a similar study by Annor and Baiden (2011) in Accra was based on knowledge, attitudes and practices of food handlers. Another study by Usfar, Iswarawanti, Davelyna, and Dillon (2010) in Indonesia was based on food, personal hygiene, perceptions and practices. This has become the concerns of the entire populace to educate food vendors and other eating places about how to promote good hygiene practices in order to stay healthy at all times.

World Health Organization (WHO) (2010) reported that hand should be washed regularly to prevent any microorganism entering the food by handlers, based on these anyone who works with food service industry should be aware of that. Donkor, Kayang, Quaye, and Akyeh (2009) stated that all the food vendors washed their hands before handling food but at different stages of food preparation; 57% of them washed their hands always, 12% washed their hands most times while 31% washed their hands some times. Mensah, Yeboah-Manu, Owusu-Darko, and Ablordey (2002) specified that despite the low level of education among the food vendors who took part in the study in Accra, they practiced good hygiene behaviours as indicated in the prevalence of hand washing and personal care at their workplaces. World Health Organization (WHO) (2010) reported that vendors should wash their hands with soap and water after visiting the toilet, touching hair, nose or other part of the body. After washing the hands they should not use dirty clothes to wipe the water off their hands since it would amount to contamination.

Prevention of food poisoning and food contaminations start from farm to consumers' plate and that storage of food items are vital to everyone who handle food in one way or other, either cooked or uncooked to ensuring food safety. Food and Agriculture Organization and World Health Organization (2003) suggested that cooked food should not be left at room temperature for more than 2 hours. The food at room temperature should be refrigerated promptly at below 80°C to 50°C at best. All perishable food should be included. However, if the vendors did not have refrigeration facilities, then ideally small quantities of food should be prepared at a time to reduce or prevent

leftovers. [Campbell \(2011\)](#) in a related study found out that 71% of the food vendors were of the view that it was unsafe to keep cooked and perishable foods unrefrigerated for a long period of time.

Despite the low level of education of the vendors, most of the studies reviewed reported that the vendors had adequate knowledge about food hygiene. [Annor and Baiden \(2011\)](#) for instance found out that the vendors knew the correct temperature for refrigeration which is between 10°C to 50°C and that the vendors had good knowledge of mouldy food which they attributed to the presence of bacteria. In a similar study conducted by [Campbell \(2011\)](#) he came out with the fact that about 47% of those who took part in the study had knowledge about the five key factors to safety foods. He also found out that majority (65%) were aware that chopping boards which were not kept clean could cause cross contamination of diseases. On the correct methods of food storage to prevent cross contamination, [Campbell \(2011\)](#) stated that the food vendors had idea about it (89%). On temperature control he found out that 83% of the vendors were aware that cooked food should be served hot while cold food should be served cold.

Food handler, the people who are employed directly in the production and preparation of foodstuffs, are integral to reducing food safety risks. Lack of personal hygiene among food handlers is one of the most commonly reported practices that contribute to foodborne illness. To ensuring personal hygiene, particularly, hand washing, has been cited the most effective tool in preventing the spread of foodborne infections ([Baluka, Miller, & Kaneene, 2015](#)). Many of the studies that were reviewed looked at the personal hygiene of the food vendors. [Mensah et al. \(2002\)](#) found out that most of the food vendors kept themselves clean while dishing out food. They stated that about 30.2% of the vendors who took part in their study washed their hands at least three times daily while dishing out food, about 69.8% washed their hands more than 3 times.

Food safety and food handling are important practices that should be practiced by all food vendors. These practices were tested in a study conducted by [Mensah et al. \(2002\)](#) came out with the following conclusions. From the study, they reported that 39% of the food vendors who took part in the study cooked their food well in advance of consumption. They again stated that exposure of food to flies, were 35%, working with food at ground level 17.1% and 3.6% also sold from tray with no covering.

Food safety is the assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use [Campbell \(2011\)](#). [Food and Agriculture Organization \(2005\)](#) defined food safety as any food item devoid of any biological, chemical, or physical hazards capable of causing harm to the customer. [MacArthur \(2007\)](#) cited ([Foodlink, 2004](#)) that defined food safety as all the hazards, whether chronic or acute, that may make food injurious to the health of the consumer. [MacArthur \(2007\)](#) again mentioned that all the respondents in her study had at one point in time eaten from a chop bar and were therefore familiar with such eating outlets.

Although street foods could be a source of food borne pathogens, they provide employment and service the tourist trade by providing traditional foods. Street food vending is considered a useful segment of the economy, but the big problem is about consumer awareness ([Mensah. et al., 1999](#)). The role it plays in the economy has led to the proliferation of vending sites all over. Most of the people involved are young women, girls and boys. [Mensah et al. \(2002\)](#) conducted a study in Accra and found out that the vendors ages ranged between 16 and 56 years, while [Donkor et al. \(2009\)](#) in a similar study in Accra also found the ages of the vendors to be between 16 and 70 years and the mean age of the vendors was 34 year. Again [MacArthur \(2007\)](#) conducted a study in Cape Coast and found out that the ages of the vendors ranged between 25 and 65 years. Another study by [Ackah et al. \(2011\)](#) in Accra found out that the ages of the vendors were as follow, below 25 years were 16 vendors, 25-50 years were 28 and above 50 years were 6 vendors. Again, in a similar study by [Campbell \(2011\)](#) in the City of Johannesburg stated that 82% of the vendors were less than 50 years of age. These researchers however did not state how the ages affected food handling practices of the vendors. They only looked at the age groups who are in food vending. This study looked at food hygiene practices among food vendors in some selected basic schools in the Birim central municipality.

2. MATERIALS AND METHODS

2.1. Research Design

Research methodology is defined as the systematic and scientific procedures used to arrive at the results and findings for a study against which claims for knowledge are evaluated (Cooper & Schindler, 2006; Saunders, Lewis, & Thornhill, 2000). A methodology is therefore shaped by the researchers' perspectives. A case study approach was used for the study because it gives an in-depth study of a particular situation than a sweeping statistical survey. It also narrows down a very broad field of research into one researchable topic. Again, case study provides more realistic responses than survey. However, the result of a case study cannot be generalized to fit a whole population that the research design was influenced by the research paradigm. Neuman (2006) defined research paradigm as a general organisation of framework for theory and research that includes basic assumptions, key issues, and models of quality research and methods for seeking answers.

2.2. Population

Generally, population refers to the number of people living in a particular place or geographical area, but to a researcher, population refers to objects from which information is gathered for a study (Agyedu, Donkor, & Obeng, 2011). This study was conducted in Birim Central Municipality of the Eastern Region of Ghana and the large group was the basic schools. There were 109 basic schools in the Municipality forming the population at the time of the study. Birim Central Municipality shares boundaries with Birim North and Kwaebibirem to the north, Adansi South and Assin North to the west, Asikuma-Odoben-Brakwa and Agona West Municipal to the south and West Akim Municipal to the East. Thus the Municipality especially, the capital Oda is linked up with many districts and this promotes commercial activities among the district capitals and other nearby communities. The main occupation are farming and trading.

2.3. Sampling Technique and Sample Size

The sampling technique used for this study was simple random sampling. According to Westfall (2008) the first statistical sampling method is simple random sampling. In this method, each item in the population has the same probability of being selected as part of the sample as any other item. The schools were selected based on Westfall's definition. Lottery method of simple random sampling was used to select 15 schools that took part in the study. The list of names of all schools in the Municipality was collected from the Ghana Education Service (GES) office. The serial numbers of the schools were written on pieces of paper, put in a box, reshuffled and 15 numbers were selected at random without replacement. The selected basic schools were from Akim Oda; Hecta International School, Joduro Integrated School, St Luke Methodist Basic School, Presbyterian Boys School, Presbyterian Girls School, St Francis Basic School, Smart Preparatory School and Junior High School. Akim Manso: Manso AME Zion Basic School, Manso Roman Catholic Basic School, Manso Presbyterian Basic School and Manso Local Authority Basic School and Akim Agene; Asene Presbyterian Basic School, Asene Roman Catholic Basic School and Saiw International School.

2.4. Data Collection Methods

Many scholars including Cooper and Schindler (2006) and Malhotra and Birks (2007) have said that in the use of case study strategy, the main instruments used are questionnaire, structured or unstructured interviews or both. They further argued that generally the questionnaire can be used for descriptive or explanatory study. It must have a good layout, be unambiguous, complete, non-offensive but relevant, logical arrangements of items, and the ability to extract willingness of answers from respondents. As a result, in this study, questionnaire and observation were used to collect data from respondents. The questionnaire was based on key areas of interest including the demographic characteristics of the food vendors, their knowledge and practices of food hygiene. The Questionnaire

consisted of items/statements that helped to obtain information on demographic data such as age, level of education, gender, date of training; information on food hygiene and safety, buying and storing food, legislation, attitudes towards food safety and hygiene principles. The knowledge questions were dichotomous making allowance for agreed, disagreed and not sure answers. Data on the practices of food vendors were obtained through questionnaire on how food vendors handle foods. Questionnaire was translated from English to Twi to the understanding of the respondents. Again both participant and non-participant observations were used. Personal hygiene of the vendors was assessed by their cleanliness of appearance and health, while environmental hygiene was assessed by cleanliness of the food environment, plates and other food equipment. Other market factors that were not directly related to the study such as food types sold and market size of vendors were observed. Apart from personal and environmental hygiene, which involved data collection by observation, the other data collected were reported by the vendors.

2.5. Data Collection Processes

The study was conducted in the Birim Central Municipality in the Eastern Region of Ghana. The population was made up of 109 schools out of which 15 representing 14% were selected to form the sample size. All the cooked food vendors in the 15 selected schools in Oda, Asene and Manso were to take part in the study. However upon visiting the selected schools a total of 135 food vendors were found out of which one hundred (100) that is 74% made up of fifty (50) representing 50% in Oda schools, twenty (20) 20% in Asene schools and in Manso schools thirty (30) 30% agreed to participate in the study when asked. The researchers administered and collected the questionnaire from the respondents.

2.6. Data Analysis

The interview data and questionnaire results were analysed using descriptive statistics, including means, frequencies, ranges and prevalence rates of the study variables. Significant differences, associations, and interrelationships of the variables were also assessed.

3. RESULTS AND DISCUSSIONS

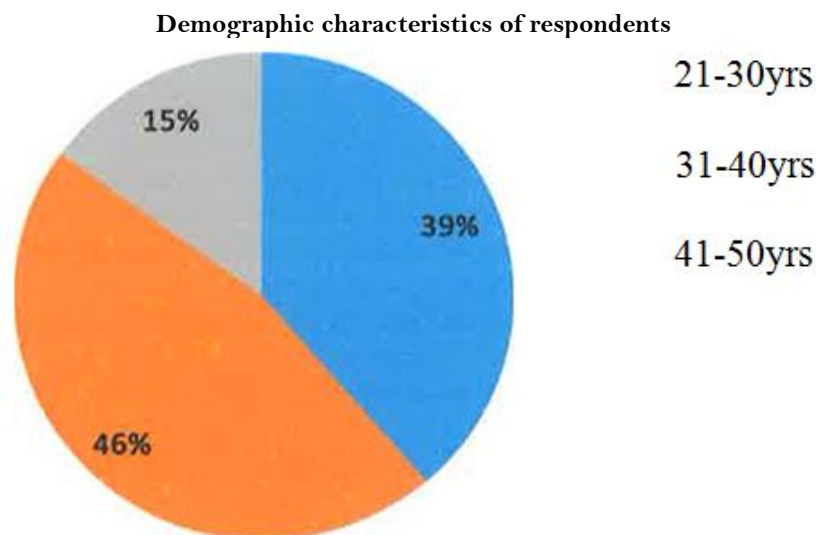


Figure-1: Ages of respondents.

The result of the ages of respondents in the study is reported in Figure 1. It revealed that out of the 93 respondents, 36 of them representing 38.7% were between 21 -30 years while 43 of them representing 46.2% aged between 31-40 years and 14 respondents representing 15.1% were between 41-50 years.

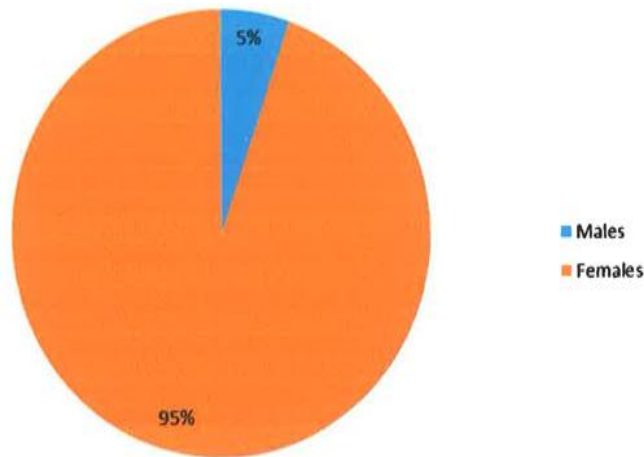


Figure-2. Gender distributions of respondents.

Figure 2 shows the gender distribution of the respondents. Five respondents (5.4%) were males while 88 (94.6%) were females. the study revealed that majority (94.6%) were females. This result is in line with the studies conducted by Mensah et al. (2002) (98.4%), Donkor et al. (2009) (98.9%), Ackah et al. (2011).

Table-1. Level of education of respondents.

Education Level	Number of Respondents	Percentage (%)
No Education	15	16.1
Basic Education	50	53.8
Middle School	20	21.5
Secondary School	8	8.6
	93	100

Table 1 shows the educational levels of the respondents. Out of the 93 respondents 15 of them representing 16.9% had no education, 50 of them representing 53.9% had Basic Education that is 9 years of schooling, 20 representing (21.5%) had Middle School Education while only 8 (8.6%) had Secondary Education.

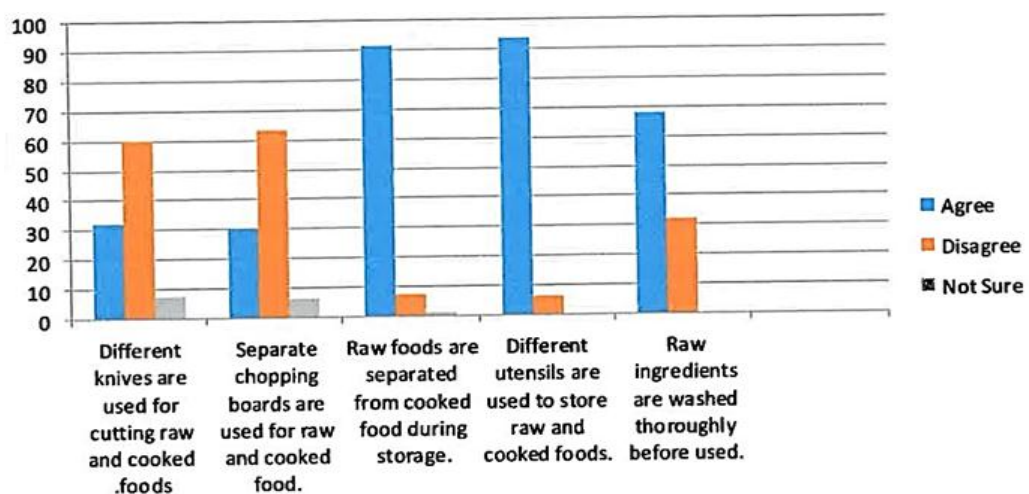


Figure-3. Food Handling practices of food vendors

The results of the study revealed that the vendors practiced some form of food handling. Figure 3 shows the results and 56 (60%) of the vendors agreed that different knives should be used for uncooked and cooked foods while 30 (32.25%) of the respondents disagreed and 7(7.52%) were not sure. Again the statement that separate chopping boards should be used for uncooked and cooked foods, 59 respondents representing (63.44%) agreed to the statement while 28 respondents representing (30.11%) disagreed and 6 of them representing (6.45%) were not sure. Also, when the respondents were asked if uncooked and cooked foods should be separated in different utensils during storage, 85 respondents representing (91.39%) agreed that separate utensils must be used while 7 of them representing (7.52%) disagreed and 1(1.1%) was not sure. Again majority of the respondents 63(67.7%) agreed to the statement that raw ingredients should be washed thoroughly before used while minority of them 30(37.25%) disagreed.

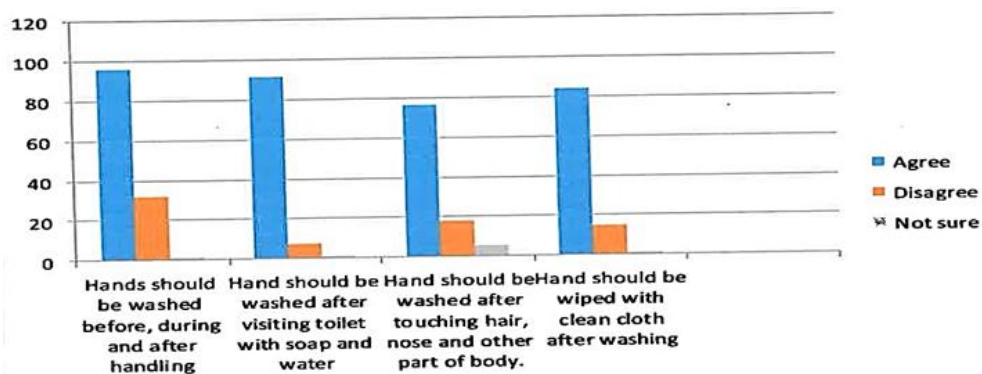


Figure-4. Practices of hands washing by food vendor.

Figure 4 presents the results on the practices of hands washing. Out of the 93 respondents, 89 (95.6%) of them agreed that hands must be washed before, during and after handling food while 3(3.22%) disagreed and 1 (1.1%) was not sure. Also, 85 (91.39%) of them were of the view that hands should be washed after visiting toilet while 7(7.52%) of them disagreed and 1(1.07%) was not sure. On the washing of hands after touching hair, nose and other part of the body, 71 respondents representing (76.37%) agreed that hands should be washed after touching hair, nose and other parts while 17 of them representing (18.3%) disagreed and 5(5.37%) were not sure. Most of the respondents, 78(83.9%) agreed that hands must be wiped with clean cloth after washing while 14(15%) of them disagreed and was not sure.

Table-2. Mode of storage of cooked food.

Statement	Agreed %	Disagreed %	Not Sure %
Cooked foods are stored in refrigerator	98.9	1.1	
Cooked foods are stored in cabinet	4.3		
Cooked foods are stored at room temperature	81.7	14	4.3
Perishable food items are stored at the room temperature	24.8	74.2	
Cooked food should not be stored for more than a day	93.5	6.5	

Table 2 shows the results on the hygienic mode of cooked food storage by the food vendors. Majority of the respondents, 92 (98.9%) agreed that cooked foods must be stored in refrigerators while 1(1.07%) disagreed. On the statement that cooked foods must be stored in kitchen cabinets, only 4 (4.3%) of the respondents agreed while 89 (95.7%) disagreed to the statement. Again 76 of the vendors representing (81.7%) agreed that cooked foods must be stored at room temperature while 13 of them representing (14.0%) disagreed and 4(4.3%) were not sure. Also, a few of the vendors agreed on the statement that perishable food items must be stored at room temperature 23 (24.76%) while 70(74.19%) disagreed. Lastly 87 respondents representing (93.5%) agreed that cooked food must not be stored for more than a day, while 6 of them representing 6.45% disagreed.

Table-3. Attitudes of food vendors towards food hygiene.

Statement	Agree	Disagree	Not sure	Total
I wash food items regularly before cooking.	95.7%	4.3%	-	100%
I buy raw food from reliable sources.	98.9%	1.1%	-	100%
I wash raw food regularly before chopping.	97.85%	2.15%	-	100%
I change my working attire daily.	73.12%	25.81%	1.07%	100%
I cut my finger nails twice a week.	53.76%	39.79%	6.45%	100%
I cover my hair all the time when handling food.	59.14%	26.88%	13.98%	100%
I wash my utensils immediately after cooking	64.52%	32.25%	3.23%	100%
I have a towel for wiping my hands after washing.	89.25%	9.68%	1.07%	100%
I have hand washing bowls for uses.	39.78%	47.31%	12.9%	100%
I keep clean surrounding.	95.7%	4.3%		100%
I dispose of my refuse at least two times a day.	65.59%	31.18%	3.23%	100%
I wash my hands regularly while handling food	97.85%	2.15%	-	100%
I keep flies away from the food	32.26%	67.74%		100%
I have covered dust bins for keeping waste.	32.25%	87.10%	2.15%	100%
I use clean water for cooking	96.77%	3.23%		100%
I provide hand towel for my customers	91.39%	8.61%		100%
I change the hand towel at regular intervals	43.01%	53.76%	3.23%	100%
I used uncovered dustbin	89.09%	10.75%	2.15%	100%

Table 3 shows the results obtained from the food vendors on their attitudes towards food hygiene. Out of the 93 respondents, 89 of them (95.6%) agreed that they wash their food items regularly before cooking while 4 respondents (4.4%) disagreed. Regarding where they buy their raw food from, majority of them (97.9%) agreed that they buy from reliable sources but (1.1%) disagreed to the statement. Concerning whether respondents wash their food items regularly before chopping, 91 respondents representing (97.85%) agreed to the statement and 2 respondents representing (2.15%) disagreed to the statement. On their attire, 68 of the respondents representing (73.2%) agreed that they change their attire daily while 24 of them representing (25.8%) disagreed and 1 respondent representing (1.1%) was not sure. Regarding cutting of finger nails, 50 of the respondents (53.8%) agreed that they cut their fingernails twice a week while 37 of them (39.8%) disagreed and 6 respondents (6.4%) were not sure. Concerning what respondents do to their hair, when handling food, 55 of the respondents representing (59.1%) agreed that they cover their hair all the time when handling food but 25 of them (26.9%) disagreed while 13 respondents (14.0%) were not sure. Regarding washing of utensils after cooking, most of the respondents 60 (64.52%) agreed that they wash their utensils immediately after cooking while 33 respondents (32.25%) disagreed whereas (1.07) of the respondent was not sure. However, on hand washing bowls, 37 of the respondents representing (39.78%) agreed that they have hand washing bowls for hand washing while 44 of them (47.31%) disagreed and 12 respondents (12.9%) were not sure. The table again shows that out of the 93 respondents, 89 of them representing 95.70% agreed that they keep their surroundings clean while 4 of them (4.3%) disagreed. Regarding disposing off refuse twice a day, 61 of the respondents representing (65.59%) agreed that they dispose of their refuse at least twice a day while 29 of the respondents (31.18%) disagreed to the statement and 3 of them (3.23%) were not sure. Regarding washing of hands before food handling, majority of the respondents 91(97.85%) agreed that they wash their hands regularly while handling food while 2 of them (2.15%) disagreed. Concerning keeping flies away from food, 30 of respondents representing (32.26%) agreed while 63 of them (67.74%) disagreed to the statement. When asked if respondents provide hand towels for consumer to clean their hands, 85 of the respondents representing (91.39%) agreed that they provide hand towels while 8 (8.61%) of them disagreed to the statement. regarding how often the hand towels are changed, only 40 of them (43%) agreed that they changed the hand towels at regular intervals. Fifty (50) of them (53.8%) disagreed and 3 of them representing (3.23%) were not sure. When asked whether respondents cover their dust bins, only 10 representing (10.75%) covered their dust bins while 81 of them representing (87.1%) disagreed and 2 of them (2.15%) were not sure. On the use of clean water for cooking, all of the 93(100%) of the respondents agreed that clean water is used for cooking.

4. CONCLUSION

The study concluded that street food vending was women dominated business, with a few males. The population of street food vendors with formal education and knowledge of food hygiene practices was high in the study area. Food hygiene, has become an increasingly important public health issue, particularly, with the advent and increase in tourism where the lives of other visitors outside the destination area are involved. The study further concludes that food vendors have low knowledge about food hygiene and that wash their food items regularly before cooking.

5. RECOMMENDATIONS

Based on the findings of the study, the following are recommended:

1. Due to the low level of education of vendors, Ghana Tourism Authority should organise in-service training for all food vendors on food safety.
2. That the regulatory agencies should inspect the premises of the vendors before giving them mandate to operate, they should also been given the vendors more training on food.

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