

Street Food Vendors' Perspectives of Hygiene Practices of Street Food Vendors in Basic Schools in Sissala East District of Ghana

Grace Annagmeng Mwini^{1*} Cornelia Tuolienuo²

1.Department of Pre-Vocational Skills, P. O. Box 19, Tumu College of Education. Tumu, Ghana

2.Department of Pre-Vocational Skills P. O. Box 71, NJA College of Education- Wa, Ghana

Abstract

The purpose of the study was to investigate the street food vendors' perspective of food hygiene, as well as personal hygiene and environmental hygiene practices of food vendors in basic schools in Sissala East District of Ghana. A descriptive survey design was used for the study. The population of the study comprised all street food vendors in the Sissala East District of Ghana. The purposive sample technique was used to select thirty (30) street food vendors from seven basic schools. The data were gathered by administering interview guide and observation guide. Frequencies and percentages were used in analysing the data. It was found that some street food vendors observed food hygiene, personal and environmental hygiene practices to some extent. The study also revealed that majority of the food vendors observe food hygiene practices such as using separate equipment for serving cooked and raw food, serve food with fork or spoon, serve food with cup or plate, and keep their equipment clean, have containers for washing dishes, wear clean clothes. However, majority of the food vendors do not keep food warm, serve food with bare hands and do not provide drying racks for cleaned utensils.

Keywords: Health, Food-borne diseases, Contamination and temperature

1. Introduction

Street vended foods are interpreted by Von Holy and Makhoane (2006) as foods and beverages prepared and or sold by vendors in streets and other public places for immediate consumption or consumption at a later time without further processing or preparation. Street food businesses have become widespread in recent times, in responds to the changing lifestyle and food consumption of people. They offer convenience and ease of access of food to busy individuals who are unable to prepare their own meals regularly at home (Annor & Baiden, 2011).

Globally, street foods can be found in clusters around places of work, schools, hospitals, universities, railway stations, bus terminals and taxi ranks in the urban areas (Kok & Balkaran, 2014). Annor and Baiden (2011) asserted that the sale of foods on street is a common aspect of lifestyle in many countries. Street food vendors often have a variety of food for sale which includes snack, drinks and even full meals. Street vended food plays important roles such as the following: they provide a source of inexpensive, convenient and often nutritious food for urban and rural poor. They are a source of attractive and varied food for tourists and the economically advantaged; they are also a major source of income for a vast number of persons, particularly women. Above all, they provide a chance for self-employment and the opportunity to develop business skills with low capital investment (Condex as cited in Nurudeen, Lawal & Ajayi, 2014).

Food and Agriculture Organisation (FAO, 2007) estimated that a total of 2.5 billion people all over the world eat street foods every day. Previous studies revealed that street food consumers come from all levels of society ranging from low income to high income groups. Even school children depend on street food (FAO as cited in Rhaman, Arif, Bakar, & Tambi, 2012).

In contrast to the potential benefits, it is also observed that street food vendors are often poor and uneducated and lack appreciation for safe food handling (Nurudeen et al, 2014). Consequently, street foods are perceived to be a major public health risk worldwide (Monday *et al*, 2014). World Health Organisation (WHO, as cited in Nurudeen *et al*) added that if a community is to have the full benefits of street vended foods, with minimal risk of food borne disease, government's intervention is required to ensure that the standard of safety for such food is attainable in the context of the prevailing local situation.

To achieve food safety globally, the Codex Alimentarius Commission in June 1997 adopted revised basic texts on food hygiene and recommended their wide use and understanding by authorities, food industries, all food handlers and consumers to ensure that food is safe and suitable for human consumption (Codex, 1999). The general hygiene requirements and practice to be followed by the vendors was also recommend for translation by the relevant authorities into codes of practice and this was recognised as cost effective tools for the control of street foods by fully taking into account local conditions including specific risk factors that are relevant to each operation. WHO further recommended that authority undertaken Hazard Analysis and Critical Control Point (HCCP) studies to identify and integrate critical control measures into strategies for improving the safety of street foods. According to Musa and Akande (as cited in Monday *et al*, 2014), the initiative resulted to the transfer of food sanitary measures and proper food handling from individuals, families to the food vendors who rarely enforce such practices.

Therefore, street foods are perceived to be a major contributory factor of morbidity and mortality due to food borne illnesses as in most instances street foods largely do not meet proper hygienic practices. For instance, food prepared in unsanitary conditions by people not trained in proper food handling techniques (Akonnor and Akonnor, 2013). Food-borne disease outbreaks are common in Ghana but are rarely reported. Despite the health-related risk potential of street foods, there have been tremendous increases of street food vending on the premises of basic schools in the urban and rural communities in Ghana.

1.1 Statement of the Problem

Street food vending is associated with food-borne illnesses due to inappropriate hygienic practices. Yet majority of students depend on these street foods on the school premises for their nutrition in the Sissala East District. A casual observation and conversation with some vendors revealed that many of them assume that no matter how raw food looks or the environment from which it was purchased, once the food is cooked, it is safe for consumption. It is, therefore, very necessary that an assessment be conducted to assess what information basic school street food vendors have in relation to food safety. Such an assessment may help to identify areas that need attention in the training programme with regard to ensuring the safety of street foods in schools, especially for vulnerable groups such as children.

Additionally, legislative changes that may be necessary in light of such an assessment could be suggested for the registration of food vendors in the basic school system to help promote good health in schools through healthy nutrition. But very little research has been conducted on the hygienic practices of street food vendors in basic schools in the Sissala East District in the Upper West Region of Ghana. It appears that appropriate hygienic practices are not being observed or adhered to by street food vendors operating in basic schools in the district.

There is the need for data on the hygienic practices of street food vendors in order to put in place measures to protect health of students and staff in basic schools. It was against this background that the researchers sought to assess the hygienic practices of street food vendors in basic schools in the Sissala East District in the Upper West Region of Ghana. The objectives of the present study were therefore to investigate street food vendors' perspective of food hygiene practices in basic schools as well as identify the personal and environmental hygiene practices of street food vendors in basic schools. The study was guided by the following research questions:

Research question 1: What are the street food vendors' perspectives of food hygiene practices in basic schools?

Research question 2: What are the challenges of personal hygiene practices of street food vendors in basic schools?

1.2 Significance of the Study

Information on the general hygiene practices would be useful to the district community nutrition officer and the health directorate in developing educative programmes on food safety practices in order to minimize food borne illnesses among pupils and the community. The results on the basic school food vendors' hygiene practices would be utilized by the district school health officials to educate and monitor street food vendors on the need to maintain good hygiene practices on basic school premises. Street Food Vendors would become aware of the results of the study and the recommendations for improving hygiene. This would help them adopt appropriate hygiene practices during food production and sales.

1.3 Scope of the Study

The study assessed the street food vendors' perspective of hygiene practices of Basic Schools Street Food Vendors in relation to hygiene practices during food sale on the school premises. The food hygiene practices covered food handling practices such as mode of serving food, hand washing practice and care of vending equipment. The study also explored the personal hygiene practices such as care of garment worn, food sales and of finger nails, covering of hair, use of jewellery and hand washing practices. Issues of environmental hygiene considered were provision of potable water for drinking and provision of equipment for hand washing, clean hand towels for drying hands, soap, and bins for washing dishes, brooms for cleaning the floor, rubbish containers and the protection of food from flies.

2.0 Literature review

2.1 The Incidence of Food-borne diseases in Ghana

Ghana like many other African countries, there is an abundance of national legislation but limited resources to control street food safety (Dewaal & Rober, 2013). Institutions such as the Ghana Standards Authority and Food and Drugs Board are committed to the work of regulating food standards and training the general populace on food safety issues. However, improvement in food safety systems has not been fully realised. This is observed in recent reports of food-borne illnesses and contamination of street food with enteric bacteria in various parts of the country (Toddi as cited in Monney, Agyei & Owusu, 2013).

There have been series of foodborne outbreaks reported in Ghana, recently, four persons were reported dead in Sheho in the Upper East Region of Ghana after eating contaminated meat (Ghana New Agency (19/04/2013). Equally cholera outbreak in Atebubu in the Brong Ahafo Region killed nine people (Ghanaweb, 22/05/2013). A similar outbreak also resulted in the death of one person in Obuasi in the Ashanti Region and over fifty (50) people responding to treatment in hospitals (Joy News, 22/5/2013). It has been estimated that about 5000 children under age five die from diarrhoea each year in Ghana (Graphic Online, 22/5/2013) However, only few surveys have been conducted to identify the cause of food-borne illness in Ghana.

2.2 Hygiene among street food vendors

A study conducted by Monney *et al* (2013) in educational institutions in Konongo in the Ashanti Region of Ghana; revealed that food vendors in educational institutions generally adhered to good food hygiene practices, namely, regular medical examination (93%) use of personal protective clothing (52%) protection of food from flies and dust (55%), preserving of food (100%) and good hand washing practices (63%). This finding was attributed to food hygiene training instead of the level of education. Information from a study conducted by Muinde and Kuria (2005) in Nairobi of which the data were collected through in-depth interview and observation checklist revealed that the food vendors lack training on food preparation. The study outlined that 62% obtained food preparation skills through observation while 33% were taught by their parents in non-formal setting. Also, the finding indicates that preparation surfaces used for the preparation of raw foods were not washed regularly. Cooked foods were stored at ambient temperature in cupboards, plastic bowls, jug and buckets were just left in the open. Vendors had garbage and waste bins beside the stalls.

A descriptive survey of hygienic and sanitary practices of vendors of street foods in Nairobi with a sample of street food vendors revealed that hygiene was not observed as the vendors never covered their heads, handled money and food at the same time and they did not wear overcoats aprons and handled food with bare hands. The findings were attributed to the fact that the vendors were not aware of hygienic and sanitary practices (Muinde & Kuria, 2005). A similar study conducted by Nurudeen *et al* (2014) added that vendors used their mouths to blow air into polythene bags to open, before using it to package foods for customers. Kok and Balkaran (2014) also added that majority of food handlers studied in South Africa did not wear gloves, hair nets or apron. A study conducted by Mensah, Yeboah-Manu, Owusu, Dark and Ablordey (2002) found that the use of fork and spoon to serve food reduced the level of contamination, while the use of bare hands resulted in increase. They also reported about 36% of the vendors served food with their bare hands. The vendors were also found to be carriers of variety of bacteria enteropathogens, including salmonella tyrobi (Mensah *et al* as cited in Mensah *et al*, 2002).

Abadalla *et al* (2009) identified that in food processing food borne microbes can be released from infected humans who handle the food, or by cross-contamination from some other raw agricultural product and the in-plant environment. Also, personnel hands are the most significant source of transfer of micro-organisms from faeces, skin, or other sites to vendors. A survey of street food vendors at vending site in the city of Durban South Africa showed that a total of 29 vendors were observed all of whom said they prepared all their meals at the site and began preparation at 5am every day. Washing of utensils was carried out in bowls or pots which were also used for cooking and water was not being changed, as it was not easily accessible. This method of washing meant that water was becoming dirtier and dirtier with repeated use. Dirty pots and other dishes were left in heaps close to serving areas and already prepared food (Kok & Balkaran, 2014). The activities cause a great number of flies in the area. The study also reported that garbage was left open. Prepared foods were displayed with no covers in very humid weather. This encourages the proliferation of insects and rodents linked to disease.

3. Methodology

The research design was a descriptive survey. The population of the study consisted of all street food vendors in basic schools, in the Sissala East District in the Upper West Region of Ghana. The purposive sampling technique was used to select all vendors who prepare and sell complete meals in basic schools. The sample size was thirty (30) street food vendors. There are fifty-nine (59) basic schools in the Sissala East District. The basic schools used for the study were; TUCE Demonstration Basic, Tumu Junior High, Egala Basic, Falahiya Basic, T.I Ahamadia Basic, St Gabriel's Basic and Tumu United Basic which were purposively selected.

Two instruments used for data collection were interview guide and observation. The interview guide was used to collect data from food vendors on their food and personal hygiene practices. The interview guide comprised questions to obtain information on demographical data such as age, level of education and types of food sold. Information on food hygiene, personal hygiene and environmental hygiene were also covered. The questions were dichotomous making room for yes/no responses. The items on the food hygiene practice covered how food vendors handle foods to prevent cross-contamination such as hand washing, keeping food warm, and care of equipment. Also, the items on personal hygiene covered issues relating to use of clean garment, hand washing and hair covering. The observation was also conducted to collect data on the environmental hygiene practices of food vendors during food sale on basic school premises. The environmental hygiene items covered

cleanliness of working area, provision of drinkable water and hand washing equipment.

In a nutshell, 23 items were used to collect data which was analyzed using Statistical Product and Service Solutions (S.P.S.S) into frequencies and percentages for easy presentation and discussion.

4.0 Results and Discussion

Data was collected to determine the demographic characteristics of the street food vendors on the basic school premises. The items were sex, age, educational status and type of food sold on basic school premises. The responses are presented in Table 1.

Table 1: Socio-Demographic Data of Street Food Vendors

Variable	Frequency	Percentage (%)
Sex		
Male	-	-
Female	30	100
Age		
Less than 20	-	-
21-30	5	16.7
31-40	18	60.0
41-50	4	13.3
above 50	3	10.0
Educational Status		
No formal education	10	33.3
Primary	1	3.3
J.H.S	7	23.3
S.H.S	11	36.7
Technical/Vocational	1	3.3
Tertiary	-	-
Types of food sold on basic school premises		
Porridge	5	16.7
Plain boiled rice	2	6.7
Kenkey	3	10.0
Banku	8	26.7
Tubani	1	3.3
Ampesi	2	6.7
Fried yam	6	20.0
Rice and beans	3	10.0

Source: field data 2014

The data in Table 1 showed that all of the respondents 30 representing 100% were females. This means that food vendors in schools at Sissala East District are females. Also 18 respondents representing 60% were in the 31-40 year range, 5 representing 16.7% were in the 21-30 year range, 4 representing 13.3% were in the 41-50 year range and 3 representing 10% were above 50 years.

Also the data indicated that, 10 of the respondents representing 33.3% had no formal education, 1 representing 3.3% had primary education, 7 representing 23.3% had JHS education, 11 representing 36.7% had SHS education and 1 respondent representing 3.3% having technical/vocational education. This shows that majority of the respondents have their education up to the SHS level. It can further be seen that none of the respondents had tertiary education.

Additionally, 8 respondents sold banku representing 26.7% which was the highest type of food sold on basic school premises. Six (6) respondents sold fried yam, another 5 sold porridge and 3 sold kenkey and rice beans representing 20%, 16.7% and 10% respectively. The least sold food was plain boiled rice, ampesi and tubani sold by 2 respondents representing 6.7%, respectively and 1 representing 3.3%.

4.1 Research question 1: What are the street food vendors' perspectives of food hygiene practices in basic schools?

The study sought for responses on the food hygiene practices of street food vendors in basic schools on the following: hand washing, separate equipment for serving cooked and raw food, keep food warm, serve food with fork/spoon, served food with bear hands, served food with cup/plate, keep equipment clean, container for washing utensils, drying rack for clean utensils. The responses are presented in Table 2.

Table 2: Food Hygiene Practices of Vendors

Practices	Frequency	Percentage (%)
Hand washing	17	56.7
No hand washing	13	43.3
Separate equipment for serving cooked and raw food	28	93.3
No separate equipment for serving cooked and raw food	2	6.7
Keep food warm	14	46.7
Keep no food warm	16	53.3
Serve food with fork/spoon	20	66.7
Serve food with no fork/spoon	10	33.3
Serve food with bare hands	26	86.7
Serve food with no bare hands	4	13.3
Serve food with cup/plate	26	86.7
Serve food with no cup/plate	4	13.3
Keep equipment clean	23	76
Keep no equipment clean	7	23.3
Container for washing utensils	24	80
No container for washing utensils	6	20
Drying rack for cleaned utensils	7	23.3
No drying rack for cleaned utensils	23	76.7

Source: Field Data 2014

The results in Table 2 indicated that, 17 of the respondents representing 56.7% stated that they wash their hands before serving food, whereas 13 representing 43.3% said they do not wash their hands. The table also shows that 28 respondents representing 93.3% said they use separate equipment for serving cooked and raw food but 2 representing 6.7% said they do not. Also, 14 respondents representing 46.7% indicated that they keep food warm during sales while 16 representing 53.3% said they do not. It can also be seen that 20 respondents representing 66.7% said they serve food with fork or spoon, but 10 representing 33.3% said they do not.

The table also indicates that, 26 of the respondents representing 86.7% stated that they serve food with bare hands whereas 4 representing 13.3% said they do not. It was also observed from the table that 26 respondents representing 86.7% said they serve food with cup or plate whereas 4 representing 13.3% said they do not. Moreover, 23 respondents representing 76.7% said they keep their equipment clean while 7 representing 23.3% said they do not. Again, it was observed that 24 respondents representing 80% have containers for washing utensils while 6 (representing 20%) said they do not. Lastly, 7 respondents (representing 23.3%) said they provide drying racks for cleaned utensils whereas 23 representing 76.7% said they do not.

In a nutshell, it could be said that food vendors observe food hygiene practices. However, a sizeable number of food vendors serve food with bare hands representing 86.7% and some do not provide drying racks for cleaned utensils representing 76.7%.

4.2 Research question 2: What are the challenges of personal hygiene practices of street food vendors in basic schools?

To assess the personal hygiene practices of food vendors, an observation was conducted at the food selling sites to observe the following: wearing of clean clothes, keeping of nail short and clean, selling of food with visible skin rashes, boils, cuts/wounds, wearing of jewellery when selling, covering of hair when selling food, washing of hands after counting or receiving money. The results are presented in Tables 3.

Table 3: Personal Hygiene Practices of Vendors

Practices	Frequency	Percentage (%)
Wear clean clothes	22	73.3
Wear no clean clothes	8	26.7
Keep nails short and clean	24	80.0
Leave nails longer and dirty	6	20.0
Sell food with visible skin rash, boil, cut or wound	16	53.3
Sell food with no visible skin rash, boil, cut or wound	14	46.7
Wear jewellery when selling food	22	73.3
Wear no jewellery when selling food	8	26.7
Cover hair when selling food	27	90.0
Cover no hair when selling food	3	10.0
Wash your hands after counting/receiving money	4	13.3
Wash no hands after counting/receiving money	26	86.7

Source: Field Data 2014

The results in Table 3 revealed that, 22 respondents representing 73.3% stated that they wear cleaned clothes, whereas 8 representing 26.7% said they do not. Also 24 respondents representing 80% said that they keep their nails short and clean while 6 representing 20% said they do not. Again, 16 respondents representing 53.3% said they do sell food when they have visible skin rashes, boil, and cut or wound whereas 14 representing 46.7% said they do not. In addition, 22 respondents representing 73.3% said they wear jewellery when selling food whereas 8 representing 26.7% said they do not. Also, 27 respondents representing 90% stated that they cover their hair when selling food while 3 representing 10% respondents said they do not. Lastly, 4 respondents representing 13.3% said that they wash their hands after counting or receiving money while 26 respondents representing 86.7% indicated that they do not.

In summary, food vendors observe personal hygiene practices to some extent. However, they fail to observe some other important personal hygiene practices. For example, 53.3% of the respondents said they sell when they have visible skin rashes, boils, cuts or wound. Other respondents representing 73% indicated that they wear jewellery when selling food and 86.7% said they do not wash their hands after counting or receiving money.

The environmental hygiene practices of food vendors were also observed during food sales on the basic school premises. The items observed were: provision of drinkable water, bowl/buckets for hand washing, clean towels for drying hands, soap for hand washing, bowls/buckets for washing dishes, brooms for keeping grounds clean, rubbish containers, as well as protection of food from flies. Details of the results are presented in Table 4.

Table 4: Environmental Hygiene Practices

Practices	Frequency	Percentage (%)
Provide drinkable water	20	66.7
Provide no drinkable water	10	33.3
Provide bowls or buckets	5	16.7
Provide no bowls or buckets	25	83.3
Provide clean towels	4	13.3
Provide no clean towels	26	86.7
Provide soap for washing hands	25	83.3
Provide no soap for washing hands	4	13.3
Provide bowls or buckets for washing dishes	28	93.3
Provide no bowls or buckets for washing dishes	2	6.7
Provide brooms for keeping grounds clean	13	43.3
Provide no brooms for keeping grounds clean	17	56.7
Provide rubbish containers	3	10.0
Provide no rubbish containers	27	90.0
Protect food from flies	15	50.0
Expose food to flies	15	50.0

Source: Field Data to 2014

The observation results in Table 4 indicated that, 20 respondents representing 66.7% provide drinkable water but 10 representing 33.3% do not. Also, 5 of the respondents representing 16.7% provide bowls or buckets for washing hands while 25 respondents representing 83.3% do not. Moreover, 4 respondents representing 13.3% provide clean towels for drying hands, whereas 26 respondents representing 86.7% do not. In addition, 25 respondents representing 83.3% provide soap for hand washing but 4 representing 13.3% do not. Again, 28 respondents representing 93.3% had bowls or buckets for washing dishes while 2 respondents representing 6.7% do not. Thirteen respondents representing 43.3% have brooms for keeping selling grounds clean but 17 respondents representing 56.7% do not. Again, 3 of the respondents representing 10% provide rubbish containers and 27 respondents representing 90% do not. Finally, 15 of the respondents representing 50% protect food from flies and 15 respondents representing 50% do not protect food from flies.

From the analysis, it can be said that, food vendors do not observe environmental hygiene practices to a great extent. This is because 83.3% of the respondents do not provide bowls or buckets for washing hands, 86.7% do not provide clean towels for drying hands and 90% do not have brooms for keeping selling ground clean.

From the analysis of results of food vendors, showed that indeed, food vendors observe food hygiene practices. This finding supports the study conducted by Monney *et al* (2013) in educational institutions in Konongo in the Ashanti Region of Ghana which revealed that food vendors in educational institutions generally adhered to good food hygiene practices, namely, regular medical examination (93%) use of personal protective clothing (52%) protection of food from flies and dust (55%), preserving of food (100%) and good hand washing practices (63%).

Moreover, the results of the current study support the study conducted by Mensah, Yeboah-Manu, Owusu, Darko and Ablodey (2002) who found that the use of fork and spoon to serve food reduced the level of contamination, while the use of bare hands resulted in increased contamination. However, the results from the study revealed that sizeable number of food vendors serve food with bare hands which is in line with Abadalla *et al* (2009) who stated that the hands are the most significant source of transfer of micro-organisms from faeces, skin, or other sites to vendors.

Also the results revealed that food vendors do not observe personal hygiene practices because they sell when they have visible skin rashes, boil, cut or wound. They also wear jewellery and do not wash their hands after counting or receiving money. This supported a descriptive survey of hygienic and sanitary practices of vendors of street foods in Nairobi conducted by Muinde and Kuria (2005) which revealed that personal hygiene was not observed and that the vendors never covered their heads, handled money and food at the same time and they did not wear overcoats aprons and handled food with bare hands

Kok and Balkaran (2014) also added that majority of food handlers studied in South Africa did not wear gloves, hair nets or apron. Results of the study from the analysis revealed that food vendors do not observe

environmental hygiene practices to a great extent. This is because they do not provide bowls or buckets for washing hands, they do not provide clean towels for drying hands and majority of them do not have brooms for keeping selling grounds clean. This current study supports the survey of street food vendors at vending site in the city of Durban South Africa conducted by Kok and Balkaran (2014), which showed that a total of 29 vendors observed, it was found that washing of utensils was carried out in bowls or pots which were also used for cooking and water was not being changed, as it was not easily accessible. Dirty pots and other dishes were left in heaps close to serving areas and already prepared food.

Similarly, the results of the current study supports the study of Mensah *et al* (2002) who discovered that the handling of food at ground level increased the risk of contamination because dust could easily be blown on to food handled. Pathogens can be passed mechanically by flies. They further found that there is consequently a risk of contamination associated with the exposure of food to flies.

5. Conclusion

The study sought to investigate street food vendors' perspective of food hygiene practices in basic schools as well identify the challenges of personal and environment hygiene practices of street food vendors in basic schools. It was found that street food vendors observed food hygiene, personal and environmental hygiene practices to some extent. The study revealed that majority of the food vendors observe food hygiene practices such as using separate equipment for serving cooked and raw food, serve food with fork or spoon, serve food with cup or plate, and keep their equipment clean, have containers for washing dishes, wear cleaned clothes, keep their nails short and clean, cover their hair when selling food as well as protect food from flies. However, some important food, personal and environmental hygiene practices were not observed. Majority of the food vendors do not keep food warm, serve food with bare hands and do not provide drying racks for cleaned utensils, sell when they have visible skin rashes, boils, cuts or wound, they wear jewellery and they do not wash their hands after counting or receiving money, do not provide rubbish containers, do not provide drinkable water, do not provide clean towels for drying hands and do not provide soap for hand washing. Generally, food vendors on basic school premises do not observe food, personal and environmental hygiene practices to the optimum. There is need to develop relevant hygiene training programmes to equip food vendors with the requisite skills of ensuring healthy hygiene practices to avoid food contamination and food-borne illness in basic schools in the Sissala East District.

It was recommended that the District Nutrition Officers (DNO) should develop appropriate programmes to train food vendors on food, personal and environmental hygiene practices to enable them provide drying racks for cleaned utensils, wash their hands before serving food, provide clean towels for drying hands and to avoid serving food with bare hands, improve their hand washing practices and the use of clean clothes, avoid selling when they have visible skin rashes, boils, cuts or wound and stop wearing jewellery during food sales, provide rubbish containers, drinkable water, clean towels for drying hands and soap. Regular supervision of street food vendors should be made by the School Health Coordinators (SHC) to ensure that good hygiene practices are observed on basic school premises.

References

- Abdalla, A., M., Suliman, E., S., & Bakhiet O., A.,. (2009) Food safety knowledge and practices of street food-vendors in Atbara city (Nahar Elneel State Sudan). *African Journal of Biotechnology* 8:24; pp. 69 67-697.
- Akonor, T. P. & Akonor, A. M. (2013) Food Safety Knowledge: The case of domestic food handlers in Accra. *European Journal of Nutrition and Food Safety* 33:99-111.
- Annor, A. G. & Baiden, A., E. (2011) Evaluation of Food Hygiene knowledge attitudes and practice of food handlers in food businesses in Accra, Ghana. *Food and Nutrition Science* 2:830-836.
- Codex Alimentarius Commission, (2003). *Recommended international code of practice: General principles of food hygiene* including Annex on *Hazard Analysis Critical Control Point (HACCP) and guidelines for its application*. CAC/RCP 1-1969 Rev 4.
- Dewaal, C. S & Rober, N., (2013). Global and local: Food safety around the World: Retrieved from http://safefoodinternational.org/local_global.pdf on 16/04/2013.
- Food and Agricultural Organisation (FAO, 1997). *Essential Safety requirement for Street vended food (revised edition)*. FAO Food and Nutrition Paper.
- Ghana News (2013). Contaminated food, water causes 700,000 deaths in Africa annually: Retrieved from <http://www.modernghana.com/news/203772/1/contaminaed-food-water-cause-700000-deaths-in-af.html> on 22/04/2013
- Ghana Web. (2013). Four dead after eating contaminated food. Retrieved from <http://www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=195505> on 22/05/2013.
- GraphicOnline, (2013). Obuasi battles cholera outbreak.one dead so far: Retrieved from <http://graphic.com.gh/health/obuasi-battle-cholera-outbreakone-dead-so-far.html> on 22/05/2013

- JoyNews (2013). Nine confirmed dead in cholera outbreak at atebubu: Retrieved from <http://edition.myjoyonline.com/page/news/201207/89610.php> on 22/05/2013.
- Kok, R., & Balkaran R. (2014). Street food vending and hygiene practices and implications for consumers. *Journal of Economics and Behavioural Studies* 6:3 pp 188-193.
- Mensah P., Yeboah-Manu, D., Owusu, Darko K., & Ablordey, A. (2002) Street foods in Accra, Ghana: How safe are they? *Bulletin of the world Health Organisation: 80:546-554*.
- Monday, I., E., Francis, J. I. & Mohammed, S. U. (2014). Microbiological Quality of Ready-to-eat foods (Rice and Mioimoi) sold by food vendors in Federal Polytechnic Bali, Jaraba State Nigeria. *Journal of Environmental Science, Toxicology*.
- Monney, I., Agyi D., Owusu, W. (2013). Hygienic Practices among food vendors in Educational institutions in Ghana. The case of Konongo. *Open Access Foods. 2:282-294*.
- Muinde, O., K., & Kuria, E. (2005). Hygiene and Sanitary Practices of Vendors of Street Foods in Nairobi Kenya. *African Journal of Food Agriculture Nutrition and Development. 5:7:1- 14* Retrieved from www.roprenya.org.
- Nurudeen, A. A., Lawal, A. O. & Ajayi, S. A. (2013) A Survey of Hygiene and Sanitary Practices of Street Food Vendors in Central State of Northern Nigeria. *African*
- Rahman, M., Arif, T., Bakar, K. & Tambi Z. (2012). Food safety knowledge, attitude and hygiene practices among the street food vendors in northern Kuching city. *Sarawak. Borneo Science pp. 95-103*.
- Von Holy, A., & Makhoane, F., M., (2006). Improving Street Food Vending in South Africa: Achievements and Lessons Learned. *International Journal of Food Microbiology 111, 89-92*.