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Research Article

Knowledge of Food Hygiene Practices among Street Food Vendors in Sagnarigu Municipality of Ghana: A Cross Sectional Study

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ABSTRACT

Food hygiene is the conditions and measures necessary to ensure the safety of food from production to consumption. In the Sagnarigu municipality in particular, majority of people depend mainly on street food and this accounts for the numerous food related health conditions within the municipality in most recent times. The study sought to assess the level of knowledge of food hygiene practices by street food vendors within the municipality. The study adopted a descriptive cross sectional design using mix method. A sample of 199 respondents was contacted for the study. The main tools for the study were survey questionnaire, in-depth interview, key informant interview guide and observation checklist. The data obtained were cleaned using Microsoft excel and transported into SPSS version 24.0 for analysis. Pearson chi-square test was used to determine the relationship between socio demographic characteristics and hygiene practices. The findings indicated that most of the street food vendors were females comprising of 98% and about 48.4% had no form of formal education. Washing of dishes in clean soapy water and the use of apron were also significant with formal training on food handling ($p<0.05$). The findings also revealed that majority (88.9%) of food vendors have sufficient and appreciable knowledge of food hygiene. The study recommends that government should resource the environmental health unit of the assembly to train and effectively monitor street food vendors.

Keywords: Knowledge; Food; Hygiene; Practices food vendors; Safety; Street food; Hazards

INTRODUCTION

Food hygiene is the conditions and measures necessary to ensure the safety of food from production to consumption. Food safety and hygiene, for decades, has been the subject of scholarly research and vending of food on the street is a weak link in food safety supervision. Street food does not only provide expediency for larger portion of the population, but it also provides a means of income for millions of low-income people, creating a great contribution to the economy of many developing countries. Some people have promoted it to the level of a national security matter [1].

The Food and Agriculture Organization has defined street food as "ready-to-eat foods and beverages sold and prepared by vendors or hawkers in streets or other public places." Street food provides convenience in the choice of diet for larger number of the population living in developing countries. An estimated population of close to 2.5 billion people consume street food every day. This consumption supports the livelihood of majority of people with low income and helping significantly to enhance the economy [2]. Food is a basic necessity of life without which humans cannot survive. The entire life of a human being from development to productivity including whether a person becomes ill or healthy depend on what the person eats. According to Clarke, [3], the Ghana Health Service (GHS), the accessibility and obtainability of wholesome food is a fundamental human right. More so, it leads to an improvement in the health of people, contributing to productivity and providing an active basis for improvement of lives of people and alleviating poverty.

Assessment of the street food vending environment is one pragmatic approach in understanding the nature and extent of the discrepancies in the availability of nutritious and affordable diet to populations and also helps in undertaking healthy food retail

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initiatives [4]. Food hygiene practices involve the protection of supply from microbial, chemical, as well as physical hazards which could occur in the processes of food preparation, handling, serving, storing and consuming to protect food borne diseases.

Foodborne illnesses do not only impact the health and well-being of people but they also have some economic implications for individuals, families, communities, businesses and even nations. These diseases put a significant burden on the health-care delivery systems and greatly bring down the productive activities of the economy. Poor people tend to live from hand to mouth, and loss of income as a result of foodborne illness perpetuating the cycle of poverty [5]. Street vended foods have become one of the most common dangers associated with the increase in outbreaks of food-borne diseases in developing nations. Good food hygiene practices improve access to healthy foods through the gentrification of food retail venues Center for disease control, [4], thus, makes healthy food retail a determinant of health in the contemporary world [6]. Unfortunately, some food retail venues are associated with the emergence of NCDs [7]. Also, modern retail emergence has brought marked nutrition and health impacts through food price reduction, assortment and ease of access to junk foods [8].

The U.S. Centres for Disease Control and Prevention has released a report showing that the counts of several types of food poisoning infections climbed in 2018, but that the increases could be the result of new diagnostic tools that help identify more cases. Overall, the agency believes food poisoning rates have remained largely unchanged [4].

Among North American populations, food environment influences the dietary behaviour of consumers and subsequently obesity [9]. Street foods are gaining increasing patronage as a result of urbanization and modernization which is compelling many urban dwellers to eat their major daily meals out of home. Street food vending is a common feature of most cities and towns in developing countries including Ghana. The sector is being faced with dangerous activities which have been widely known to pose serious concerns over the safety and wellbeing of the practitioners, particularly the health of the consumers [10]. These unwholesome and unsafe actions have traversed the entire chain of street food enterprise ranging from agricultural raw materials to the final retail street foods and have been fingered in the epidemics of diseases and illnesses [11]. The prevention, maintenance and treatment of diseases from street food borne illnesses were reported to result in heavy drain on the purse of individuals and governments in the developing countries due to huge spending involved [12]. The scarce resources which could have been channelled in to infrastructural development are being used to treat preventable diseases due to the unwholesome activities mentioned above. However, hygienic practices should go along with the various perceptions that people have in order to achieve safety in street-vended local foods. Literature is Limited on how actors define safety so that there is continued Patronage of Street foods in urban areas despite the concerns raised regarding vendors' unhygienic practices.

In Europe, a lot of scientific research works have been done specially to look at the perception of the public on the dangers of food and its associated risks. Even though, these studies showed that an appreciable number of the general public still do not consider the risk associated with food seriously, yet people developed their own means and tactics in order to handle food quality issues [13].

It is estimated that food and waterborne diarrheal diseases are one of the leading causes of illness and death in under developed countries killing approximately 1.8 million people annually [5]. Thus, have the potential of seriously damaging the health status of the population and subsequently creating an enormous social burden on the communities and their health system. More worrying is the fact that, it is a common practice in the streets of Sagnarigu municipality to see food vendors not observing the basic sanitary and hygienic practices of food safety. It is very common to see a food vendor using her bare hands to cut and serve food and still use that same bare hand to collect money from consumers not thinking twice about the health consequences to the consumer. The current study determined the level of food hygiene practices among street food vendors in the Sagnarigu Municipality. To achieve this, following specific objectives have been explored. Assess the level of knowledge of food hygiene practices among the participants and to examine the role of regulatory authorities (environmental health workers) in relation to food hygiene and health among the study participants.

MATERIALS AND METHODS

Research design and setting

The study is a descriptive cross-sectional study employing mixed method of (qualitative and quantitative) data gathered among street food vendors in the Sagnarigu municipality which is the second largest municipality in the northern region of Ghana. The municipality has several formal institutions from schools to hospitals and to private enterprises and most workers within these institutions depend largely on street vended food for their survival.

Study population and sampling

The target population for this study was all street food vendors who sell cooked foods on the major streets within the Sagnarigu municipality during the day but excluding restaurants and big chop bars which clearly are being monitored by the tourism authority.

Sampling technique and sample size

In this study, we used a probability sampling method to select respondents. This was informed by the lack of a sampling frame of street food vendors in Sagnarigu municipality. The sampling procedure followed a two-stage approach; first, the study area was classified into clusters, thus three zonal councils, namely Kanvilli, Kalpohini and Chogu zonal councils. The second stage involved selecting the respondents randomly. Checks from both the environmental health unit of the Sagnarigu municipality and the food and drugs Authority revealed that there was no data on street food vendors and so the researchers conducted a census of street food vendors to get their population in order to determine the sample size. Population size of 480 was gotten and out of that 199 street food vendors were sampled to take part in the study including the environmental health officer. This was done using an online application known as random.org. Where we filled in the range thus minimum and maximum figures and then run the system. The process is repeated until the last sample gotten. Respondents who were unwilling to take part in the study were immediately replaced by the next vendor per the technique for sampling using cochran sampling method.

Study variables

The independent variable was the knowledge on food hygiene

practices by street food vendors whiles the independent variables were the socio demographic characteristics (age, sex, level of education, religion etc.,), certification and frequent visits by regulatory authorities.

Data collection tools and data collection procedure

Data used in the study were exclusively primary. A structured questionnaire and an interview schedule were the tools used to collect the data. For the quantitative data, questionnaire was the key tool used since it was seen as the most appropriate and effective way of reaching the target population. Because of accuracy the questionnaire was designed using Computer Assisted Personal Interviewing (CAPI). The CAPI was programmed using web-based software known as the KoboCollect. In this process of administering questionnaire, there is no non response rate because the interviewer only completes a form in the presence of the respondent; thus, interviews were done face to face.

In-depth interview was one of the tools employed in this study to gather qualitative data. This tool was used to strategically cross examine and validate the quantitative data collected from the street food vendors. In all, there were ten in-depth interviews that were conducted. Nine were administered to street food vendors whiles the remaining one was designed and administered to the environmental health officer of the Sagnarigu municipal assembly as a key informant. The third data collection approach used to gather data for this study was direct observation. In addition to using structured questionnaire and in-depth interview, direct observations were made on vendors behaviour during questionnaire administration on issues such as hand washing among vendors, holding of money, serving food with bare hands, covering of hair, the use of aprons by vendors, and the environment where food is been prepared and sold. This direct observation on vendor's hygiene behaviour was used to validate vendors reported hygiene practices.

Data analysis

In this study, both quantitative and qualitative approaches were used. Quantitative data from the field were extracted from the koboCollect tool box, transported into Microsoft excel v2010 and cleaned. All questions were checked for completeness and then transported into SPSS version 24.0 for analysis. Codes were given to some of the variables before it was put into SPSS version 24 to run the analyses. Frequencies were used to compare continuous variables and the Pearson chi-squared test for discrete variables. P-values of less than 0.05 were taken as statistically significant.

Also point estimates were compared and presented as means and percentages. Nominal 2-sided p-values were reported with statistical significance defined at p-value<0.05 at 95% confidence interval. Percentage or proportion was calculated for discrete variables while the mean with its Standard Deviation (SD) were computed for the continuous variables. Qualitative analysis was undertaken through content analysis. The audio recorded was played and transcribed into thematic areas based on the objectives of the study. This enables the researchers to make meaning out of the data gathered. The qualitative data was used as a checker to validate the quantitative data.

Ethical consideration

Ethical clearance was sought from the ethics committee of the Ghana health service through the northern regional health directorate. Introductory letter from the University for Development Studies was given. Then also, all the participants consented to be part of the study before they were recruited. Questionnaires and observational guide had no space for names of respondents or their shops for purposes of confidentiality. Also, informed verbal consent was obtained from the food handlers before the interview. Above all, participation in this study was completely voluntary.

RESULTS

Socio-demographic characteristics of respondents

Out of the 200 respondents who took part in the quantitative study it was revealed that only 5% of the respondents were below age 20. Only 5.3% attained tertiary education. Majority (78.4%) of the respondents were married with almost all (98.4%) of the respondents being females, and as high as 86.8% of the respondents were Muslims (Table 1).

Table 1: Socio demographic characteristics and hygiene practices.

Age groupings of respondents	Is the vendor wearing an apron		Chi- squared test of association
	Yes (%)	No (%)	
Below 20	2(18.2)	9(81.8)	X^2=14.661[a]
20-29	13(37.1)	22(62.9)	p-value= 0.005*
30-39	35(48.6)	37(51.4)	
40-49	16(33.3)	32(66.7)	
50-59	2(8.3)	22(91.7)	
Age grouping of respondents	Is the vendor wearing a head cover/ cap		Chi squared test of association
	Yes (%)	No (%)	
Below 20	8(72.7)	3(27.3	X^2=11.914[a]
20-29	31(88.6)	4(11.4)	p-value=0.018*
30-39	69(95.8)	3(4.2)	
40-49	47(97.9)	1(2.1)	
50-59	23(95.8)	1(4.2)	
Age of respondents	Are dishes being washed with clean soapy water		Chi squared test of association
	Yes (%)	No (%)	
Below 20	10(90.9)	1(9.1)	X^2=4.032[a]
20-29	35(100)		p-value=0.402
30-39	70(97.2)	2(2.8)	
40-49	47(97.9)	1(2.1)	
50-59	24(100)		

Note : *: To determine the level of knowledge of street food vendors on food hygiene, [a]: Formal training of food vendors on food handling.

Knowledge level of street food vendors on food hygiene

To determine the level of knowledge of street food vendors on food hygiene, a number of questions on a liked scale format were administered. On the question of whether fresh meat has microbes on the surface, majority of the respondents selected both strongly agreed and agreed: 43% and 40% respectively. On the issue of whether healthy people can carry germs to food, 41% and 35% responded in the affirmative. With regard to the question of whether food prepared (hot) has microbes, almost all the respondents (91%) indicated they strongly disagreed to the statement. With regard to whether raw vegetables such as lettuce has harmful organisms, a higher percentage 60 and 29% responded strongly agreed and

agreed respectively.

For the statement of whether food that has been prepared too long in advance can give microbes time to grow, only 10% and 35.8% alluded to strongly agreed and agreed respectively. When respondents were asked whether viral diseases such hepatitis B and HIV/AIDS can be spread through food, 21% and 25% responded strongly agreed and agreed respectively. On the question of whether cholera can be spread through food, 64% and 26% responded strongly agreed and agreed.

For the knowledge question of whether soap and water can be used to kill all harmful organisms on food preparation surfaces after preparing fresh meat, almost all (56% and 39%) of the respondents alluded to strongly agreed and agreed. Generally, the individual knowledge level indicators indicated that the food vendors had high knowledge level regarding food hygiene (88.9%). We allotted a mark each for every correct response and a zero for a wrong response, and then both are aggregated separately and converted into percentages with 50% as the mean. So a score less than 50% was taken as low or insufficient knowledge while a score above 50% is considered as adequate or sufficient knowledge (Table 2).

Medical examination and certification to sell food

The study revealed that majority (51.1%) have never done medical examination whiles only 48.9% have at some point undergone medical examination.

Certification: The acting environmental health officer during an in-depth interview reported. "It is compulsory for all food vendors to be certificated. Food vendors are not allowed to sell without certificates. The office announces to the general public its intention to undertake a screening exercise of food vendors within the municipality leading to the award of a certificate. Food vendors without certificates are taken on by the law, so certification is a serious issue in the vending of food (Figure 1).

Food handling practices and street food vending

The study looks at some hygienic practices in terms of the way food is handled during serving customers. Only 5.0% of vendors or sellers end up receiving money with their bare hands and at the same time serving food with it. During an in-depth interview with a Kenkey seller on the issue of whether she collects money with her bare hands. This was what she reported. "I used my left hand to collect money with a rubber covering my hand. And I washed my hands after serving between three to five customers". Another Kenkey seller said, for me I know that money is poison so I don't collect money whiles selling; it is my daughter who collects the money from customers. One Aduwa seller also reported "even though I use a ladle to serve my customers, I don't take money with my bare hands. I always rub my left hand with a rubber and use it to collect money from my customers".

Reasons why street food vendors do not have certificates

The study attempts to find out why street food vendors in the Sagnarigu municipality do not have certificates to prepare and sell food to the general public, yet they are on the streets vending food. It was realized that majority (45.1%) of the respondents felt it was not necessary to have a certificate in order to sell food while only 2.0% indicated that they did not have time to go for it. As high as 43.4% of the food vendors said they did not know where to get it. 2.5 and 7.0% of the vendors alluded to the fact that it was expensive and also very bureaucratic.

Formal training on food handling and food hygiene practices

Wearing of apron against formal training of food vendors was seen to be statistically significant with outcome chi-square of (X^2=12.648; p=0.001). Again, vendor has formal training on food handling as against vendor washing dishes in clean soapy water and vendor undergoing medical examination were both seen to be statistically significant with p-value of (p=0.005) and (p=0.001) respectively. During the in-depth interview with the environmental health officer on the issue of whether food vendors have adequate formal knowledge on food handling, he reported that "people consider street food vending as an informal business as and when you have money and wish to sell food you just get your few items and off you start. So apart from those who attained education beyond secondary level and were taught something related to food hygiene in school only a hand full of street food vendors have been trained formally on food handling" (Table 3).

Table 2: Knowledge level of street food vendors.

Knowledge on food hygiene	Strongly agreed		Agreed		Disagreed		Strongly disagreed		Don't know		Total
	Freq	(%)	Freq	(%)	Freq	(%)	Freq	(%)	Freq	(%)	(%)
There are always microbes on the surface of fresh meat	82	43%	76	40%	10	5%	0	0%	22	12%	100%
Canned food harbors disease causing organisms	25	13%	67	35%	70	37%	4	2%	24	13%	100%
Healthy people may cause illness by carrying germs to food	78	41%	66	35%	17	9%	8	4%	21	11%	100%
Cooked foods(hot) contain microbes	0	0%	0	0%	30	91%	3	9%	0	0%	100%
Green leafy vegetables have disease causing organisms	114	60%	56	29%	6	3%	0	0%	14	7%	100%
Microbes can grow on food that is prepared in advance	19	10%	68	36%	64	34%	15	8%	24	13%	100%
HIV and Hep B including other viral diseases may spread through food	39	21%	48	25%	45	24%	19	10%	39	21%	100%
Diarrhea/cholera may be spread through food	122	64%	50	26%	11	6%	1	1%	6	3%	100%

Food preparation surfaces can contaminate foods	57	30%	107	56%	9	5%	0	0%	17	9%	100%
Soap can be used to disinfect the surface of food preparation surfaces after preparing raw meat	107	56%	74	39%	2	1%	2	1%	5	3%	100%
When you bandage the wound on your hand you can still prepare food with it.	12	6%	66	35%	86	45%	14	7%	12	6%	100%
Hands should be correctly and adequately washed after blowing your nose or sneezing	139	73%	49	26%	1	1%	0	0%	1	1%	100%

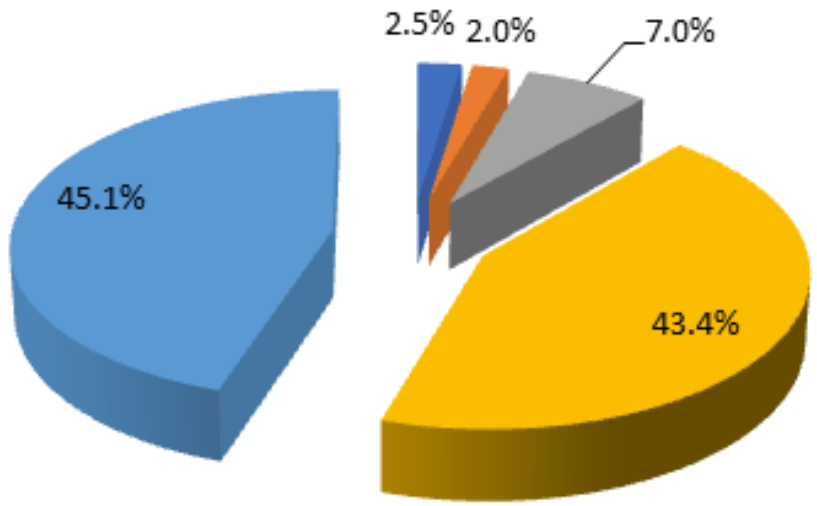

Figure 1: Reasons for not having certificate. **Note:** (■) It is expensive, (■) there is no time, (■) bureaucracy, (■) don't know where to get it, (■) certificate does not matter in selling.

Table 3: Association between formal training on food and food hygiene practices.

Formal training on food handling	Is the vendor wearing a head cover or cap		Chi- squared test of association
	Yes (%)	No (%)	
Yes	34(89.5)	4(10.5)	X^2=1.423[a]
No	114(94.7)	8(5.3)	p-value= 0.233
Formal training on food handling	Is the vendor wearing an apron		Chi squared test of association
	Yes (%)	No (%)	
Yes	23(60.5)	15(39.5)	X^2=12.648[a]
No	45(29.6)	107(70.4)	p-value=0.001*
Formal training on food handling	Are dishes being washed with clean soapy water		Chi squared test of association
	Yes (%)	No (%)	
Yes	35(92.1)	3(7.9)	X^2=7.725[a]
No	151(99.3)	1(0.7)	p-value=0.005*
Formal training on food handling	Vendor serving food and collecting money with the same bare hand		Chi squared test of association
	Yes (%)	No (%)	
Yes	4(10.5)	34(89.5)	X^2=1.954[a]
No	7(4.6)	145(95.4)	p-value=0.162
Formal training on food handling	Has vendor under gone medical examination		Chi squared test of association
	Yes (%)	No (%)	
Yes	28(73.7)	10(26.3)	X^2=11.631[a]
No	65(42.8)	87(57.2)	p-value=0.001*

Note : *: To determine the level of knowledge of street food vendors on food hygiene, [a]: Formal training of food vendors on food handling.

Relationship between government role and street food vending

Supervision by government agencies to ensure that food vendors undergo medical examination had a very strong relationship and indicates statistical significance of p-value at α=0.05. For those whose activities are not being monitored by government agencies had as high as 41.4% preparing and selling food close to open gutters. Those who have not had any form of monitoring from government agencies and cooking in the open recorded a high percentage of 83.8% of the vendors prepare and serve food in the open.

"They normally asked us to always keep the surrounding clean, make sure we wash our bowls and utensils with clean soapy water and try to cover our food to protect it from flies and other contaminants" reported by rice balls and TZ seller. One other Fufu seller reported that "yes, the environmental health officers do come for visits but it is not regular. When they come, it takes about six to nine months sometimes even one year before you see them again".

DISCUSSION

The findings of the study have revealed that almost all (98.4%) of the respondents were females which actually supports the findings of Dajaan, et al. [14], where 97% of the respondents were females. Again, the findings are in consonance with another study which indicated that there were generally higher proportions of female street food vendors which can be attributed to the fact that females are traditionally recognized for cooking and taking care of children. They are also known generally to have lower skills and educational levels which could be a reason why females dominate the street food vending industry [15]. The findings showed that majority (37.9%) of the food vendors were in the age category of 30-39. And 20-29 accounted for 18.4% this is similar to the findings of a study conducted by Dajaan, et al. [14], where majority (41%) of the vendors were between 36-46 and 10% were between 15-25. This means that people in their active age are mostly involved in this business of street food vending. Majority (48.4%) of food vendors had no formal training on food and this is in consonance with Dajaan, et al. [14], where 58% of food vendors in basic schools did not have any formal education on food hygiene. 86.7% of the vendors learned their trade through apprenticeship and personal intuition or from friends and parents confirming the FAO, [2], report that a great majority of women in the food vending business do so basically to enhance the food security of their family and to a larger extent increase financial independence. This finding is however contrary to the findings of a study done in Jamaica by Thelwell-reid, [16], which indicated that as high as 55% of the food vendors attained secondary level education, and this is in sharp contrast to the situation in Ghana. The low level of education among street food vendors in Ghana could account for some poor food handling practices such as not being screened medically and having license in order to prepare and sell food to the general public.

The FAO indicated that it is imperative for all food vendors to have some level of knowledge and skills in order to enable them prepare and handle food in a more hygienic manner FAO [2]. Only 20 of the street food vendors had formal training on food handling which is similar to findings of Muinde OK, et al. [10], done in Kenya where only a few of vendors had formal training on food handling while majority learned by observing from their parents.

When food vendors do not have sufficient food hygiene knowledge it is a recipe for food contamination as emphasized by Galgamuwa LS, et al. [17], who concluded that consumption of contaminated foods is a major reason for more than half of diarrheal disease in most communities in developing countries. As a result, knowledge, attitude and food hygiene practices are crucial to food safety and hygiene at food establishments or joints. This is supported by a study done by Thelwell-reid, [16], whose findings depicts that food handlers who are formally trained had a statistically significant high mean knowledge score (65.61% *vs*. 59.0%, p<0.05) and mean practice score (67.40% *vs*. 60.35%, p<0.05) than food handlers who were not formally trained. This implies that, it is necessary to regularly organized food hygiene and safety training for players within the street food vending industry to enhance the knowledge level of vendors so as to minimize food borne illnesses. Also by observation, the findings revealed that most of the conditions under which food is prepared and sold are not suitable since the vending sites are closed to open gutters that harbour a lot of pathogens that can easily find their way into the food thereby contaminating it and possibly causing foodborne illness to consumers. These findings were consistent with the findings of Trafialek J, et al. [1], who concluded that most vending sites are not suitable for both preparation and selling of wholesome food to consumers. "Food must be prepared in a clean environment that is not close to: Opened gutter, Public toilet, Chocked gutter including Places that could obstruct public movement" (Sagnarigu Municipal Environmental health officer).

It turned out that majority (51.1%) of street food vendors have never done medical examination. Food vendors are given some form of education after the medical examination then certificates are awarded to them certifying that they are healthy enough and with good food hygiene knowledge to be able to prepare and sell food to the general population. The findings in this study is however contrary to Federico G, et al. [18], recommendation that every person vending food or assisting in the vending of food must go through some form of screening in order to be licensed before he or she can engage in the food vending business. The chi-squared test of association between government supervision and medical examinations was statistically significant (X^2=63.630; p=0.001) (Table 4). This means that if the government agencies such as the environmental health officers or the food and drugs authority actually do proper supervision, it will ensure that all food vendors will adhere and undergo medical screening before they vend food. This finding is consistent with Musoke, et al. [19], who concluded that environmental health officers have been given the mandate to examine food handlers medically and that they should focus on diseases that can be spread through food easily. Sagnarigu Municipal environmental health officer also reported "training of food vendors is part of our mandate as sanitation officers but we are handicapped in terms of personnel. The officers are not many and cannot be everywhere within the municipality at all times and because the food vendors are scattered across the municipality it is difficult to bring them together for a workshop" [20].

Table 4: Association between government supervision and adherence to hygiene protocols.

Are your activities being monitored by government	Have you ever undergone medical examination		Chi- squared test of association
	Yes	No	
Yes	72(79.1)	19(20.9)	X^2=63.630[a]

No	21(21.2)	78(78.8)	p-value= 0.001*
Are your activities being monitored by government	Is the vendor wearing a head cap or cover- observe		Chi squared test of association
	Yes	No	
Yes	85(93.4)	6(6.6)	X^2=0.023[a]
No	93(93.9)	6(6.1)	p-value=0.880
Are your activities being monitored by government	Does the person preparing the food have formal training on food handling		Chi squared test of association
	Yes	No	
Yes	25(27.5)	66(72.5)	X^2=6.095[a]
No	13(13.1)	86(86.9)	p-value=0.014*
Are your activities being monitored	Is the vendor wearing apron (observe)		Chi squared test of association
	Yes	No	
Yes	40(44.0)	51(56.0)	X^2=5.068[a]
No	28(28.3)	71(71.7)	p-value=0.024*
Are your activities being monitored by government	Is cooking and selling being done in the open		Chi squared test of association
	Yes	No	
Yes	74(81.3)	17(18.7)	X^2=0.210[a]
No	83(83.8)	16(16.2)	p-value=0.647
Are your activities being monitored by government	Do you sell close to open gutter		Chi squared test of association
	Yes	No	
Yes	41(45.1)	50(54.9)	X^2=0.256[a]
No	41(41.4)	58(58.6)	p-value=0.613

Note: Source: Field survey 2020. *: To determine the level of knowledge of street food vendors on food hygiene, [a]: Formal training of food vendors on food handling.

CONCLUSION

The study showed that street food vendors in Sagnarigu municipal generally have high knowledge of food hygiene. However, they do not adhere to food hygiene protocols which we found to be rather more dangerous. Most street food vendors did not even know that they need to undergo medical examination then subsequently be given license before they can prepare and sell food to the general public. This we attribute to some level of irresponsibility on the part of government to implement and enforce by-laws in order to safe guard the general populace. There is no clear-cut definition as to whose role solely is it to supervise and train street food vendors and this brings about lapses in terms of supervising the food vendors. And this, we have found to be the chief cause of lack of adherence to food hygiene protocols by street food vendors within the municipality. It was also found out that most of these vendors vend close to open gutter by major streets which they have no capacity to cover or distilled properly, this is also a vivid case of lack of adequate show of responsible especially by the municipal assembly who these street food vendors including their customers pay taxes to. We recommend that the street food vending business should be regularized into the main stream food vending just as it is in the case of big chop bars, restaurants and cafeterias in hotels. Stake holders such as the Municipal Assembly and NGOs need to organize food hygiene training for street food vendors in the municipality. Though they have been some works done on food hygiene in Ghana but this work done in Sagnarigu among street food vendors who are not considered as part of the main stream food vending is novel and has made serious findings which the researchers recommend for authorities in the sector i.e., the Ghana health service, ministry of health, food and drugs authority, environment health unit of the assemblies as well as NGO's interested in health should collaborate to adequately train street food vendors and resource their staff to supervise and monitor these vendors on regular basis so as to good health and prevent food borne illnesses.

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