



Comparative Assessment of the Sanitary Conditions of Some Food Service Joints (A Case Study in the Tamale Metropolis)

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Abstract: Food vending in the country is very vital as it provides nutritional needs of its population and at the same time serves as a source of revenue for the operators of these service joints. Tamale in the northern region is not left out as so many women are into the business of food vending which is their source of livelihood; nevertheless, food vending poses much risk to consumers of these foods due to bad sanitary practices in some food service joints. This study seeks to make a comparative assessment of the sanitary conditions of some food service joints in Tamale metropolis which sought to; identify waste disposal practices, assessment of food hygiene practices and assessment of the level of personal hygiene. The different types of food service joints surveyed in the study include; Restaurants, chop bars and roadside food joints. Questionnaires and face to face interview were used in acquiring information from respondents. A total of 120 respondents were interviewed, out of which 90 were customers, 21 being staff of the food service joints, 9 managers of the food service joints. Information from some key informants at the environmental regulatory bodies was equally taken. The results revealed differences in general hygiene practices between the types of food service joints. Roadside foods are mostly purchased by customers who have not attained formal education and those customers with primary, JHS and secondary education were fairly represented across the three types of food service joints. Customers with tertiary education patronise food from both restaurants and chop bars whilst customers who have schooled above tertiary (post graduates) mainly patronise food from restaurants. Sanitary regulations by environmental regulatory bodies is found to be very poor at the Roadside food joints which is evident by the fact that all these joints are not licenced but is fairly good at the Restaurants and Chop bars under study.

Keywords: Food vendors, Restaurants, Chop bars, Food hygiene, Food service joints and Sanitary regulation.

1. Background

In recent time, many developing countries including Ghana's food vendors have become an integral part of the food supply chain particularly the onset of urbanization (Akintaro, 2012). Statistics

by the Food and Agriculture Organization points out that, 2.5 billion people eat vended food every day (FAO, 2011). Food is anything solid or liquid which when eaten and digested promotes growth, repairs worn-out tissues, provides heat and energy, fights against diseases and infections and regulates the body processes (Adigbo and Maddah, 2011). Some foods sold at these vending sites include; fufu, plain rice, jollof rice, banku, wakye among many others to meet the various nutritional needs and demand of the customers. The food can either be prepared at home and carried to the vending site or prepared and sold on site depending on the individuals (Rane, 2011). Due to the increasing number of the population and its demand, there has been the establishment of food service joints to cater for this growing population which involve majority of women establishing these vending sites in the country (Lues *et al.*, 2006). For women in developing countries, food vending serves as a major source of livelihood and provides them with the opportunity to develop business skills with low capital investment (Lues *et al.*, 2006). The activities of food vendors can increase the chances of food contamination with pathogenic microorganisms and mycotoxins (Danikuu *et al.*, 2015). This happens right from the preparation of the food, how it is being handled and also with utensils used for the preparation. Chapman *et al.*, (2010) wrote that about 70% of disease outbreaks are linked to vended foods and It was estimated that, food-borne illnesses account for about 2.2 million deaths annually, out of which about 86% are children. This is due to the fact that, children are large patrons of vended foods either in schools, at church or at the playing ground (Afele, 2006). Other factors which could introduce these microbial contaminants include raw materials, time and temperature abuse of cooked foods among other common factors which could expose the food to bacteria and other disease causing vectors leading to an increase in the level of food borne illnesses and to some extent death as a result of food poisoning (Rane, 2011). Sanitation as defined by UN-WATER AID (2008), are measures or ways necessary for improving and protecting the health and wellbeing of the people. Sanitation in this area of study is very vital and important because a variety of harmful or deadly bacteria would otherwise infect people and potentially start a disease.

The food sector in Ghana is confronted with challenges, there is inadequate supervision and improper monitoring by food safety officers and also the enforcement of food hygiene regulation is weak (Onyeneho and Hedberg, 2013). Most of these foods are prepared at very dirty surroundings with waste water and garbage disposed nearby, providing nutrient and breeding ground for rodents and vermin (Barro *et al.*, 2006). In most cases running water is not available at vending sites, so therefore washing of hands and crockery are done in bowls or buckets and sometimes without soap (Abdalla *et al.*, 2008), this could also lead to the spread of some contagious diseases. In most cases, food vendors are always at the end of accusing fingers for the spread of food-borne diseases, particularly cholera outbreaks, and are sometimes banned momentarily as a desperate measure to control the outbreak (Ansah *et al.*, 2014). Food vendors have come to help a lot of people to meet their nutritional needs (Haleegoah *et al.*, 2015). However, it is important and necessary for food vendors to stick to high standards of hygiene and maintain clean vending environments hence minimizing the effects of food borne illnesses, this has prompted considerable research to assess hygiene and food handling practices among food vendors across the globe in order to contribute to efforts aimed at improving food handling practices (Barro *et al.*, 2006). Therefore, the study sought to assess the sanitary conditions of food service joints in the tamale metropolitan Assembly. Specifically To; identify waste disposal practices at the various food service joints; evaluate food hygiene practices between food service joints; assess the level of personal hygiene at food service joints and assess the Level of enforcement of sanitary regulations.

2. Methodology

2.1 Study Area

Tamale officially called the Tamale Metropolitan Area is the capital town of the Northern Region and the fourth largest city in Ghana and has a total population of 360,579 (GSS, 2010) Tamale has three sub-metropolitan areas and is located in the heart of the Northern Region, the only district with metropolitan status among 26 districts in the region. It lies between latitude 9.16° and 9.34° N and longitudes 00.36° and 00.57W. It is located in the central part of the region and has a tropical wet and dry climate under the Koppen's climate classification. The metropolis is purposefully structured into three (3) constituencies namely; Tamale north, Tamale south and Tamale central (GSS, 2014). Tamale

is developing in all direction and has become the hub for immigrants from within and outside the Northern Region. As one of the fastest growing cities in the country, Tamale is challenged with poor environmental sanitation especially in the area of solid and liquid wastes management, which happens to be the single greatest problem in the metropolis (Paul et al, 2012). The study population includes the management, staff and customers within restaurants, chop bars and roadside food joints in the metropolis

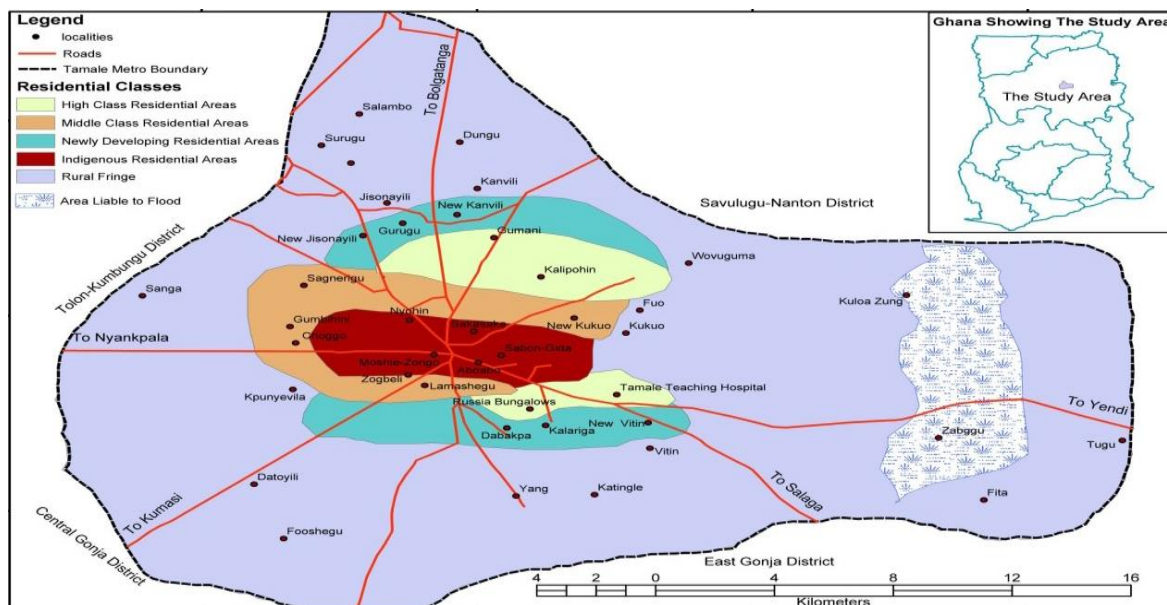


Figure 1: Map of the study area (Tamale Metropolis)

Source: Based on TaMA medium term development plan 2003-200

2.2 Research design

The study adopts both qualitative and quantitative approaches to this research. The quantitative approach applied to the survey involved customers and junior staff, while the qualitative approach involved in-depth interviews with the owners or management staff of the various food joints in addition to the staff from the environmental regulatory bodies.

2.3 Study population, sampling technique and sample size

The target population in this research constituted customers, employees, management, staff and environmental regulating body of the various food joints in Tamale, Ghana. The research was designed to study evidence by using a sample of respondents. The study adopted different sampling techniques for the various categories of the research population. First of all, a convenient sampling technique was used in selecting the various food service joints for the study within the metropolis. Systematic sampling (interval sampling) technique was adopted to select customers from the sampled food service joints. The sampling procedure involved a random start (for first respondent) and then proceeded with the selection of every *k*th element from then onwards as customers come in. Every 4th customer was selected from the pull of customers coming to buy food in a particular day. A total sample size of 90 customers were selected from the different food service joints combined. Secondly a purposive sampling technique was used to select 21 employees involved in the preparation, handling and other activities at the facilities to elicit information about personal and food hygiene practices, waste disposal and other food handling practices. Three (3) key informants from regulating bodies; Ghana Tourism Authority (GTA), Food and Drugs Authority (FDA) and District Assembly (DA) were interviewed on regulations and certification and to make a comparison with responses given by the managers/ owners of the food service joints.

Table 3.1: Sample frame

Type of food service joint	Manager/ Owner	Staff	Customers	Total within Sector
Restaurants (3)	3	9	30	42
Chop bars (3)	3	9	30	42
Roadside food joints (3)	3	3	30	36
Total	9	21	90	120

2.4 Data collection Tool

The objectives of this research were analyzed using both primary and secondary data obtained. Electronic media information was accessed through the electronic media and magazines, journals on the background to the study and literature review, problem statement as well as methodological review. Two different data collection tools were used for the three broad categories of samples (customers, staff and management /owners). Firstly, a structured questionnaire was used to elicit relevant information from the customers and staff. The structured questionnaire was used to collect data on the waste disposal and food hygiene practices, level of personal hygiene within food service joints among others. For the second category of the sample which was Management/owners and environmental regulating bodies, an interview guide was used to elicit information regarding the sanitary conditions of food service joints and the level of enforcement of sanitary regulations.

2.5 Method of Data Collection

The questionnaires were administered at the food service joints and selected customers and staffs who were willing to respond immediately were made to respond to the questionnaire through a face to face interview. Similarly, different data collection methods were used for the interview involving the manager/ owners and key informant from the environmental regulating bodies, since most of them are very busy the interviews were scheduled in advance to enable them respond in person. Self-administering of the interview guide was last resort for Managers/owners who were found to be extremely busy. A major setback of this method of administering interviews is that it denies the Researcher the opportunity to ask follow up questions and also capture other non-verbal communication which can be captured during face-to-face interviews.

2.6 Data analysis

The data from the questionnaires administered to the customers and staffs were captured and analyzed using the Statistical Package for Social Sciences (SPSS) software version 23 and Excel. Descriptive analytical tools such as frequency tables, bar graph, pie charts etc. were used to summarize the results. The qualitative data from the managers/owners and key informant at the environmental regulating bodies (FDA, GTA, DA) was analyzed manually using the thematic content analysis technique. This method involves organizing the qualitative responses into key themes and grouping the responses that fall under similar themes together. The following describes how the specific objectives of the study were measured and analyzed:

2.7 Measurement and an analysis of the specific objectives

- **Waste disposal practices at the food service joints**
 Managers and staffs were asked questions on their waste disposal practice they have adopted at their establishment. Key questions were centered on where they keep waste before disposing it, how they dispose of the waste generated, cost and service delivery of waste agencies, etc. Waste disposal practice was categorized based on type of food service joints. Results was analyzed using frequency tables and charts. A cross check of the strategies and disposal practices from staff on the ground helped to ascertain how effective the strategies were.

- Assessing the level of personal hygiene among food service joints**
 Personal hygiene was categorized into three levels of personal hygiene (Low, Moderate and High) based on each customer’s total sum of score from the sub-questions asked under the following personal hygiene headings (Food handling practices, Personal, Food and Environmental hygiene) on a rating scale of 1 to 5 (Excellent- Poor). The total sum of score of the personal hygiene questions “clipping nails, covering hands, cleanliness, medical check-up and clearance” were used to ascertain the level of Personal hygiene. The results were then presented in descriptive statistics: Frequencies and cross tabulation with graphs showing the level of personal hygiene by staff in food service joints and customers perception showing the variation in the level of personal hygiene between categories of food service joints and gender perceptions by customers.
- Assessing food hygiene practices and sanitary conditions of food service joints**
 Food hygiene practices by staff and management/owners at the various food service joints was identified. The results were analyzed using major themes arising from interviews in addition to descriptive analytical tools such as frequency tables and graphs.

3. Results and Discussion

3.1 Socio-Demographic Features

Demographic variables shape many facets of human lives as being studied by researchers. Indeed, demographic characteristics play an essential role in service delivery industry. The above stated characteristics have been found to be indicators of persons’ attitude towards services in general.

Table 4.1: Gender, Age distribution, Education and Marital status

Gender, Age distribution, Education and Marital status					
		Customers		Staff	
		Frequency	Percentage	Frequency	Percentage
Gender	Male	56	62.2	5	23.8
	Female	34	37.8	16	76.2
Age distribution	18 – 25 years	27	30	10	47.6
	26 – 35 years	38	42.2	8	38.1
	36 – 45 years	17	18.9	2	9.5
	Above 45 years	8	8.9	1	4.8
Education Level	No formal Education	13	14.4	2	9.5
	Basic	12	13.3	2	9.5
	Secondary	25	27.8	14	66.7
	Tertiary	40	44.4	3	14.3
Marital status	Single	37	41.1	15	71.4
	Married	48	53.3	5	23.8
	Divorced/Separated	5	5.5	1	4.8

3.2 Gender

The distribution of respondents in terms of Gender in this study was significant due to the immense role that gender stratification plays when it comes to the role both male and female play in the food industry. Information gathered from the field showed that there were more female staffs (76.2%) at the food service joints as compared to male staffs represented by 23.8%, an observation similar to findings by Donkor *et al.* (2009), Mensah *et al.* (2002) and Odonkor *et al.* (2011). The selected customers consist of 56 males representing 62.2 % of the total sample and 34 females representing 37.8% which indicated that more males purchase food than females, the reason being that most females carry homemade food to their places of work and so less women actually buy food during working

hours. However, females represent (76.2 %) in terms of the activities (Cooking, Serving) that staff undertake at food joints compared with males 23.8 % (Tab.4.1).

3.3 Age Distribution

The age distribution of customers is an essential characteristic that helps management and owners to plan to meet the requirements of the different age group in relation to taste and preference at any point in time. The research conducted revealed that about 4 out of every 10 customers (42.2%) interviewed were aged within 26-35 years followed by 30 % of customers who were aged 18 - 25 years patronised road side food and the third and minority age range were 36 – 45 years (18.9%) and 45 years and above (8.9 %) respectively (tab.4.1). Customers above 45 years mainly patronize food from restaurants. It can be deduced that majority of the sampled customers (72.2%) were youth (18-35 years). Thus the youthful majority implies that this class of customers are very flexible. These findings would help in tailoring strategies to specific age groups so as to meet customer needs. However, those aged 26 - 45 years are not skewed in their source of food, they patronize both Restaurant and Chop bar. Age distribution among staff is dominated by the youth 85.7% (18-35 years) who are mostly engaged in serving and cleaning (tab4.1). About half (52.4 %) of the staff at the various food service joints have been working for about 5 – 10 years, followed by 28.6 % who have worked for about 10 – 15 years mainly at the restaurants and chop bars with staffs working less than 5 years (19 %) found in Chop bars and Roadside food joints.

3.4 Marital Status

On marital status of customers, married people were the predominant group representing 48% of customers followed by those who were single representing 37 %. The Divorced/Separated and the Widow/widower groups were the least represented by 5%. In relation to staff at the food joints, the single (71.4%) were the vast majority who work at the food service joints followed by the married and the divorced/separated (tab4.1).

3.5 Educational Level

Most customers (44.4%) of food service joints have schooled to the tertiary level followed by secondary, no/non-formal education and basic in that order (tab4.1). Roadside food is mostly purchased by customers who have not attained formal education and those customers with primary and secondary (JHS & SHS) education were fairly represented across the three types of food service joints. Customers with tertiary education patronise food from both restaurants and chop bars whilst customers who have schooled above tertiary (post graduates) mainly patronise food from restaurants. Majority of staffs at various food service joints have had their education up to the secondary school level. A greater proportion of staff (81 %) at the various food service joints have attained at least secondary level of education (Secondary and Tertiary) followed by both basic and no/non-formal education (9.5 %). Refer to tab4.1. In addition, a few numbers of staff have received other forms of education through training and workshops in relation to the food services they provide to customers. Moreover, half of the food vendors had at least secondary education (66.7%), 9.5% had basic education (Primary, JHS), another 9.5% food vendors forming the minority had no formal education and 14.3% went higher to the tertiary level which agrees with the findings of Essumanbah (2014) where almost half (43.3%) of food vendors had secondary education and (38.9%) had Basic (Primary/JHS) education and also in contrast with the work of Mensah *et al*, (2002) where he found out that most of the food vendors had no formal education.

3.6 Waste Disposal Practices at the Food Service Joints

Table 4.2: Waste Disposal Practices by vendors/ managers of food service joints

		Frequency	Percentage
Where do you keep waste before disposing it?	Box/ container	2	9.5
	Dustbin	15	71.4
	Heap on ground	4	19.1
Where do you dispose of the waste generated?	Waste bin	5	76.2
	Burn	16	23.8
Does a waste management agency collect your waste?	Yes	4	44.4
	No	5	55.6
How much do you pay for waste disposal?	Minimum	30	
	Average	50	
	Maximum	100	

The table above indicates responses from managers and staff concerning waste disposal practices at the food service joints. At the premises of the facility respondents who disposed of waste in dustbins constituting the majority are 71.4%, vendor who heaped rubbish on floor constituted 19.1% whilst 9.5% of vendors put waste in boxes or containers. During the final waste disposal, 76.2% disposed of their waste within the facility into a bigger waste bin provided by the waste management agency while 19.1% of the respondents who heaped the waste on the ground actually burn it. 44.4% of respondents who disposed of waste in sanitary dustbins had the waste agency coming over to collect waste while 55.6% did not have the waste agency coming over, so they either burnt their waste or sought the services of individuals who came over to the facility to dispose of waste. Payment of waste disposal by the agencies or individuals is being done by 55.6% of respondents while 44.4% of respondents did not pay for any services. Payment by respondents of the various food service joints ranged from GH¢ 30.00 minimum to GH¢ 100.00 maximum on monthly bases depending on the food service facility and the quantity of waste generated by the various food service joints.

Table 4.3: waste disposal practices by type of food service joints

	Box/ container	Dustbin	Heap on ground
Restaurants	-	100 %	-
Chop bars	-	67 %	33 %
Roadside food joints	67 %	-	33 %

Good waste disposal practices were observed more at the restaurants who dispose of their waste in sanitary dustbin, hence represented by 100% which goes to explain that all restaurants being studied practice good waste disposal methods. On the other hand, two (2) chop bars representing 67% dispose of their waste in sanitary dustbins while one (1) chop bar representing 33% heap and burn their waste just around the facility which is in consonance with the work of Muinde and Kuria (2005) who found out that majority of food vendors had sanitary dustbins while minority employed other means of waste disposal in Nairobi, Kenya. Roadside food vendors do not observe good waste disposal practices, 66% keep their waste in containers and boxes while 33% heap and burn their waste around their facility. Waste disposal practice in this phase is not satisfactory as the box system and heaping and burning are not healthy methods of waste disposal. Roadside food joints have been observed to lack behind in terms of proper waste disposal practices which could be due to the attitude of the operators to prefer burning of waste to its proper disposal, general ignorance or apathy on the part of the operator on the consequences of burning, payment for disposal of waste seemed expensive to these vendors.

3.7 Food Hygiene Practices

Food hygiene practices among the various food services joints differ in accordance to how each of them handles food and whether they are knowledgeable about food hygiene. Information gathered from the field indicated that 81% of staffs at the various food service joints have some sought of

knowledge or training about food hygiene whilst 19% had no knowledge or training on food hygiene practices. This is in consonance with the works of Monny, 2014 and Ntow *et al*, 2016 where majority of vendors had fair knowledge on food hygiene practices. For those who had a source of knowledge/training out of the 17 staff, when asked about their source of knowledge/training, four staff constituting 19.1% said they received training from the Food and Drugs Authority occasionally during visits, 4.8% of staff indicated that they were trained during management training organised by facility, nonetheless 6 (28.6%) staffs responded that they had no source of training but in a way two (2) staff from this category made it clear that they read books on their own to educate themselves on food hygiene practices. Staff who received knowledge from school (JHS, SHS, and Vocational) constituted 47.6%.

The descriptive table (table 4.) provides some very useful descriptive statistics, including the mean, standard deviation and 95% confidence intervals for the dependent variable (Total hygiene score) for each separate group (Restaurants, Chop bar, Roadside food joint), as well as when all groups are combined (Total). In this Descriptive Statistics table, the mean total hygiene score for Restaurants is 8.2 being the highest in this situation in terms of hygiene practices. The mean for the Chop bars is 9.8 and the mean for the Street food is 10. The standard deviation for the Restaurants is 2.63, the standard deviation for the Chop bars is 2.42 and the standard deviation for the Street food is 2.26 (when rounded). The number of participants in each condition (N) is 30. Though there are variations in the means of each type of food joint, we need an ANOVA to determine if the differences between condition means are significant.

Table 4.4: Descriptive analysis of total score of food, personal and environmental hygiene

	N	Mean	Std. Dev.	Std. Error	95% confidence interval for mean		Min	Max
					Lower	Upper		
Restaurants	30	8.2	2.63138	0.48042	7.22	9.18	4	13
Chop bar	30	9.8	2.41666	0.44122	8.86	10.67	6	15
Road side food	30	10	2.25908	0.41245	9.16	10.84	6	14
Total	90	9.32	2.54323	0.26808	8.79	9.86	4	15

Staffs were asked on parameters they considered before buying food staff from the market, responses indicated that 28.6% of staff considered to a greater extent price and quantity of food staff before purchase which should not be the first to look out for in terms of food hygiene practices and so has to be discouraged whilst 71.4% of staff constituting the majority considered freshness before going in for food stuffs which is of great concern in food safety delivery which agrees with the work of (Boateng, 2014) in Dunkwa-On-Offin where good number of respondents considered the quality of food stuffs irrespective of its cost as against quantity and also stated that source of contamination of pathogens or other small insects should be a concern of all food venders. Also majority of staff (57.1%) wash their serving plates multiple times on daily bases as long as plates were dirty, this could not be said for other staffs (14.3%) and (26.6%) who washed their plates twice and thrice daily respectively with the reasons that there are extra serving plates and so dirty ones are piled and washed later, low turnout of customers and so there are little serving plates to wash.

In connection with washing and serving plates, staffs were asked on the regularity of disposing of water during washing, it is surprising to know that 12 out of 21 (57.14%) staffs dispose of water after several washes with the explanation of trying to manage and conserve water which is in line with the study of (Chekuezi, 2010) in Owerri, Nigeria who found out that due to the shortage of clean potable water, many vendors tend to reuse the water, especially for cleaning utensils. However, 9 out of 21 staff actually dispose of water after each wash, this attitude should be encouraged and practiced in all food service joints which will go a long way in promoting food hygiene hence less food borne illnesses. Foods prepared indoors to an extent is less contaminated compared to that prepared outdoors which is greatly exposed to outdoor pollutants and gases as well as flies and other disease causing bacteria. 15 staff representing 71.43% which happens to be the majority prepare their meals inside the

establishment while 28.57% of staff prepare food in the open. The FAO (2011) notes that foods should be prepared in a place set aside exclusively for that purpose, whereas the place of preparation should be kept clean at all times and should be far from any source of contamination (rubbish, waste water, dust, and animals), this could not be said for some of these food service joints, two (2) out of the total restaurants reside at clean environments, chop bars understudy were equally located in considerably clean environments whilst street food joints where located close to roads and gutters which bred flies and other disease causing agents which goes a long way to affect the hygiene of food sold to customers

3.8 Responses of Staffs on Level of Personal Hygiene

Table 4.7: Level of personal hygiene within type of food service joint

Food Service Joints	Low		Moderate		High	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Restaurants	-	-	17	58.6	12	41.4
Chop bar	4	13.3	23	76.7	3	10
Roadside food joint	5	16.7	21	70	4	13.3
Total	9	10.1	61	68.5	19	21.3

Questions asked during field work on personal hygiene of staff include; possession of medical certificate, medical examination and regularity, washing hands before and after serving customers, frequency of washing hands with soap and water, method of covering hands during customer service, regularity of clipping nails. Responses from staff showed the level of personal hygiene ranging from low, moderate and high. And Information gathered from respondents at these food service joints revealed that 68.5% of food vendor’s level of personal hygiene is moderate while responses from others indicated that 21.3% of food vendors had a high level of personal hygiene practise. In the same way another category of respondents indicated that food vendors practiced low levels of personal hygiene which is represented by 10.1%. The level of personal hygiene practises varied greatly with the types of food service joints ranging from restaurants, chop bars and roadside foods joints. From the above information, generally food service joints practiced a moderate level of personal hygiene.

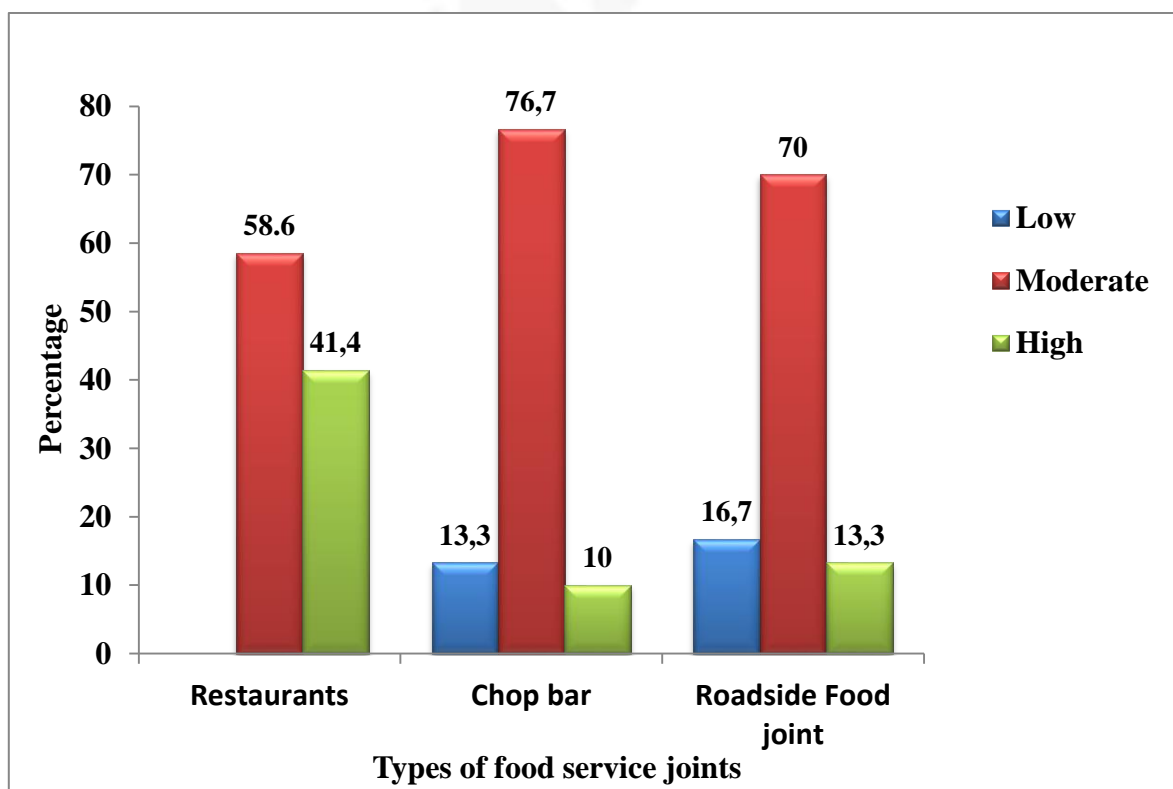


Figure 4.1: Personal hygiene practice of staff at food service joints

The figure 4.1 above shows the distribution of responses from respondents across the different food service joints on the level of personal hygiene across food service joints based on low, moderate and high ranks. Within the restaurant facility, 58.6% (constituting the highest percentage and most practiced) of staff had a moderate level of personal hygiene practices while 41.4% of staff operating in these restaurants were ranked high in their level of personal hygiene practice, there was no ranking based on low levels of personal hygiene in this facility. 76.6% of staffs in chop bars had a moderate level of personal hygiene practise, 13.3% of staff equally practised low levels of personal hygiene and 10% of staff at these chop bars practiced high levels of personal hygiene. 70% of staff within the Roadside food joints practised a moderate level of personal hygiene practices while 16.7% practiced low levels of personal hygiene and at the same time 13.3% practiced high levels of food hygiene. Majority of food service joints are observed to practice good personal hygiene moderately from the information given above; this scenario occurs mostly within the chop bars and street food joints than within the restaurants that observe higher levels of personal hygiene practices due to training sessions given to staff on hygiene practices. Low levels of food hygiene practices were observed in both chop bars and street food joints but the latter had a higher percentage which is contributed by factors such as; inability of regulatory bodies to have regular inspections at facilities of vendors, lack of training sessions for staff, less or no knowledge on personal hygiene practices by operators of road side foods, less or no income to go for medical check-ups

According to (Rane,2011) *Salmonella*, *non-typhi salmonellae*, *Campylobacter* and *E.coli* can survive on finger tips and other surfaces for different lengths of time and even in some cases after hand washing. It is therefore appropriate for food vendors always to keep their nails short and clean to prevent them from serving as a vehicle for transmission of pathogens, from the study all food vendors cleaned their nails and kept them short at least weekly. Also hand washing is very essential in hygiene practices and equally in food vending, according to a study by (Apanga et al., 2014) large proportion of food vendors (88.5%) washed their hands before food services which is similar to this study where majority of food vendors responded that they washed their hands with soap and water before and after selling food.

3.9 Level of Enforcement of Sanitary Regulations

This study brings to light the enforcement of sanitary regulations by environmental regulatory bodies specifically mentioned by respondents as bodies that came around for inspections and licensing. Interacting with key informants at the various inspectorate units indicated that, they were responsible for giving operational licenses, issuing food permits and issuing licenses to small scale businesses as well as undertaking environmental inspections of these food service joints respectively. From the interaction with a field officer at the Tamale metropolitan assembly, made it clear that “no road side food vendor is to be licensed to operate, this is against the law”. Activities of street food vendors are illegal, but these illegal vendors serve majority of the public during the day in the metropolis. The rate of monitoring these road side food vendors by regulating bodies is appalling, this is backed by the fact that all the street food joints which were under study have no operational license neither have they been visited for inspection.

The Metropolitan Health Management Teams in collaboration with The Food and Drugs Authority, the Ghana Tourism Authority and district assemblies ensures the standards and regulations for the food service joints. These institutions are responsible for issuing operational license which gives mandate to food service providers to operate, responsible for health screening or medical examination of food service providers and training of food vendors (Stoler, 2012). This study found out that operational license is targeted at restaurants and chop bars, from the study all restaurants (3) and chop bars (3) have been granted operational licenses to sell. It is interesting to know that roadside food vendors who serve the majority of customers in the tamale metropolis were not licensed. Explanations from the key informant revealed that the huge numbers made monitoring difficult as well as the unpredictable nature of their movements making it difficult in keeping track of their operations. Both the FAO (1997) and WHO (2010) recommend that food handlers should be medically examined whether clinically or epidemiologically to prevent the transmission of communicable diseases amongst food handlers and consumers. However, the study revealed that 11 out of the 21(52.4%) food handlers

interviewed had actually been screened medically with most of the staff having been screened once in a year. The remaining 10 (47.6%) food handlers at the various food service joints had not undergone any health screening though they are involved directly in handling food. The study is in consonance with the works of Addison (2015) who studied “Hygienic Practices among Food Vendors in The University of Ghana” and Musa and Akande (2003) who carried out a study on food hygiene practices among food vendors in Nigeria where the number of food handlers who have had medical examination were woefully less than the sample size. This implies that in a situation where food vendors are infected with any transmittable disease, consumers may not be safe for consuming food from such food vendors

4. Conclusion

Hygiene practices among food vendors in the various food service joints (restaurants, chop bars, roadside food joints) were generally unsatisfactory in terms of food hygiene, personal hygiene, and environmental hygiene. We can conclude by confirming that there is difference in sanitary conditions of the various food service joints in the Tamale Metropolis. For the different food service providers in tamale, there is difference in their food hygiene, environmental hygiene and personal hygiene practices. Of major concern is the operation of Roadside food joints, hence legislations should be made to regulate their operation since it is obvious that they feed more people within the metropolis and also authorities should ensure that vendors are licensed before operations. There should be more coordination between local government authorities, food safety standards and regulatory bodies for clear-cut guidelines to regulate the operations of food vendors. Training sessions should be held more at these food service joints to give staff more knowledge on hygiene practices since most of the staff are ignorant on these issues. Consequences of bad hygiene practices should be stressed on to make them better understand their actions. Local dialect or Posters and flyers should also be used in educating staff since most of them are not educated and will not understand terms used. Inspections by the regulatory bodies should be held as regular as possible to enable operators of food service joints adhere to sanitary conditions. Vendors should be educated on the essence of proper waste disposal practices and the need to obtain sanitary dustbins which will keep flies and other disease causing bacteria away. Burning should be discouraged at some of these vending sites.

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