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Evaluation of Food Safety among Fast Food Operators in Madina, Accra

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Abstract
The study evaluated food safety among fast food operators in Medina, Accra. Since food safety is a major concern with street foods as they are generally prepared and sold under unhygienic conditions. Food safety was defined as the conditions and measures that are necessary during the production, processing, storage, distribution and preparation of food to ensure that it is safe, sound, and wholesome and fit for human consumption. The study assessed fast food operators' knowledge on food safety and identifying food safety measures and control of regulatory bodies in Ghana. Descriptive research design was used. A multistage sampling technique which combined both probability and non-probability sampling methods were used. Questionnaires and observations were used to collect data from respondents and analysed using descriptive statistics such as means, frequencies, and percentages. The study revealed that 94% representing majority of the fast food operators were aware of food safety. The study therefore recommends that education on safety and hygienic practices in food handlers must be intensified at every level by the Ministry of Health in collaboration with MDAs and other stakeholders so as to drive home dangers involved in neglects for such practices. In conclusion, food vendors are aware of food safety (Ministry of Health, 2003)
Keywords: Food safety, food operators, descriptive statistics, ministry of health, multistage sampling technique

1. Introduction

Food safety is a corporate social responsibility as food is a product where consumption is not just a matter of choice, but is ultimately a matter of life and death (Peattie, 2006). It is the number one non-negotiable priority to the food industry (Leech, 2005) and is equally a priority for governments worldwide as food borne diseases with related deaths and economic losses occur in countries worldwide (Thurston, 2006). Consumers likewise have growing concerns over how the food on their table was grown and processed with the rising food related issues like *Salmonella* in contaminated peanut, *E. coli* in contaminated beef and pork, contaminated vegetables and melanin in milk among others. Governments, law makers, food manufacturers, caterers, food vendors, farmers and all consumers have roles to play in making food safe. According to Wallace (2006), food can be said to be safe when it contains no hazardous substance that could be injurious to health (Wallace, 2006; Codex, 2009). This can only be assured when stringent and careful measures are put in place to prevent, reduce and or remove possible hazards to acceptable levels, through effective training on methods and technologies available.

The WHO (1984) defines food safety as the conditions and measures that are necessary during the production, processing, storage, distribution and preparation of food to ensure that it is safe, sound, and wholesome and fit for human consumption. The term "street food" refers to 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 (WHO, 1996). Food safety is a major concern with street foods as these foods are generally prepared and sold under unhygienic conditions, with limited access to safe water, sanitary services, or garbage disposal facilities (WHO-AFRO, 2006; Rheinländer*et al*.,2008). An estimated 2.5 billion people patronize food-vendors world-wide (Nyarango*et al.,* 2003). In Ghana and elsewhere, food vendors are noted for selling foods and drinks at reduced prices, so providing more affordable means for people to obtain nutritionally balanced meals outside the home (Maxwell, 1998; FAO, 2001). Although street food has become an indispensable part of both urban and rural diets, some public health risks are associated with the consumption of street food in developing countries. While it is expected that street food meets the nutritional needs of consumers, it is also necessary to ensure its safety from contaminants and microorganisms (Chakravarty, 2001).

In Ghana, the boom of street food vending occurred after the post-independence era. Promotion of industrial development brought about new sources of employment, with people working increasingly away from their home environment. The operations of fast food joints, restaurant and chopbars have increased in the Ghanaian community, especially in urban areas (Ayeh-Kumi*et al*, 2009). Currently, there are about 60,000 food vendors of ready-to-eat foods in Accra, the capital of Ghana (Afele, 2006). According to WHO (1989), food handling personnel play important role in ensuring food safety through-out the chain of food production, processing, storage and preparation. Municipal authorities regulate the food industry by screening potential food vendors before being issued with certificates to ply their trade. Vendors are screened for communicable diseases and declared medically fit by medical authorities. Food borne and water diarrhea diseases are said to be leading causes of illness globally, killing 2.1 million people annually (WHO, 2001). Ghanaians have our own share of food borne diseases and their

related cost to individuals and the nation as a whole. Highlighted in the news in recent times are food and water borne diseases including the swine flu, bird flu, food borne infections in some schools where students had to be hospitalized, food labeling misinformation and recently the cholera epidemic that has already taken over 60 lives out of over 4000 reported cases. According to the Ghana News Agency, (2010) a total number of outpatient cases reported with food borne disease in Ghana is reported to be 420,000 per year with an annual death rate estimated at 65,000, costing a total of 69 million US dollars to the economy. This is a problem that needs to be tackled head on.

In Ghana, various studies have been conducted on aspects relating to food safety. A survey conducted in the Regional Capitals of Ghana by Tomlins, Johnson, Aseidu, Myhara and Greenhalgh, (2002) reported that most consumers did not associate poor hygiene with illness. This shows the low level of awareness among consumers on possible diseases that one could get when hygiene is not practiced. According to Mensah et al (1999) most food vendors have barely any formal education. According to Osei and Duker, (2008) Africa alone accounts for 90% of cholera cases worldwide. They reiterated that while Ghana accounted for 27000 of these cases, Madina in the Greater Accra region was one of the most affected. Ayeh-Kum*iet al*, (2009) screened a total of 204 food vendors from seven metropolitan areas of Accra to assess the prevalence of intestinal parasitic infections among food vendors in Accra. Donkor, (2006) applied WHO keys of safer food to improve food handling practices of food vendors in Chorkor, a suburb of Accra. Mensah *et al*, (1999) investigated the microbial quality of foods sold on the streets of Accra and factors responsible for food contamination. Structured questionnaires were used to collect data from 117 street food vendors on personal hygiene, food hygiene and knowledge of food borne illness. The present study was carried out to determine the hygienic knowledge and food safety practices among fast food and street-food vendors in Madina, Accra. It was aimed to obtain current information on the food safety knowledge and practices of fast food and street food vendors in Madina. Information gathered from this study could be used by health officers in Ghana in developing preliminary strategies towards regulating safe street food handling, preparation and vending within Ghana.

Food handlers are very important people when considering food safety. In Ghana most of the food handlers are the food sellers for which street food sellers form the majority. For a community to reach a state of awareness in hygiene such that they do not suffer from food borne disease epidemics, loads of awareness campaign must be received by food handlers especially the fast food or street food sellers. They must also get some direct or indirect education on good hygiene practices with effective monitoring and surveillance in place. Food borne diseases are carried to their host by pathogens which find their way into the ready to eat foods. Such diseases are kept to their barest minimum when hygienic and safety measures are put in place. Hygienic and safety measures include; sourcing of raw materials from a right supplier, good storage systems, temperature control, maintenance, proper waste management and pest control systems, available cleaning regimes, personnel training and good personal hygiene, transporting and distribution under safe conditions and currently Hazard analysis and critical control point [HACCP]. The study sought to determine and evaluate food safety measures among fast food operators since a blatant disregard or sheer ignorance for safety measures could be precarious. This is premised on the fact that lack of safety measures could lead to the spread of food borne diseases. Thus it is the interest of the researchers to investigate food safety and good hygiene practices among food handlers in the Madina area.

The purpose of our research is to evaluate food safety measures among fast food operators at Madina in Accra. To achieve this, the following specific objective were pursued: (a) assess fast food operators' knowledge on food safety, (b) analyze hygienic practices among fast food operators selected in Accra, and (c) identify food safety measures and control of regulatory bodies in Ghana.

2. Methods and Data

Descriptive research method was used for this study. According to Burns and Grove (2003), descriptive research is designed to provide a picture of a situation as it naturally happens. This method may be used to endorse current practices and also to develop theories. Descriptive research design can also be defined as a scientific method which involves observing and describing the behaviour of a subject without influencing it in any way. It is used to obtain information concerning the current status of the phenomena to describe "what exists" with respect to variables or conditions in a situation. The research reported in this study is also based on a cross-sectional data. Cross-sectional data or a cross section of a study population, in statistics, is a type of one-dimensional data set (Henry, Brady & Johnston, 2008). Cross-sectional data refers to data collected by observing many subjects (such as individuals, firms or countries/regions) at a particular point in time, regardless of differences in time (Henry *et al*., 2008). Analysis of cross-sectional data usually consists of comparing the differences among the subjects. Quantitative method was used for this study. Though the study was to understand and interpret social interactions regarding food safety which fall under qualitative research, quantitative approach was adopted in order to produce information and draw general conclusions on the study. The Quantitative method was used to validate the findings of the study. The quantitative approach of this research involved the deployment of self-administered survey for the 200 respondents. The target population consisted food vendors of the Madina area in the Greater Accra Region.

Madina community has several suburbs which include Atomic Junction, Zongo Junction, Market, Mayehot, Social Welfare, Estate, Fire Stone, Post Office/Taxi Rank, Rawlings Circle/Park and IPS. Table 1 represents the number of respondents studied in each area.

Table 1: Sample Size Distribution

Areas	Number
Atomic Junction	20
Madina Zongo Junction	20
Madina Market	20
Madina Mayehot	20
Madina Social Welfare	20
Madina Estate	20
Madina Fire Stone	20
Madina Post Office/Taxi Rank	20
Madina Rawlings Circle/Park	20
Madina IPS	20
Total	200

According to Cochran (1977), if the population of interest is unknown, the following formula is appropriate in choosing the sample size.

$$n' = \frac{t^2 \mathrm{P}(1-\mathrm{P})}{e^2}$$

Where;
n = sample size with finite population,

t = the number relating to the degree of confidence anticipated in the result; in this case a 95% confidence interval (t = 1.96 which is the abscissa of the normal curve).
P = Expected proportion (in proportion of one), 84.615%, and
e = Precision (in proportion of one) is 0.05
Therefore for this study, the sample size was calculated as follows:

$$n' = \frac{(1.96)^2 \times 0.84615(1-0.84615)}{(0.05)^2}$$

$$n' = 200$$

Therefore, the sample size was made up of 200 food venders. A multistage sampling procedure was employed. The first stage involved purposive sampling where the Greater Accra Region was chosen due to its economic urbanization. More than 50% of food poisoning issues recorded in Ghana was from the urban areas. Since there are a lot of communities in the region and they are mostly homogeneous, a cluster sampling was used to select one community. This was done by writing the names of the communities on pieces of paper. The papers were then folded and shuffled. One community was then selected at random as the cluster. However, in the community selected, stratified random sampling procedure was used to select the sample (Here, the researchers divided the population into smaller groups based on the food vendors shared attributes. The researchers then used random sampling to sample from each of the stratum). The community has several suburbs which include Atomic Junction, Zongo Junction, Market, Mayehot, Social Welfare, Estate, Fire Stone, Post Office/Taxi Rank, Rawlings Circle/Park and IPS. Finally, 200 fast food vendors were selected randomly from 20 suburbs. The data collected included information on fast food vendors' demographics (age, sex, marital status, education, et cetera).

The researchers used observation method alongside interviews and questionnaires. The researchers observed variables of interest but did not take part in the activities observed. Through this method, the researchers were able to get first-hand information, which the respondents were able to give. An observation checklist was used to guide this method. The researchers measured variables or factors in terms of performance indicators and control ratios such as the perspectives of the score card, economy, effectiveness and efficiency of food venders involved, activities and capacity of the food venders. Respondents were asked, on a point likert-type scale from one (of negligible impact) to end (extreme impact) to measure their perceptions about the food safety measures. Qualitative data was analyzed based on opinion of the respondents. Data collected was analyzed using descriptive statistics namely means, standard deviations, frequencies and percentages to determine the variable relationships.

3 Results and Discussion

The study achieved a response rate of 89.57%. Among those who responded 84% were females while 16% were males, implying that majority of the respondents in the fast food business in Madina, Ghana are females. The most dominant age group was between 25 years and 44 years, representing 72% of the fast food operators studied. This was followed by the age group 45 years to 54 years representing 18%. The least age representation was those between 18 years and 24 years and they constituted 10%. Majority of the operators of fast food (65) junior and

senior high school graduates while 35% were tertiary school graduates. Also, it was observed that 67% of the respondents have been in business between 6-10 years followed by 1-5 years (33%).

The result clearly indicate that most (40%) of the fast food operators cook several meals such as rice, yam, plantain, banku, fufu and many more. Some also cook rice and yam only, rice, yam and plantain only, fufu and banku. This observation of the study was not a departure from the study of Mondelaers*et al*. (2009) that in most of the developing countries food sellers especially the fast food or the street food sellers serve the local foods or sell staple foods. According to Ababio and Adi, (2012) because the target or buyers of most of the street food sellers are the local indigenes it does not give the incentive for the sellers to try any new food. However, Humphrey (2008) had a contrary view to this. It is always safe to sell or listen to the demands of their consumers since they urge them to earn profits and be in business. The odds are that serving any continental or foreign food would amount to low or no patronage.

Fast food operators' knowledge on food safety

This section of the study discusses the commitment of the fast food operators' knowledge on food safety. Findings from the study show that 188 representing 94% of the fast food operators interviewed were aware of food safety. Only 6% were not aware and this might be because of their educational level. This is so because, this very group was found not to have any formal education. Meanwhile, all the fast food operators practices all the food safety measures such as covering their foods properly, frequently cleaning their utensils, washing their hands frequently, covering their hair, cutting their finger nails frequently, cleaning their surroundings, houseflies are scarce in their environment, washing food before cooking and keeping their meals always warm. This confirms that all the fast food operators were aware of food safety; a few of them seem not to be aware because of their educational background. It also confirms the conclusions of Tengvall and Ellegard (2007) that every food seller is quite aware of practices that make customers queue for his/her food. Sage (2002) rehashed the fact most food seller are very much aware of the practices or safety practices that customers wants. Thus they turn to give the customers what they ought to see or what they want to see.

In relation to how fast food operators washed their hands, the study revealed that 64.0% of food sellers wash their hands from elbow to finger while the rest 36% of them wash it from their wrist to finger. Meanwhile, according to the WHO (2006), the best way to wash hands is from elbow to finger. This is however encouraging because majority of them were doing the right thing (Table 2).

Table 2: How fast food operators wash their hands

How fast food operators wash their hands	Frequency	Percent
From elbow to finger	128	64.0
From wrist to finger	72	36.0
Total	200	100.0

The study revealed that 62% of fast food operators test their meal in the palm while 38% of them test it with a spoon. Meanwhile, the best way of testing a meal is by using a small spoon. This is however not good since their hands might not be clean before testing their meals. Knowledge about how to wash hands is a key to a larger extent reducing salmonella and other faecal contamination in cooked foods. However, Nestle (2003) emphasized that is a different thing to really wash hands before handling food and another thing knowing that it good to wash hand. Washing of hands and dressing properly before and during cooking, proper disposal of waste are very vital in reducing bacterial infection

According to the results on Table 3, majority (64%) of the fast food operators do not operate by road sides near gutters. However, 36% of them operate near road sides near gutters. Though, these operators do not form the majority, it is harmful to the health of the community. This is because; they serve more than 200 people in a day. This observation confirms the study of Ghebrehewet and Stevenson (2003) that selling of foods at the road side help promote the spread diseases. There is the tendency for small particles of dust and other unwholesome particles to get into the foods. Thus the study laments the selling of foods at the road side especially the untarred roads. It is also the recipe for the spread of rubbers, papers and other solid wastes.

Table 3: Operate by the road side near a gutter

Response	Frequency	Percent
Yes	72	36.0
No	128	64.0
Total	200	100.0

The researchers sought to find out whether those who operate by the road sides gutters' clean and dry their gutters every day. It was however obvious as indicated earlier that those who patronize their meals from the fast food operators who operate by the road sides' health is at risk since 94% of them confirmed that their gutters were not cleaned and dried every day. Only 6% of fast food operators who operate by the road side stated that their gutters were cleaned and dried every day. Meanwhile, through an observational study, none of the gutters were cleaned and dried. These results buttresses the views of Ghebrehewet and Stevenson (2003) that selling foods by

gutters especially the uncovered and unclean gutters or drainages causes lots of sicknesses example cholera. Nestle (2003) also emphasized that food selling at unkempt environment is a recipe for disaster regarding the proportions of customers patronizing street foods in the most of the developing countries.

Table 4 presents results on where fast food operators buy the food stuffs. It appears from the study that about (30%) of the fast food operators buy their food stuffs from anywhere (customers, general and supermarkets) they get them while 26% of them buy it from only supermarkets. Few (8%) of them also buy their food stuffs from only general markets. Meanwhile, the most appropriate place to buy these food stuffs is the supermarkets since several researches have confirmed that it is safer buying food stuffs from supermarkets than any other place. This is because it is scarce to get *E-Coli*contents in supermarket food stuffs.

Table 4: Where fast food operators buy their stuffs

Where do you buy your food stuffs	Frequency	Percent
General market	16	8.0
Supermarket	52	26.0
Provided by customers	40	20.0
General Market and Supermarket	32	16.0
Customers, general and supermarkets	60	30.0
Total	200	100.0

The researchers also sought to find out whether the fast food operators do visit the hospital frequently for a medical checkup. It was however obvious that though majority (54%) of them confirmed that they do, the percentage of them who do not go for a medical check is also on the higher side. This is because, 46% of them do not visit the hospital frequently for a checkup. Meanwhile, all the operators have a health license to operate. Having food handling certificate is very important especially for food vendors in that it helps the vendor to know her health status and reposes confidence in the consumers of the clients that at least they are safe. Currently in Ghana it is a requirement for a food vendor to have medical certificate before selling (FDA, 2011). This assertion supports the study of Ghebrehewet and Stevenson (2003) that in developing countries where it is free for anyone to sell food anywhere, there is the tendency for people to do anything else they want. Thus the only sure way to check this menace is to enforce food sellers to have medical certificate which is actually incumbent on having been assessed of the environmental condition of the selling place and equipment.

Also, 54% of the respondents said they do have someone who takes sales orders; the percentage of those who do not have is also alarming. This is because, when the operator handles money at the same time whiles serving food, there could be some bacterial on the money which will accidentally enter the food since the operators do not wash their hands after collecting the money before serving the next customer. According to the results, 54% of the respondents bath twice a day while 16% bath thrice a day. Besides, 30% of the operators bath just once a day which is not good.

However, it is better they all bath at least once a day. Meanwhile, they do wash their working gears daily. Studies have indicated that keeping self and attire clean by washing them with soap and water is very effective way to prevent infections and contaminations that might have attached itself to the hands or cloths of the seller. According to WHO (2006) and FDB (2011), the act of washing before and after touching any edible substance is a good step to removing stains though not all contaminations could be done away with just soap and water.

Table 5: Monitoring and supervision by health authorities

Response	Frequency	Percent
Weekly	12	6.0
Monthly	112	56.0
Yearly	76	38.0
Total	200	100.0

The study requires respondents to indicate the how often monitoring and supervision are done by health authorities. It was observed that, majority of fast food operators mentioned that health authorities do monitor them monthly. 38% percent of the operators also said they are visited once a year, while 6% indicated weekly (see Table 5) having frequent visit to the fast food joints, they are also able to convince the food operators to, attend of workshops and seminars and by that try to educate them on the best practices also least know the happenings in the food vending activities (Ababio & Adi, 2012; Ghebrehewet & Stevenson, 2003).

Observational study

The study revolves around the observations made during the study. The weighted rank mean in Table 6 indicates that majority of the fast food operators were clean, neat and appropriately dressed. The food joints' decor was typical equal to its image and price range. They had easily readable and visually attractive menu, comfortable seats in the dining room, dependable and

Consistent food joint and their employees can answer questions completely. Meanwhile, there was no

evidence to state that the dining areas were comfortable, clean and had visually attractive parking areas and building exteriors. There was also no evidence to state that they serve in the promised time and do quick correction of wrong service. There was no evidence that the fast foods maintain speed and quality of service during busy times and provide prompt service. Above all, the observational study indicated that, customers were not satisfied with the dining experience.

The standard deviation however indicates that the variations in the views were insignificant. Again, from the observations on table 4.10 it support the views of Sage (2002); Tengvall and Ellegard (2007) that every food seller is quite aware of practices that make customers queue for his/her food. The study further rehashed the fact that most food seller are very much aware of the practices or safety practices that customers wants. Thus they tend to give the customers what they ought to see or what they want to see. However, the study of Osei and Duker (2008) contradicted the results above mentioned in their study that foods may contain colours (natural and synthetic), flavours, pharmacologically active substances (such as caffeine, steroids, and salicylates, which chemically affect the body), natural toxicants (naturally occurring poisons, such as cyanide), additives, and various contaminants (substances resulting from a contaminated environment, such as pesticides).

Table 6: Mean and standard deviation of the observational study

Observation	Mean	Interpretation	Std. Deviation
1. Clean, neat and appropriately dressed staff.	3.50	Agree	0.702
2. Food joint's decor typical to its image and price range.	3.58	Agree	0.495
3. Easily readable menu.	3.76	Agree	0.428
4. Visually attractive menu.	3.64	Agree	0.481
5. Comfortable seats in the dining room.	3.54	Agree	0.575
6. Dependable and consistent food joint.	3.74	Agree	0.440
7. Employees can answer questions completely.	3.52	Agree	0.501
8. Comfortable dining area.	3.42	Not sure	0.495
9. Clean dining areas.	3.42	Not sure	0.495
10. Visually attractive parking areas and building exteriors.	3.06	Not sure	1.141
11. Visually attractive dining area.	3.30	Not sure	0.808
12. Service in the promised time.	2.72	Not sure	0.828
13. Quick correction of wrong service.	3.34	Not sure	0.588
14. Accurate bill.	3.22	Not sure	0.503
15. Error-free served order (food).	3.44	Not sure	0.607
16. Maintaining speed and quality of service during busy times.	2.92	Not sure	0.485
17. Provision of prompt service.	2.66	Not sure	0.740
18. Extra effort for handling special requests.	2.66	Not sure	0.766
19. Comfortable and confident feeling	3.44	Not sure	0.699
20. Well-trained, competent and experienced staff.	3.28	Not sure	0.696
21. Overall satisfaction with dining experience.	3.08	Not sure	0.746
22. Staff provides information about menu items, their ingredients, and method of preparation.	2.48	Disagree	0.609

Note: 1= strongly disagree; 2= disagree; 3= not sure or neutral; 4= agree5= strongly agree

Knowledge on washing hands, dishes, having easily readable menus and comfortable seats in the dining room, clean dining areas and having visually attractive dining area are not enough.

1.4 Conclusion

In general, fast food operators were knowledgeable on food safety. Some of the food safety measures they were aware include covering of foods properly, frequently cleaning utensils, washing hands frequently, covering hair, cutting finger nails frequently, cleaning surroundings, making sure that houseflies are scarce in the environment, washing food before cooking and keeping meals always warm. The study also concludes that majority of the fast food operators were clean, neat and appropriately dressed. They had easily readable and visually attractive menu, comfortable seats in the dining room, dependable and consistent food joint and their employees can answer questions completely. Also be concluded that food regulatory bodies that are to ensure food vendors operate under hygienic conditions do not frequently visit and inspect food vendors. Therefore hygienic standards are left at the mercy of the food vendor.

1.5 Recommendation

Based on the findings of this study the following recommendations have been made for policy relating to food safety regulation and compliance and fast food operation:

Intensification of education on safety and hygienic practices

The study recommends that education on the safety and hygienic practices in food handlers must be intensified and enforce at every level by the Ministry of Health in collaboration with the MDAs so as to drive home the dangers involved in the neglects for such practices. Hazard Analysis Critical Control Point (HACCP) principles should be made an integral part of any food safety programme of the foodservice establishments. These principles should be religiously disseminated to the major actors of the industry.

Food vendors should incorporate good hygiene practices

The study recommends that hygiene practices such as washing of hands and dressing of cuts, regular bath, cutting of nails, covering of hair, clean surroundings and desilting of gutters should be strictly complied with.

Regulating authorities need to be firm

It also advocated that the authorities regulating fast food operations in the urban areas ought to ensure that food sellers or handlers have a medical test since it's a way of reducing contaminations and infections. Food safety law should be reviewed if any to incorporate the informal sector. If possible a new food law should be drafted to specify a government institution to do the regulation and monitoring of the sector and roles of key players specified to avoid duplication of tasks.

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