

EFFECT OF ‘CHOP-BAR’ FOODS AND ITS HEALTH IMPLICATIONS ON CONSUMERS IN KUMASI METROPOLIS, GHANA

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Abstract

The purpose of the study was to find the effect of chop bar food and its implication on its consumers. Two research questions were set and the study was guided by a descriptive research design. The data was collected with a self-designed questionnaire. The data was analysed using frequency and percentage. The study showed that majority of the customers checked the hygienic conditions of food before buying. The result also revealed that the quality of food served in chop bars were not of high quality. Despite majority of the food operators have attended training programme on their operations they do not practice it. The study therefore, concluded that food borne illnesses could largely be attributed to the environment where the chop bars operate and where they bought food items before cooking.

Keywords: Effect, health implication, food, quality, chop bar & consumers

1.0 Background of the Study

A negative food hygiene practice describes the unwholesome and unhygienic method of handling and preparation of food that can cause transmission of food borne illness. The Food and Drugs Board (FDB) Report of 2006 indicated that 90,692 people died from food and personal hygiene-related illness in Ghana. During the same period, an estimated number of 297,104 people might be going to clinics and hospitals because of food and hygiene-related issues. One out of forty Ghanaians suffers from serious food borne diseases and this was attributed to poor sanitary conditions such as open defecation, poor waste disposal, poor food hygiene and low level of hand washing practices across the country (FDB, 2006).

The mismanagement of restaurant operators' health and hygiene has been a key factor in majority of report on food-borne illness. These establishments lacked active programs for the management of their employee's health and hygienic practices. The global incidence of food-borne disease is difficult to estimate, but it has been reported that in 2005 alone 1.8 million people died from diarrhoea diseases (WHO, 2007). A great proportion of these cases can be attributed to contamination of food and drinking water.

Food borne illness continues to be an important and preventable cause of illness, diseases and death in the United States of America (USA). According to the center for Disease Control and Prevention (CDC), 76 million people were believed to become ill each year from contaminated foods. An estimated number of 325,000 individuals are hospitalized as a result of contracting food borne illness and 5,000 people were believed to have died as a result of food contamination (WHO, 2007).

Recently Ghana has become a cholera endemic country, over 70 cholera patients have been reported to die and 4000 others hospitalized. Nearly 70% of all people reported with cholera cases have been eating from outside home. To avoid cholera, people must observe hygienic practices such as washing of hands with soap, eating and drinking of safe water (Ghana Health Services, 2011). In Ghana, a case of primary source of food poisoning was recorded at Berekum in 2005, where a fast food seller's fried-rice was contaminated and all those who ate had runny stomach.

1.1 Research Questions

1. What is the quality of food served in 'chopbars' in Kumasi?
2. Does poor sanitary conditions in 'chopbars' contributes to the outbreak of food borne diseases in Kumasi Metropolis?

2.0 LITERATURE REVIEW

2.1 Food Safety

Food safety is a scientific discipline describing handling, preparation, and storage of food in ways that prevent food borne illness (Stretch, 1991). This includes a number of routines that should be followed to avoid potentially severe health hazards. Food can transmit disease from person to person as well as serve as a growth medium for bacteria that can cause food poisoning. According to food Australia (2001), food is not safe if it would be likely to cause physical harm to a person who consumer it. Yeung and Morris (2001) describe that the analysis of risk relating to food safety can began with the identification of food hazards.

Similar to the restaurants position in the food production chain, in a restaurant the food worker is often the last handler of food before it is delivered to the public. As such, the hygienic practices of the individual worker may greatly influence whether the food delivered is safe to eat or not. The specific employee health and hygiene risk factors that have been associated with outbreaks are both direct and indirect in nature. The direct risk facts include reporting to work sick, lack of proper hand washing with ready-to-eat foods (FDANKFT, 2004). Indirect risks factors include the lack of management commitment, knowledge and training (WHO, 1989).

2.2 Food Safety Knowledge

Knowledge is associated with current practices, which in turn affects willingness to change current practices if it is learned that current practices are unsafe (McIntosh, Christensen, & Acuff, 1994). The importance of food safety education for improving food-handling behaviours has been increasingly recognized during the past 18 years (Redmond & Griffith, 2006). According to Howes *et al.* (1996) cited in Worsfold and Griffith (2003), food handler's malpractices contributed to 97% of food-borne illness in food service establishments.

As a result, such mistakes place consumers at considerable risk of contracting food borne illness, leading to increased individual and societal costs due to pain and suffering, loss of economic productivity and pressures on primary and public health resources (Kennedy *et al.*, 2005). Therefore, in every food service businesses, food handlers should have the skill and knowledge of food safety and hygiene to ensure that food is safe to be consumed by the public. However, actual food handling practices are known to differ from self-reported practices (Jay, Cormar, & Govenlock, 1999). Evans, Madden, Douglas, et al. (1998) have shown that the main factors

responsible for the outbreaks of food poisoning in England and Wales during 1992–1994 and 1995–1996 respectively, were inappropriate storage, inadequate cooking or reheating, and cross-contamination. Particular attention has to be given to the importance of time and temperature control, personal hygiene, cross contamination, sources of contamination and the factors determining the survival and growth of pathogenic organisms in food (WHO, 1988).

Zain and Naing (2002) in their study showed that food stalls had four times significantly higher odds of having poor knowledge. The main reason of this was food handlers who involved in food stall/hawkers activities were not all registered with local government, had low level of education and were not trained (Zain & Naing, 2002). Manning and Snider (1993) further concluded that assessment of workers in temporary public eating places revealed deficiencies in attitudes, knowledge and practices in the areas of cooling/reheating, temperature control and cross contamination.

Sockett (1995) points out that many people do not know the basic rules of food hygiene. In contrast, surveys conducted in 1986 and 1995/1996 illustrated that respondents did know which foods were at high risk from food poisoning, but knowledge about how a food could be made safe to eat was limited (Raab & Woodburn, 1997). Many program planners believe that by enhancing knowledge or altering attitudes, they can induce behavioural change (Shaw, 2003).

According to (Kidd, 2000) besides education and training for food handlers, the food legislation also plays a supportive role for the success of the food safety assurance. Adams (1995) had reviewed the past and present food hygiene legislation and made a recommendation in the production of an industrial guide for food safety in the hotel and catering industries.

2.3 Hygienic Practices

The goal of hygiene promotion is to help people to understand and develop good hygiene practices, so as to prevent diseases and promote positive attitudes towards cleanliness. Hygiene is the effective study of all rules which bring healthy living by preventing or avoiding dirt or germs from entering our stomachs through the mouth or other parts of the body (Alcock, 1985). There are several studies that have discussed that the main causes of microbial contamination typically occurring in foodservice establishment are contaminated suppliers, dirty food contact surfaces, poor personal practices, inappropriate storage temperatures and insufficient cooking (WHO, 2007). More in detail, various studies have demonstrated that the main source of cross contamination during processing comes from food contact surfaces, equipment and employees (Gill et al., 2001, Mc Envoy et al., 2004). In the last decades, the consumers consciousness about health issues related to their food are increased, especially in developed countries which affected the food producers and related institutes to present better of food safety. Therefore, food safety awareness of consumers will influence the demand of the product (Adams, 1995).

2.4 Food Hygiene

In order to create a better food hygiene environment, according to Morrison *et al.*, (1998), the driving force for change in a commercial world must be the customer who must see hygiene accreditation as a pre-requisite to doing business. It is important that customers are educated, as well as providers. When hygiene is highly demanded, market forces will prevail and hygiene will be supplied.

Hygienic preparation, cooking and storage of food are a prime importance if food poisoning is to be prevented. High standard of hygiene minimize food spoilage and we must ensure that food

eaten is wholesome and free from pathogenic bacteria, harmful viruses and moulds. In view of this food items can be grouped into high risk food commodities and low risk food commodities. Food hygiene is all about keeping food clean, at appropriate storage temperature and away from micro-organisms so that the food will be safe for consumption (Neal, 1975).

2.5 Safe Temperature of Food

Controlling temperature of food cooked is vital in assuring that food service establishment complies with food safety regulations (McSwane et al., 2004). Food borne illness may be resulted from temperature abuse while preparing a dish. According to NRAEF (1999), time temperature abuse occurs when food has been allowed to stand for an extended period of time at temperatures favourable to bacterial growth. McSwane et al. (2004) further added that the abuse of temperature also may be caused by insufficient amount of cooking or reheating time and desired temperatures that should eliminate the existence of harmful microorganism.

Nott & Hall (1999) explained that the major purpose of cooking is to increase the palatability of food, the heating of many foods is essential to kill bacteria thereby increasing the foodstuff's safety and storage life. In practice, pasteurization and other sterilization processes require stringent assurance that all parts of the food product have been heated above a certain temperature for a defined period of time (Nott & Hall, 1999). Poor holding and cooking temperature control was a main factor contributing to food borne outbreaks as well as improper holding temperature of food contributing to the growth of certain bacteria through its spores because not all of these spores will be destroyed with heating processes (Todd, 1997; McSwane et al., 2004). It is therefore important for all food handlers to recognize their responsibilities in ensuring that all food prepared were monitored in every stages of its preparation.

2.6 Personal Hygiene

Good personal hygiene is a legislative requirement, ensuring safe food. It requires every person working in a food handling area to maintain a high degree of personal cleanliness to prevent the spread of food poisoning bacteria (Gaman, 1996). Food handlers are a potential source of bacteria and physical contamination of food, and so personal hygiene is a key element of ensuring that food is prepared safely (Paulson, 1997). Poor personal hygiene causes more than 90% of the food safety problems.

Statistics showed that improper hand washing alone accounts for more than 25% of all food borne illness (Weinstein, 1991). Contamination of workers hands due to inadequate hand washing allows pathogenic microorganisms which commonly exist on the food worker and in the kitchen environment to be picked up and manually transferred to foods (Paulson, 1997). Handling trash or touching anything else that may contaminate hands (National Restaurant Association Educational Foundation (NRAEF, 2004). To prevent such contamination, food workers must conduct thorough hand washing at critical times during the workday. Guzewich and Ross (1999) identify several different protocols for effective hand washing that have been recommended by authorities, involving the use of different cleaning agents (soap, antibacterial soap, waterless gels) washing times (10-20 seconds) and means for drying (paper, towel, air dryers). In instances where food workers hand may be highly contaminated, hand washing may need to be combined with the use of food gloves to effectively protect the food (FDA, 2002).

2.7 Bare Hand Contact with Ready- To-Eat Foods

Bare hand contact with ready to eat food has been associated with the transmission of pathogens such as Salmonella, Hepatitis A and Norovirus (Guzewick & Ross, 1999). In a survey of restaurant that had been implicated in recent outbreak of food borne illness, it was found that 35% of the time, bare hand contact with ready-to-eat foods was a contributing factor (FDA, 2002). Pathogens may be intrinsic to the food item (such as Salmonella in poultry) and/or they may be introduced to the food item during processing, which is typically the case with Norovirus. During processing, pathogens are often introduced to foods by soiled food equipment due to poor sanitation.

The impact of food borne illness on individuals can vary greatly. For most healthy individuals, food borne illness results in only mild, gastrointestinal illness, usually involving diarrhoea, vomiting, nausea, or fever. It may also result in a loss of work or activity for a few days. Food gloves have been recognized as an affective barrier to the contamination of ready- to-eat food (Paulson, 1996). Therefore food safety regulations commonly requires that food workers were close-fitting vinyl or latex gloves or use utensils or other method to minimize bare hand contact. Paulson (1997) recommends that gloves are change often and that hands are washed whenever gloves are changed.

2.8 Waste Disposal

According to Paulson (1996), food waste and other refuse must not be allowed to accumulate in food rooms before disposing it. Any refuse containers used for storage of waste collection must have a lid and to be constructed of durable material for easy cleaning and disinfect. Paulson (1996) state that adequate provision must be made for the removal and storage of food waste and other refuse. Refuse stores must be designed and managed in such a way as to enable them to be kept clean. Areas for indoor storage of refuse must be remote from food rooms and not sited near the main delivery entrance.

2.9 Hazards Analysis Critical Control Point (HACCP)

Another important efforts made by public health authorities to address food safety in restaurants has been the development of programs based on Hazards Analysis Critical Control Point (HACCP) principles. The FDA (2002) defines HACCP as “a systematic approach in identifying, evaluating, and controlling food safety hazards” The HACCP approach focuses on the control of food hazards by systematically addressing the risk factors known to contribute to food borne illness at each step of the production to ensure that the final food item is safe to eat (Bryan, 1992). These risk factors include those related to contamination introduce by poor employee hygiene.

Monitoring procedures are essential to ensure that the critical limits for each CCP in the production of food are maintained. Corrective actions are taken to ensure that the process which caused the failure is corrected. Record keeping documents the contents of the HACCP plan and maintains an operational record of all the HACCP elements. Verification procedures ensure that the HACCP plan is actually operating as intended. The HACCP approach is considered superior to traditional inspections based on food code guidelines and food safety educational efforts (Bryan, 1992).

3.0 METHODOLOGY

3.1 Introduction

This chapter seeks to provide information of the methods used in selecting the sample and collecting of data for the study. They include the population, sample and sampling techniques and instruments used in collecting data and analyzing of data.

3.2 Research Design

The research design adopted for the study was a descriptive survey design. This design was adopted because of the intension of the study and the objective of the study.

3.3 Participants

Three sampling techniques were used and this was necessary due to the fact that population of customers, and chop bar operators and officers reflected on different focus of the study. The techniques include random, cluster and purposive sampling. Random sampling was used to consumers of chop bar meals. All the 10 chop bars in the Subin Metro had a chance of being equally selected. In all 10 chop bar operators or owners, 50 employers and 40 consumers were selected. These made up the 100 respondents. Cluster sampling was used to sample 10 chop bars from four clusters. This technique was used because the area was large and it has the same characteristics. Purposive Sampling technique was used to select sanitary inspector in the Subin Metropolis.

3.4 Instrumentation

The instruments used in the collection of data from respondents was questionnaire, interview and personal observation. -The observation was done alongside the interview to obtain the maximum amount of information required. Questionnaires used covered poor sanitary conditions in 'chop bars' contributing to the outbreak of food borne diseases, the unhygienic practices adapted by 'chop bar' operators within Kumasi Metropolis as well as the health status of food handlers.

3.5 Data collection Procedure

Collection of data was by personal visit by the researcher to selected chop bar outlets in the Subin sub metro. Permission was sought from operators before questionnaires were administered and interview carried out. The questions and interview guide (one-on-one interview) were used to collect both quantitative and qualitative data from employers, employees and food consumers. The questionnaires were administered to ten (10) 'chop bars' operators within the Kumasi Metropolis and forty (40) consumers of chop bar meals and fifty (50) food handlers in chop bar.

3.6 Data Analysis

The researcher made use of tables and charts in analyzing the data collected. Each question was analyzed and the number of respondents who gave particular response was converted to frequencies distribution table, bar charts and pie charts. The opinion or response with the highest percentage was considered as the general opinion of people with regards to the point.

RESULTS

4.1 Quality of Food Served in ‘Chop bars’

To address this research objective, the results from the field has been presented in Tables 1- 3 and Figures 1- 3.

Table 1- Complains on food borne illness and foreign materials in food

Complain	Yes		No	
	Freq.	%	Freq.	%
Ever suffered any food borne illness	22	55.0	18	45.0
Ever found foreign material	13	32.5	27	67.5

Table 1 shows complaints on food borne illness and foreign materials in food. It indicates that 55% of customers had ever suffered food borne illness while 45% of customers had never suffered food borne illness. 32.5% have found foreign material in food before while 67.5% had not found foreign material before. This depicts that majority of customers had ever suffered food borne illness.

4.11 Rating of quality of food sold

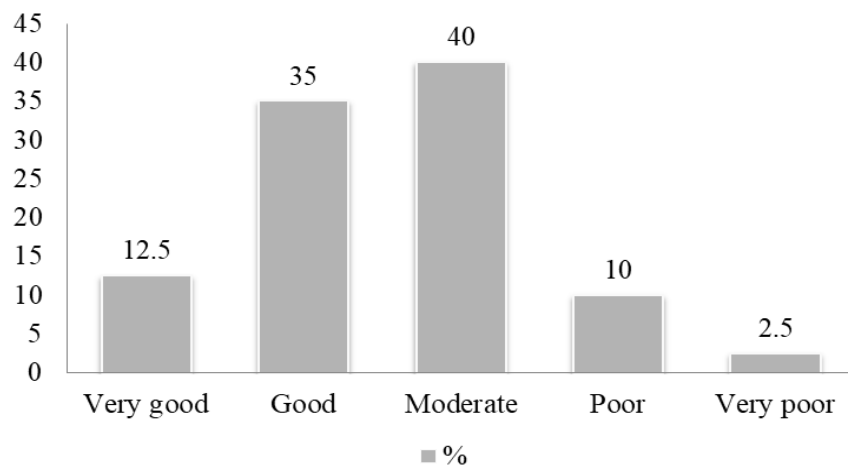


Figure 1 rating of quality of food sold

Figure 1 shows customers rating of quality of food sold. It indicates that 12.5% of the customers rated the quality of food sold to be very good, 35% rated it to be good, 40% gave a moderate rating, 10% also gave a poor rating and finally 2.5% rated it very poor.

Availability of rules and regulations concerning handling of food

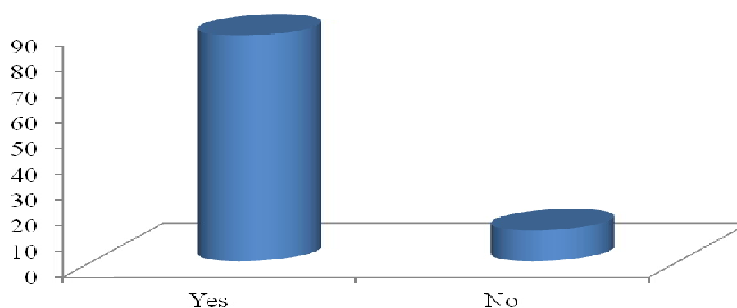


Figure 2 - Availability of rules and regulations concerning handling of food

Figure 2 shows the availability of rules and regulations concerning handling of food. It indicates that 88% food operators have rules and regulations concerning handling of food while 12% do not have rules and regulations concerning handling of food.

What the programme was about

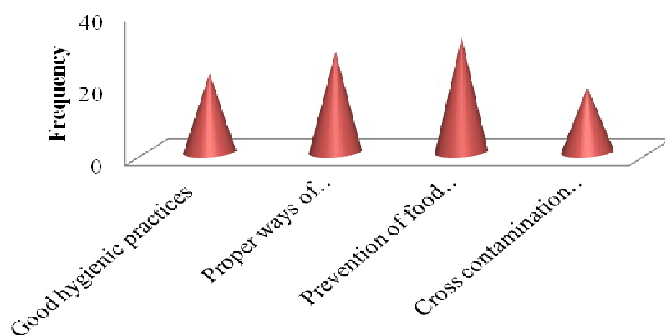


Figure 3 what the programme was about

Figure 3 shows what the programme was about. The data shows that 22% said the programme was about good hygienic practices, 28% said it was about proper ways of cooking food, 32% said it was about prevention of food poisoning and 18% said it was about cross contamination issues.

Table 2- complains about food poisoning and foreign material in food

Description	Yes		No	
	No.	%	No.	%
Complain about food poisoning after eating food	15	30.0	35	70.0
Complain about finding foreign material in food	33	67.3	16	32.7

Table 2 shows complain on food poisoning and foreign materials in food. It indicates that 30% of food operators received complains about food poisoning while 70% of food operators did not receive any complain. 67.3% received complains of finding foreign material in food; while

32.7% did not receive complain of foreign material in food. This depicts that majority of customers complained about finding foreign material in food.

Table 3- Place for storing dry ingredient

Place	Frequency	Per cent
Plastic containers	12	24.5
Well ventilated place	23	46.9
In basket	14	28.6
Total	49	100.0

Table 3 shows the place for storing dry ingredient. The data shows that 24.5% of food operators store their dry ingredients in plastic containers, 46.9% store in well ventilated place and 28.6% store their dry ingredients in basket.

4.2 Contribution of poor sanitary condition to outbreak of food borne diseases

In addressing this research question, Tables 4 - 8 and Figure 4 have been used to help in the discussion.

Table 4- Understanding of kitchen hygiene

Description	Frequency	Per cent
Cooking food in kitchen	7	17.5
Cleaning kitchen equipment thoroughly	25	62.5
Sweeping kitchen	7	17.5
Cooking, serving and eating food in kitchen	1	2.5
Total	40	100.0

Table 4 shows the customers perception about kitchen hygiene. It indicates that 17.5% of the costumers perceived kitchen hygiene is about cooking food in the kitchen, 62.5% perceived it to be cleaning of kitchen equipment thoroughly, 17.5% perceived it to be sweeping of kitchen and 2.5% perceived it to be about cooking, serving and eating food in kitchen. This depicts that majority of the customers understand kitchen hygiene as cleaning kitchen equipment thoroughly.

Table 5- reasons for perceiving that operators practice kitchen hygiene

Reason	Frequency	Per cent
Cooking and serving equipment well clean	11	34
Equipment and items well arranged	8	25
No waste found on the premises	6	15
No pest/insect found on the premises	7	22
Total	32	100.0

Table 5 shows the reasons customer perceived that operators practice kitchen hygiene. It indicates that 34.4% of the customers perceived cooking and serving equipment are well clean, 25% of the customers perceived it is when equipment and items are well arranged, 15% when there is no waste found on the premises and 22% perceived there is no pest or insect found on the premises.

Table 6- Reasons for perceiving that operators do not practice kitchen hygiene

Reason	Frequency	Per cent
Cooking and serving equipment not clean	3	17
Equipment and items not arranged	5	28
Waste found on the premises	6	33
Pest/insect found on the premises	4	44
Total	18	100.0

Table 6 shows the reasons customer perceive that operators do not practice kitchen hygiene. It indicates that 17% of the customers perceived cooking and serving equipment were not well clean, 28% of the customers perceived it was when equipment and items were not well arranged, 33% when there was waste found on the premises and 44% perceived that there were pest or insect found on the premises.

Table 7- Having separate cutting boards and knives

Description	Yes		No	
	No.	%	No	%
Do you have separate knives for cutting meat/fish	32	66.7	16	33.3
Do you have separate cutting boards for raw/cooked	38	77.6	11	22.4

Table 7 shows separate cutting boards and knives. It indicates that 66.7% have separate knives for cutting meat/fish while 33.3% do not. 77.6% have separate cutting boards for raw/cooked food while 22.4% do not. This indicates that majority of food operators have separate cutting boards and knives.

Table 8- Rules and regulations applied when cooking

Description	Frequency	Per cent
Food safety	23	48.9
Food hygiene regulations	24	51.1
Total	47	100.0

Table 8 shows the rules and regulations food operators apply when cooking. The data shows that 48.9% apply food safety rules and 51.1% apply food hygiene regulations.

4.21 Hygiene check before buying food

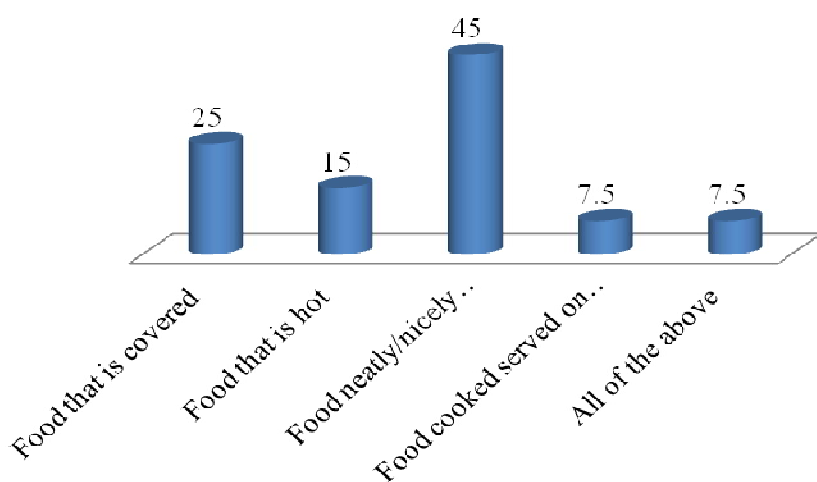


Figure 4 hygiene check before buying food

Figure 4 shows customers hygiene check before buying food. 25% of the customers check food that is covered as their hygiene check before buying food, 15% of the customers check food that is hot as their hygiene check before buying food, 45% of the customers check food that is neatly and nicely presented as their hygiene check before buying food, 7.5% check food that is cooked and served on time, 7.5% also check all the above conditions as their hygiene check before buying food.

5.0 DISCUSSIONS

Approximately 10 to 20% of food-borne disease outbreaks are due to contamination by the food handler (Zain & Naing, 2002). Food handlers play an important role in food poisoning because they may introduce pathogen into food during while preparing it, distributing and or preparation (Green *et al.*, 2005). Therefore, in every food service businesses, food handlers should have the skill and knowledge on food safety and hygiene to ensure that food is safe. However, actual food handling illnesses differ from self-reported practices (Jay *et al.*, 1999).

Data on risk factors for food borne disease indicate that the majority of outbreaks results from inappropriate food handling practices (Jonas & Angulo, 2006). Bare hand contact with ready to eat food has been associated with the transmission of pathogens such as Salmonella, Hepatitis A and Norovirus (Guzewick & Ross, 1999). Education, training and the development of food safety examination are key components in ensuring that food handlers are proficient and knowledgeable about food safety and sanitation principles (Jacob, 1989).

The periods of washing hands by operators during cooking are at the beginning of cooking, after cooking and wash as they cook. The result depicted that most food operator washed their hands only at the beginning of cooking. This is not good enough, because in the cooking process there is the need for the operators to wash their hands as many times as possible so as to avoid contamination of food and food poisoning. According to Taylor *et al.* (2002) there is evidence from the food industry showing that microorganisms are transferred to the hands in the process of handling food and through poor personal hygiene. Statistics showed that improper hand washing alone accounts for more than 25% of all food borne illness (Larson, 2002).

Improper hand washing allows pathogenic microorganisms which commonly exist on the food worker and in the kitchen environment to be picked up and manually transferred to foods (Paulson, 1997). Riell (2003) reports that hand washing and hygiene are personal issues and food managers may be uncomfortable to addressing them directly. To overcome this, restaurant owners must motivate staff toward a goal of food safety. The findings on availability of rules and regulations concerning handling of food shows that generally food operators have rules and regulations concerning handling of food, but some percentage of the chop bar operator do not have any idea about the rules and regulations.

This is in agreement with Sockett (1995) who points out that many people do not know the basic rules of food hygiene. Besides education and training, the food legislation also plays a supportive role for the success of the food safety assurance. Adams (1995) had reviewed the past and present food hygiene legislation and made a recommendation in the production of an industrial guide for food safety in the hotel and catering industries. The food hygiene regulations 1970 has been brought into force in order to protect public health and reduce the number of outbreaks of food

poisoning. It must be observed by anyone 'handling' food in a food business (Worsfold *et al.*, 2003).

According to the study, majority of food operators which constitute 89.3% opined inspectors visit their kitchen, but 10.7% of the operators disagreed that inspectors visit their kitchen. This suggests that not all of the operators' kitchens are visited by inspector. According to the data in Table 25, inspections are conducted weekly, monthly and quarterly. It was revealed that inspections are normally conducted every month and this constitutes 62.5% of the responses. Food service operators should make sure that food handlers are supervised, instructed and/or trained in food hygiene to an appropriate level (Miles *et al.*, 1999).

Wilson *et al.* (1997) offer another suggestion to reduce food risk by monitoring the use of a number of approaches including systematic observation, measurement and recording of the significant factors for controlling the hazards. The results from Table 26 also indicated that 94.6% of the food operators have attended training programs before but 4.7% have not received any training on their operations before. According to those who have attended training before, the program was about good hygienic practices, proper ways of cooking food, prevention of food poisoning and cross contamination issues. Wilson *et al.* (1998) observed that although the concept of training is endorsed by many managers in the hospitality industries, only very few managers put these ideas into practice. Go *et al.* (1996) defined the hospitality training as a systematic process through which organization's human resources gain knowledge and develop skills by instruction and practical activities that result in improved corporate performance.

Food service operators should have a better knowledge about food safety and hygiene since consumers spend money on a meal and expect that eating the meal should not make them sick. Despite better knowledge, a clear understanding of how and why consumers perceived food safety risk cannot be neglected since the uncertainty of achieving food safety goals may lead to some possible consequent losses for consumers (Yeung & Morris, 2001). Many program planners believe that by enhancing knowledge or altering attitudes, they can induce behavioural change (Shaw, 2003). The HACCP approach focuses on the control of food hazards by systematically addressing the risk factors known to contribute to food borne illness at each step of the production to ensure that the final food item is safe to eat (Bryan, 1992).

5.1 Conclusion

Eating food in chop bars have health implications for the consumers and the source of acquiring quality food can largely be attributed some food borne illnesses. Despite the fact that some of the patrons to chop bar assessed the environment where they buy, there are diseases that cannot be observed with eyes. The study has established the fact that all the food bought outside were rated moderately. This thus indicated that the foods were not safe for consumption but they do not have any option per their purchasing power.

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