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Assessing the Awareness of Food Safety Laws and Regulations among Consumers in Sekondi-Takoradi Metropolis, Ghana.

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Abstract
This study was undertaken to assess the level of awareness of food safety laws and regulations among consumers in the Sekondi-Takoradi Metropolis. The objectives of the study were to; find out the level of consumers awareness regarding food safety laws and regulations, find out how best consumers understand the laws governing food safety, identify the sources of education and information available to consumers on food safety laws and regulations and to find out how best consumers can improve on the quality of food consumed to reduce food borne related diseases. The study employed non-experimental and descriptive survey design. Purposive and simple random sampling techniques were used for the study. A total of 100 questionnaires were personally administered to respondents by the researcher. A quantitative analysis was used to analyze the data with the aid of Microsoft Excel and Statistical Product for Service Solution (SPSS 22.0). The study found out that, majority of the respondents were aware and also appreciated the existence of food safety laws and regulations. The media, family members, friends etc. play a major role in educating respondents on the various food safety laws and regulations. The study therefore recommends that, massive education should be provided to enlighten consumers on the hazards associated with food consumption most often.
Keywords: Consumer awareness, food safety, food borne related diseases and laws governing food safety.

1.0 Introduction

Food is a critical contributor to physical well-being and a major source of pleasure, worry and stress (Ababio, 2013; Ababio and Adi, 2012), its procurement, preparation and consumption are vital for sustenance of life. Codex Alimentarius Commission define food as any substance, whether processed, semi-processed or raw, which is intended for human consumption, and includes drinks, chewing gum and any substance which has been used in the manufacture, preparation or treatment of food but does not include cosmetics or tobacco or substances used only as drugs. The definition includes all bottled drinks. Meanwhile, how safe is your food? Diseases spread through food are common and persistent problems that result in appreciable morbidity and occasionally in death (Ababio, 2013; Adak, 2007). Over the last decade, food safety has been high on political and business agendas. Public concern over the safety of food has increased as a result of the Bovine Spongiform Encephalopathy BSE crisis and other food scares (Motarjemi et al., 1993; Vogel et al., 2011;). Food safety is a shared responsibility and a highly debated issue food safety remains a critical issue with outbreaks of foodborne illness resulting in substantial costs to individuals, the food industry and the economy (Motarjemi, et al., 1993; Kaferstein, 2003).

As the total number of out-patients reported with food borne diseases in Ghana is about 420,000 per year, with an annual death rate estimated at 65,000 and total cost to the economy at US$69 million (Yeboah, 2010). Food safety is the inverse of food risk the probability of not suffering some hazard from consuming a specific food (Adak, 2007; Mitchell, 2004 and Ninemeire, 2004). Food safety has been described as protecting the food supply from microbial, chemical and physical hazards that may occur during all stages of food production, including growing, harvesting, processing, transporting, retailing, distributing, preparing, storing and consumption (Varzakas, 2008; Sperber, 1988 WHO, 2002). Consumers‟ concerns about food are based on worries not only about health but also about agriculture, ecology and food culture (Borzelleca and Boobis, 2008). Consumers‟ attitudes towards food safety and their practices related to food are themes of interest to food producers and retailers, public authorities and health educators (Food safety agency, 1013). This interest has been reflected in discussions about how food safety should be defined and how consumers perceive food safety and choose food (Food safety agency, 2011). This has resulted in international community established food safety policies to manage and control system that collectively aim to assure that national food safety goals are met. Elvbakken argues the usefulness of Selznick‟s definition of regulation (Elvbakken 1997:8 Motarjemi, et al., 1993; Kaferstein, 2003). He describes regulation as "…sustained and focused control exercised by a public agency over activities that are socially valued" (Selznick 1985:363–364). Regulation, however, is more than just making rules. Regulation consists of rulemaking (standard setting), monitoring

compliance, and enforcement (FDA food code, 2009). Regulation, however, is more than just making rules.

Food safety regulation covers a broad range of regulatory techniques: from public to private and from low interventionist to highly prescriptive obligations. Food safety systems if well developed, will contribute to improved public health, increased access to food trade, reduction of poverty, increased food security and the protection of the environment. Hence there is a great need for research, education and increased the level of awareness among consumers on food safety and key food regulations in Sekondi-Takoradi Metropolis. The increasing rate of food poisoning and related food borne diseases due to contamination, unhygienic food practices, expired and dented foods has become a great concern to the nation Ghana. Food borne diseases present a serious challenge to public health in both developing and developed countries. Studies done in both developing and developed countries have indicated that the majority of reported food borne diseases originates in food service establishments (Tauxe, 1997). Food safety regulation and food control is understood in institutional terms. It is seen as an institutionalized policy field, involving certain characteristics, based in distinctive institutions, comprising traditions and values formed over time (Motarjemi, et al., 1993; Kaferstein, 2003).

Thus, the study seeks to assess the level of awareness of food safety and key food regulations among consumers in Sekondi-Takoradi Metropolis. The objectives of the study were; to find out the level of consumers awareness regarding food safety laws and regulations in the Sekondi Takoradi Metropolis, to find out how best consumers understand the laws governing food safety in Ghana, identify the source of education and information available to consumers on food safety laws and regulations and to find out how best consumers can improve on the quality of food consume to reduce food borne related diseases.

2 Literature Review

2.0 Concept of Food Safety

Food is vital for life but can only serve such an important purpose if it is safe and secure to ingest (WHO, 2006; Varzakas and Arvanitoyannis, 2009). Food can be defined as edible substances whether in natural or manufactured state which, from a public health perspective form part of the human diet (Will and Guenther, 2007). Therefore, easy understanding of necessity of health and nutritional sound food is good for human health. Food safety is a broader term, which means an assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use (Lupine, 1998) and remains a critical issue with outbreaks of food borne illness resulting in substantial costs to individuals, the food industry and the economy (Motarjemi, et al., 1993; Kaferstein, 2003). This can be achieved through the utilization of various resources and strategies to ensure that all types of foods are properly stored, prepared, and preserved so that they are safe for consumption (WHO, 2012). Ababio and Adi (2013) define food safety as the inverse of food risk the probability of not suffering some hazard from consuming a specific food. Inadequate food safety is a significant contributor to the burden of disease in developing countries including and Ghana is not an exception, and should be addressed as the food system develops and along with related investments in public health. The heavy burden of food borne diseases imposes substantial economic losses to individual, households, health systems and entire nations. Economic losses as a result of rejected food exports due to shortcomings in food safety are also often very significant (WHO, 2013).

2.1 Food Safety Regulation

Literally, regulations have been implicitly and explicitly defined in many context and concept. A traditional conception refers to regulation by the state through the use of legal rules backed by (criminal) sanctions (Ababio, 2013) and further stated that regulation is the sustained and focused attempt to alter the behaviour of others according to defined standards or purposes with the intention of producing a broadly identified outcome, which may involve mechanisms of standard-setting, information-gathering and behaviour-modification (Ababio, 2013; Ababio and Adi, 2012). Meanwhile, regulation is more than just making rules and consists of rulemaking (standard setting), monitoring compliance, and enforcement (Picciotto 2002; Scott 2002). Governments establish food safety policies and they put in place and manage a system of controls that collectively aim to assure that national food safety goals are met (CDC, 2013; FSA, 2011).The relevance of understanding food control as a particular form of regulation with a specific history and its own institutions has been argued in a work on food control in Norway (FSA, 2013). From an institutional approach (FSA, 2011; FSA, 2013; MOH, 2012), food regulation and food control can be seen as reflecting certain norms, values and objectives, which are embodied in certain institutions formed over time and in different contexts. The objective of these regulations is to provide consistent, understandable, and usable labels that can

help consumers make informed and healthier food choices (Tauxe, 1997).

2.2 The Level of Consumer Awareness about Food Safety and Food Safety Regulations.

Setting of food safety regulations and standards is a critical tool to protect the consumers from contaminated foods by every nation. Improper food handling may be implicated in 97% of all food borne illness associated with catering outlets (Howes, et al., 1996). Food borne illness is as a result of consumer awareness of food safety practices and weak enforcement of food safety regulations. Food safety and quality issues are gaining importance at national and international levels due to various reasons such as the implementation of Food and Safety Standards (FSS) Act 2006 and Regulations, 2011. Meanwhile, the relevance of understanding food control as a particular form of regulation with a specific history and its own institutions has been argued in a work on food control in Norway (Ninemeire, 2004). Food safety policy has a long history of using risk analysis to guide public decisions. A study by U.S. Food and Drug Administration (FDA) toxicologists in the mid-1950s introduced safety factors to establish acceptable daily intake of food additives on the basis of acute toxicity, an approach still applied today (Motarjemi, et al., 1993; Kaferstein, 2003). Illness from food borne pathogens is a significant global health concern (Sperber, 1998; 2003; WHO 2013). Population level incidence estimates, however, are uncertain due to underreporting and difficulty in attributing illness to food consumption (Varzakas and Arvanitoyannis, 2012). Awareness of food safety has grown tremendously across the globe and many studies have been conducted to prove it empirically.

2.3 Hazards Associated with Food Consumption

Food safety is the assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use (Adak, 2007). Food safety control deals with the prevention, control and or eradication of hazards that render food unfit for consumption or that could be injurious to the health of the consumer when food is ingested. Awareness of food safety is very necessary when consumers are aware of the hazards associated and make food unsafe for human consumption. There are lots of hazards associated with foods that make food unsafe and causes food borne illness. The study therefore reviews the three main hazards which include chemical hazard, physical hazard and microbiological hazard (Borzelleca and Boobis, 2008).

2.3.1 Chemical hazards

Most food will cause death if consumed in excess and not as a part of a balanced diet. Toxic compounds are present in grains, legumes, fruits and vegetables. When a variety of foods in moderate amounts are consumed as a part of a normal diet, these toxic compounds do not accumulate in the body and hence, cause no problems. Some toxic compounds, such as hemagglutins in kidney beans and soybeans, are inactivated by moist heat. These items should not be eaten without cooking. There is also much concern and discussion about chemical contamination of food by insecticides, rodenticides and herbicides. While there are some rare incidents of excessive amounts of these chemicals on or in food, more than adequate control measures are taken by both the government and industry to prevent this occurrence (Kaferstein, 2003; FDA code, 2009). Another vital aspect of chemical hazards is over- or under-nutrition. Vitamins and minerals in food are chemicals. It is important that each person eat a balanced diet as defined by current U.S. dietary guidelines. Most Americans consume too much red meat and fat. Being overweight is a hazard to one's health. Current dietary guidelines in the United States recommend that both fat and red meat consumption be reduced, and that consumption of fruits, vegetables, and whole grains and cereals be increased. It is said that 75% of the human diseases stem from food (FSA, 2011; FSA, 2013).

2.3.2 Physical hazards

Insurance companies pay more money for mouth and throat injuries due to hard foreign objects in the food than for any type of food borne illness. The reason is that the evidence is conclusive when a consumer pulls a rock from his/her mouth after breaking a tooth. The food supplier cannot deny liability. In cases of microbiological illness, it is difficult for consumers to prove the cause of illness and its food source. The government allows what is considered to be "unavoidable filth" in food. This includes specified low levels of insect fragments in spices and in frozen and canned fruits and vegetables, and rodent and insect filth in peanut butter (FSA, 2011; FSA, 2013). This type of contamination can only be seen under a microscope, and it has not been shown to be a health hazard. If American consumers want moderately priced food, this practice of allowing some "unavoidable filth" in food will continue. However, the presence of large particles and foreign objects (rocks, pieces of metal and plastic, bones, nut shells, stems from raisins, etc.) in food

is a hazard. Whole bay leaves can also be a problem because they do not soften when cooked, and people can choke on them if they are left in food products. To prevent injury from foreign objects, objects in food should be kept smaller than 1/16 inch. Foods should be inspected for the presence of foreign objects by the food preparer. These objects can be removed by picking them out of food and/or by washing food items in flowing water, if this is applicable (Borzelleca and Boobis, 2008).

2.3.3 Microbiological hazards

Truly, no raw, fresh food can be considered safe. Microbial contamination of food is not new. Food has been contaminated from the dawn of history. Microbiologically, raw food can be absolutely safe if it is handled correctly. Microorganisms on food can be reduced: by pasteurizing (heating) it, as for example, to 160°F for a few seconds; by acidifying food by a fermentation process or adding sufficient amount of acid (lemon juice or vinegar) to food; or by washing. Any one of these methods, or a combination, can be used to ensure food safety. Especially on raw food such as fruits and vegetables, people eat millions of spoilage microorganism and some pathogens in a meal. Each individual's state of health affects his/her resistance to or tolerance of these pathogenic microorganisms. Resistance to diseases is also gained from vaccinations, if not acquired naturally. When there are few competitive microorganisms in the gut, pathogenic bacteria such as *Salmonella, Shigella, E. coli,* etc., if they survive the stomach, can easily multiply. The body's third defense is the immune system (Borzelleca and Boobis, 2008; WHO 2012).

2.4 Hazard Analysis and Critical Control Points (HACCP)

HACCP is an internationally recognized food safety assurance system that concentrates prevention strategies on known hazards; it focuses on process control, and the steps within that, rather than structure and layout of premises (Borzelleca and Boobis, 2008; WHO 2012) but a key challenge due to prevalence of informal food markets (FSA, 2011). Again, HACCP is a structured and rational approach to the analysis and prevention of potential hazard points at every stage of food operation. It requires operators to enumerate and identify all steps in their activities that are critical to achieving food safety and to identify and evaluate safety measures. The HACCP approach provides a means of ensuring the provision of safe food to consumers. Hazard analysis identities all factors that could lead to hazard for the consumer: all the ingredient, stages in the processing of foods environmental features and human factors that could lead to unsafe food being served (Borzelleca and Boobis, 2008; WHO 2012).

2.5 Consumers understanding of Food Safety Regulation

Traditional command-and-control regulation by the state is increasingly replaced in political theory as well as in practice, by alternative, flexible, less state-centered forms of regulation, such as self-regulation, co-regulation, management-based regulation, and private systems of governance (Borzelleca and Boobis, 2008; WHO 2012). This transition challenges existing conceptualizations of regulation. Traditional top-down regulatory theory, based on a state-centered conception of regulation and premised on improving compliance and regulatory techniques, is inadequate to deal with these new arrangements. MOH (2022) argues the necessity of empirical research on government-business interactions in regulatory practices.

3 Methods

The study was conducted in the two major cities in the western region, Ghana: Sekondi and Takoradi. The basis for using these two cities for the study was supported by the fact that they have largest population of street food vendors, with most of the ‘white color job’ workers which were the target sample unit for the study. 100 customers were selected from these two cities using purposive and simple random sampling method. This sampling approach helped to find people who can and are willing to provide information by virtue of knowledge or experience. Due to the geographical location and the parallel nature of the two cities and the sensitive nature of the study, the researchers collected the data by themselves with designed survey questions. The study used sourced for both primary and secondary data. Primary was collected using structured questionnaire while secondary data was gathered form journals, articles and book form internets and libraries. The questions on the questionnaire were of two kinds; open and close ended questions. Open ended questions allowed customers and vendors to provide their own views on the topic. However, close ended questions allowed vendors to choose responses only from the listed options that were provided in the questionnaire. Before administration, the questionnaire was pilot-tested and subjected to reliability test using Cronbach Alpha; resulting in a reliability coefficient of 0.949 which was above the recommended minimum of 0.7 (Santos & Reynolds, 1999). Data collected was analyzed using the statistical package for service solution (SPSS version 21). Descriptive statistics was used to explain the variable characteristics (Twenefour et al., 2015).

4.0 Results and Discussions

Table 1 presents the demographic characteristics of the respondents. In relation to gender, respondents were skewed toward male as they account for 67% of the total population whilst the female counterparts accounted for the remaining 33%. Table 1 depicts that, 5% of the respondents were below 15 years, 62% respondents were within the age group of (15 – 25) years while 13.0% were 36 years and above. This indicates that, majority of the respondents were within the age group of (15 – 25) years. It can again be said that, most of the respondents (46%), were single with 15% and 13% respondents respectively been divorced and widowed. Considering the respondents educational level, it was gathered that, 16% were Junior High School graduates, 23.0% were Senior High School graduates. Also, 12% of the respondents were with no formal education, whilst majority (44.0%) of the respondents was tertiary graduates with 5.0% having other educational qualifications. Moreover, it can be seen from Table 4.2 that, majority of the respondents (60%) were employed whereas the remaining 40% indicated not employed. Also in relation to the income level of the respondents, it was revealed that 48% of the respondents indicated they earn less than GH¢ 500 ($112), whiles 30% respondents asserted they earn between GH¢ 500 to GH¢ 1000 ($112 to $225). 22% of the respondents however indicated they were earning above GH¢ 1000 ($225). In relation to the kind of Street food purchased, majority (44%) of the respondents posited main meals (rice, fufu, banku, etc.), followed by breakfast and branch (tea, milo, oats, porridge etc) which accounted for by 31% of the respondents whiles 25% of the respondents posited snacks (meat pie, beverages etc.).

Table 1: Demographic Characteristics of Respondents

Characteristics	N	Frequency	Percentage
Gender	**100**		
Male		67	67.0
Female		33	33.0
Age in years	**100**		
Below 15 years		5	5.0
15-25		62	62.0
26-35		20	20.0
36 and above		13	13.0
Marital Status	**100**		
Single		46	46.0
Married		26	26.0
Divorced		15	15.0
Widowed		13	13.0
Educational Status	**100**		
Senior high school		23	23.0
Tertiary		44	44.0
No formal education		12	12.0
Other		5	5.0
Employment status	**100**		
Employed		60	60.0
Unemployed		40	40.0

Table 2 above presents the factors that respondents considers when purchasing street food or the factors they consider before patronizing street foods. Results on Table 2 posits that 86.0% of the total respondents considers the physical appearance of the seller, 89.0%, also indicated they consider the availability of covered bins to keep waste, 78.0% consider regular wiping of eating table while 72.0% of the respondents asserted the availability of hand washing soap. In the same vein, 87% also indicated that they consider the method of serving as one of the key factors before patronizing street food.

Majority (77%) of the customers (respondents) also indicated they consider whether customers are allowed to make contact with the food sold before making decision to purchase. When asked why? They asserted why customers should come into contact with food sold for the general public and consider that inappropriate. Some of the factors respondents considered as inappropriate includes: the seller talking whiles serving food, garbage and dirty waste close to the selling place, use of same hands to serve and collect money and the presence of houseflies in the stalls of shades where the food is sold (see Table 2). These accounted for majority embracing the yes counts. Results on Table 2 shows that, most of the respondents critically assessed the factors as critical and needful before considering purchasing street foods with a minimal proportion showing no consideration for the factors listed.

Table 2: Factors Respondents Considers when Purchasing Street Foods

Factors	Yes		No	
	Freq	%	Freq	%
Physical appearance of the seller	86	86.0	14	14.0
Availability of covered bins to keep waste	89	89.0	11	11.0
Regular wiping of eating table	78	78.0	22	22.0
Availability of hand washing soap	72	72.0	28	28.0
Customers are allowed to make contact with the food sold before making a choice	77	77.0	23	23.0
The seller talking whiles serving food	89	89.0	11	11.0
Method of serving	87	87.0	17	17.0
Use of same hand to serve and to collect money	75	75.0	25	25.0
Garbage and dirty waste close to the selling place	93	93.0	7	7.0
Presence of houseflies in the stalls or shades where the food is sold	91	91.0	9	9.0

Table 3 presents the awareness of food safety laws and regulations. When asked respondents; do you have confidence in what you eat outside? 78% out of the total respondents (customers) avowed ‘yes’. Majority of the respondents (82%) also indicated they do know the food they eat could be harmful to their health conditions. Also majority of the respondents embraced ‘yes’ on the statements; ‘are you aware of food safety laws and regulations’ (81%) and ‘have the knowledge about food safety laws and regulations influence your food consumption (87%). However, the statement; ‘will you buy foods without knowing how it was prepared’ saw majority of the respondents positing ‘no’, this accounted for 76% of the total respondents (customers).

On the issue of awareness on food safety acts 50% were conversant with the food and drugs Act, 20% were of the environmental protection Act. Also, 12% were aware of the local government Act whiles 5.0%) and 10% respectively were familiar with the labeling and consumer protection Act with a minimal proportion of respondents representing 3% been familiar with biosafety Act. This indicates that majority of the respondents were much more conversant with the food and drug acts as compared to their knowledge on the other food safety Acts. In relation to information about food safety laws and regulations, 44.0% indicated they heard or learnt them through the media 23% indicated through their family members and friends, 12% were through publications whereas 21% asserted through the internet.

Table 3: Awareness of Food Safety Laws and Regulations

Factors	Yes		No	
	Freq	%	Freq	%
Do you have confidence in what you eat outside?	78	78.0	22	22.0
Do you know that the foods we eat can be harmful to our health condition	82	82.0	18	18.0
Will you buy foods without knowing how it was prepared	24	24.0	76	76.0
Are you aware of food safety laws and regulations	81	81.0	19	19.0
Have the knowledge about food safety laws and regulations influence your food consumption	87	87.0	13	13.0

This shows how important social media is vital in our daily activities. Majority of the respondents however indicated their source of information about food safety laws and regulations were through radio and television, social media and through family members in that sequence.

5.0 Conclusion and Recommendation

Consumers have variety of food to eat from home, ranging from breakfast (tea, porridge) to snack (meat pie, beverages) to main meal (rice, fufu) and this is as a result of convenience, time factor etc. Respondents considered the physical appearance of the seller, availability of covered bins to keep waste products, regular wiping of eating table, the availability of hand washing soap, seller allowing consumers to make contact with the food sold before making choices, method used in serving by the seller, the seller talking repeatedly whiles serving the food, the seller using the same hand in serving and collection of money, garbage and dirty waste close to the selling place and the presence of houseflies in the stalls or shades where the foods are being sold before purchases were made. Since the food can be harmful to human health, consumers and manufacturers of food consider hygiene before food preparation. However, food safety awareness have grown tremendously within the young adults but insignificant. Again, consumers are awareness of Food Safety laws and regulations is widely understood and appreciated by most of the consumers. In addition, the media, family members and friends, the internets and various publications about food safety laws play vital roles in educating individuals on food and safety laws and regulation.

The study recommends that the following be done to address some of the problems raised by the consumers with regards to food safety laws and regulations: there is the need to enlighten consumers on the hazards associated with food more frequent. If this is done, consumers may not only be aware and understand the Food Safety laws and regulations but also practice it and make it significant; the researcher recommends that, since consumers are aware and understand the laws and regulation about food safety, much education should be given to them on the offences when these laws and regulations are breached. This will deter others from replicating unsafe attitudes towards food safety and massive education must be provided on the effect of ensuring good and safe production, sales and consumption of foods found outside. These includes but not limited to contaminated toxins associated with various food sources, improper waste disposal etc. This will however help improve the health status of consumers.

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