



## Socio-Economic Profile, Knowledge of Hygiene and Food Safety Practices among Street-Food Vendors in some parts of Accra-Ghana.

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### Abstract

*In this study, some food vendors in Accra were surveyed to assess their knowledge in food hygiene and best food safety practices. Data on demographics, food safety knowledge and practices were collected from 50 food vendors using a 31-question standardized survey tool. Street food vending was the main income provider for 84% of the vendors. Eighty Percent of the questionnaire respondents were females, with the majority age group ranging between 25-50 years. Majority of the vendors lacked health certificates. Generally, food vendors proved to be quite aware of the knowledge of proper food handling practices. It was recommended that there is further need for health education to improve the knowledge of food vendors on food safety and hygiene.*

**Key words:** Accra-Ghana, food safety, hygiene, street-food vendors, knowledge

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### Introduction

Food safety has been 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, wholesome and fit for human consumption (WHO, 1984). 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 worldwide (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/WHO (2003). 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.

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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.

In Ghana, various studies have been conducted on aspects relating to food safety. Ayeh-Kumi et 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 et al. (2009) applied WHO keys of safer food to improve food handling practices of food vendors in Chorkor, a suburb of Accra. Mensah et al, (2002) 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 street-food vendors in Accra. It aimed to obtain current information on the food safety knowledge and practices of street food vendors in Accra. Information gathered from this study could be used by health officers in Accra Metropolis in developing preliminary strategies towards regulating safe street food handling, preparation and vending within the city of Accra.

## Material and Methods

### Location of the study area

The study area is parts of the Greater Accra Metropolitan Area (GAMA). The area is densely populated with population estimated to be around 3,909,764. Parts of the area are characterized by poor hygienic environments which could pose serious health risks to ready-to-eat or street food. The vegetation consists of the coastal savanna grassland. The climate is hot and humid and reflects a bimodal rainfall pattern with a mean annual rainfall of about 1,300 mm. The mean daily temperature is 26 °C with a range of 18 °C–35 °C. The relative humidity can be as high as 97% in the mornings of wet seasons and as low as 20% in the afternoon of the dry seasons.

### Data collection and analysis

Prior to starting this study, we explained the aims of this study to food vendors in the study area. The survey was conducted to evaluate the food safety knowledge and practices of street food vendors within Accra, Ghana. The study was carried out between May and June, 2011. Fifty food vendors operating in the major streets, open air market, schools, and offices were randomly sampled for this study. The questionnaire was pre tested for clarity and validity on 10 randomly selected street food vendors in open air market area in Accra. Results of the pre-test were used in the revision of the initial survey tool. The final version of the

survey tool contained 31 questions. The data collection focused primarily on i) Knowledge of health and personal hygiene ii) food safety practices iii) type of food sold iv) information about the establishment and iv) socio-economic profile. The raw data was analyzed using Microsoft Excel and SPSS software (Statistical Package for Social Scientists Version 16, SPSS Inc. Chicago IL.). Descriptive statistics such as means, frequencies, ranges and prevalence rates of the study variables were used to display the results.

## Results and Discussion

### Demographic characteristics of food vendors

The demographic characteristics of the food vendors sampled are reported in Table 1.

Table 1 Characteristics of food vendors in parts of Accra

Parameter	Frequency( n=50)
<b>Age (years)</b>	
Below 25	16
25-50	28
Above 50	6
<b>Gender</b>	
Male	10
Female	40
<b>Educational Attainment</b>	
Illiterate	5
Up to primary	13
Primary to JHS	11
SHS to Graduate	18
Above Graduate	3
<b>Duration of Engagement</b>	
Below 10 years	35
10-20 years	9
Above 20 years	5
<b>Place of belonging</b>	
Local	28
Migrated	22
<b>Main occupation</b>	
Yes	42
No	8

The majority (80%) of street food vendors were women. The results agreed with similar studies reported by Muyanga et al. (2011) in Uganda and Tomlins and Johnson (2004) in Ghana. In Africa, food preparation responsibility lies primarily on women. The ages of the majority of street food vendors ranged between 25-50 years. There were very few respondents i.e. (12%) whose ages were above 50 years. Thirty two percent of the respondents had ages below 25 years. In respect to educational levels, 36% of the respondents had attained education up to Senior Secondary level, whereas 26% had attained education up to primary level. Lower educational levels of street food vendors have been linked to poor hygiene practices leading to food contamination during handling, storage and food

preparation (Kitagwa et al, 2006). Eighty-four percent of the vendors had food vending as their main occupation. It is only 16% who used food vending to supplement their household income to meet their livelihood needs. Seventy percent of vendors had been engaged in the food vending business for less than 10 years, while only 10% had worked for twenty years in the food vending industry. Eighteen percent of the vendors had worked for between 10-20 years, while the remainder did not indicate the period of engagement in the food vending business. This is indicated in Table 1.

Twenty-two of the vendors had between 1 and 3 employees, while ten vendors had employees greater than 5. Ten of the vendors had no employees, while seven had between 3 and 5 employees. This is shown in Figure 1.



Fig. 1 Relationships between vendors and number of their employees

Fifty-eight percent (58%) of the units/establishments for food vending were owned by food vendors. Most of the street-food vendors were owners and had employed others to assist with the business (Fig 1). Twenty percent of these employees were under 16 years (Table 2). Sixty-two percent of the vending sites had permanent cover, while 26% of the vending stalls were in the open space (Table 2). On the other hand, 8% had their unit covered with tent (Table 2). This observation was in contrary to Muyanga et al. (2011) in which it was found out that open air was the dominant vending unit used since they offered better lighting conditions. Vending sites should offer protection of street foods from dusts. Dusts carry many microbes that may be pathogenic if left to settle on street foods. Most of these sites offered protection to dusts.

Table 2 Information about vending units in Accra

Parameter	Frequency (n=50)
<b>Ownership</b>	
Owner	29
Rental	4
Employed	17
<b>Under-aged Employees (below 16 years)</b>	
Yes	10
No	39
<b>Licensed unit</b>	
Yes	21
No	25
<b>Seating capacity</b>	
Nil	7
Up to 3 persons	11
Up to 5 persons	5
Above 5 persons	25
<b>Age of unit</b>	
Below 5 years	22
5-10 years	11
10-15 years	3
Above 15 years	9
<b>Covering</b>	
Permanent cover	31
Unit covered with tent	4
Unit remains open	13
<b>Mode of lightning</b>	
Gas light	3
Candle	1
Electricity	17
Lantern/kerosene lamp	7
Not applicable	20
<b>Type of establishment</b>	
Small vendor	39
Restaurant	8
Mobile food	3
<b>Working hours</b>	
Up to 8 hours	14
8-12 hours	14
Above 12 hours	21

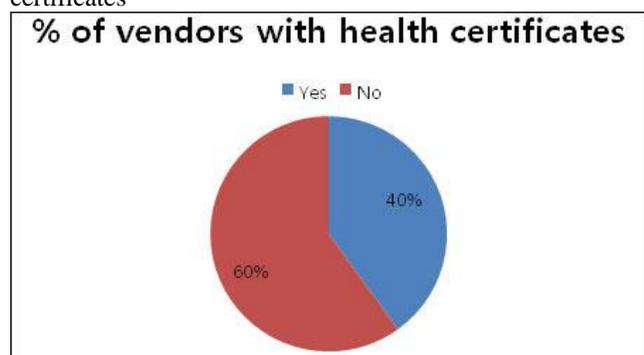
#### Health certificate requirements of street-food vendors

One of the common ways of regulating street vended food in the developing countries is through medical examination of food vendors (Musa and Akande, 2002). The majority of the food vendors (60%) interviewed had no health certificates as shown in Fig 2.

In Ghana, public health requirements insists on food handlers to undergo medical screening for infectious or contagious diseases such as typhoid fever, tuberculosis, cholera, dysentery and other communicable and air-borne diseases. Periodic screening is also a requirement by metropolitan, municipal and district environmental health officers and inspectors. The vendors are expected to carry out complete physical and medical examination and obtain health certificates issued by the authorized health centers

and hospitals. The health certificate is to be kept by the vendors, presented on inspection and renewed annually. Only 40% of the respondents in this study have acquired the certificate. This study agreed with results from a study in Nigeria by Musa and Akande where only 30 out of 141, representing 21% of food vendors in secondary schools at Ilorin had undergone medical examination to be issued with health certificates. Respondents cited reasons for not having certificates being lack of funds, non-awareness and lack of strict enforcement from authorities.

Fig. 2 Percentage of vendors in possession of health certificates



#### Kinds of foods sold on streets of Accra

The street foods vended were grouped into four major classes according to Omemu and Adoreju, 2008. These were processed foods, main meals, soups and stews and snacks. Processed foods were foods and drinks which were obtained or purchased by the street foods vendors completely prepared, packaged, and not requiring additional handling by the vendors except for chillings like for sachet packed water, bottled water and beverages. The other categories including main meals, soups and stews and snacks are vendor-prepared by the vendors after buying the ingredients. They include cooked meals like rice, beans, fufu, soup, tomato stew and snacks such as meat-pie. Table 3 shows the street foods vended in Accra.

#### Hygiene profile of food vendors

Hygiene during handling and cooking food is very important. Human beings represent the largest contamination sources of food (Marriot, 1985). Health and personal hygienic knowledge of the street food vendors surveyed are shown in Tables 4. About 84% of the vendors had knowledge of the need to wash hands after handling money while 88% of the vendors knew that it was necessary for vendors to wash their hands when toilet paper was used after each trip to the toilet. Eighty percent of the vendors were aware that it was necessary to wash their hands when handkerchief is used for sneezing (Table 4). Ninety-six percent of the respondents felt that the use of

Table 3 Some street foods sold in Accra

Type	Frequency	%
<b>Processed foods</b>		
Bottled soft drinks	19	38
Bottled water	13	36
Sachete packed water	22	44
Fruit juices	13	36
Bread	8	16
Porridge	2	4
Koose	1	2
<b>Main meals</b>		
Rice( Plain, fried and Jollof)	19	38
Banku	22	44
Fried plantain	11	32
Fried yam	4	8
Boiled yam	6	12
Fufu	11	22
Tuo-zaafi	4	8
Omo-tuo (rice balls)	9	18
Kokonte	5	10
Waakye	10	20
Spaghetti	10	20
Beans	9	18
<b>Soups</b>		
Light soup	12	24
Groundnut soup	17	34
Palmnut soup	15	30
Abunaabunu	2	4
Nkatenkonto	4	8
<b>Stews</b>		
Vegetable stew	8	16
Tomato stew	28	56
Garden egg stew	3	6
Beans stew	6	12
Kontomire stew	8	16
<b>Snacks</b>		
Meat pie	10	20
Doughnut	9	18
Rock buns	6	12
Hamburgers	2	4
Cakes	7	14
Spring rolls	7	14
Chips	9	18

soap is always necessary for hand washing while all the respondents advocated the need for clean water for hand-washing (Table 5). However, relatively fewer (62%) felt that disinfectants are necessary for keeping the hands clean (Table 3). Twenty-eight (28%) percent of the vendors did not see the need to wash hand after scratching. According to FAO (1995), food handlers should have the requisite knowledge and skills in food handling. According to WHO, 1989, hand-washing is very important because the hands are considered the most important vehicle for transfer of micro-organisms from faeces, nose, skin and other parts of the body into food. Studies in Epidemiology have further confirmed that bacteria such as *Salmonella typhi*,

Escherichia coli can survive for varying periods on the fingers and other parts of the body (Pether & Gilbert, 1971). Mensah et al. (2002) reported in a study in Accra that out of 511 street food items examined in Accra, 69.7% contained mesophilic bacteria, 5.5% contained Bacillus cereus, and 31.9% contained Salmonella aureus, while 33.7% contained Enterobacteriaceae. From this study, it is evident that most of the vendors have a good knowledge of the need to wash hands after certain activities. These observations were similarly made and collaborated by Azanza et al (2005), in which they found in their study that among the 54 street food vendors, surveyed in the Philippines, knowledge of food safety concepts was established particularly on topics that dealt with health and personal hygiene and food contamination. It was reported in that study that the relatively high level of knowledge in hand washing and its translation to practice of surveyed street food vendors was due to the availability of a number of hand washing

Table 4 Health and personal hygiene knowledge of street food vendors in Accra

Topics	Yes	No	No knowledge
<b>1) Hand washing is necessary for street food vendors</b>			
....after touching money	42	7	1
.... when toilet paper is used after trips to toilet	44	2	4
.... when handkerchief is used for sneezing	40	5	5
.... when hands are not yet visibly dirty	36	7	7
.... during continuous food handling	41	4	4
<b>2) Street food vendors should</b>			
.... bath regularly	44	2	4
.... wear hair restraints and aprons when vending	45	4	1
.... consider hands and arm jewelries as sources of contaminations	30	11	5
<b>3) Street food vendors cannot safely handle food</b>			
.... when they have cold, cough and catarrh	41	6	3
.... when sick with diarrhea	34	14	2
.... if hands are washed after trip to the toilet	33	10	6
.... when they have an open wound in the hands even if it is fully bandaged	35	8	3
.... when handling money	34	9	6

facilities within the study area, a university campus. However, (Martins, 2006) observed otherwise in his study in South Africa. The majority of the vendors surveyed knew that bathing must be done regularly and should not only be triggered by evidences of visible dirt or objectionable body odor. The study also apparently shows that street food vendors considered wearing of hair restraints, hand or arm jewelries and aprons as important for safer street food vending. Information from several studies has indicated that the part of skin under rings worn is more heavily colonized by pathogens than other parts of the skin. However, there is no evidence supporting the fact that wearing rings results in greater transmission of pathogens (Jacobson et al., 1985). Street food vendors also demonstrated the knowledge of the importance of the need to abstain from cooking or vending when afflicted with an infectious ailment is of concern. This finding was in contrary to a study conducted in Abeokuta by Omemu and Aderoju (2008).

Table 5 Health and personal hygiene practices of street food vendors in Accra

	No. of positive responses	%
<b>1. Ailments that temporarily prevented vendors from vending or cooking foods</b>		
Cough and colds	39	78
Diarrhoea	42	84
Nausea	36	72
Vomiting	41	82
Sore eyes	31	62
Stomach cramps	36	72
Sick member of family	29	38
Fever	32	64
<b>2. Hand washing requirements</b>		
Clean water	50	100
Soap	48	96
Clean hand towel	48	96
Disinfecting solution	31	62
<b>3. Reasons for hand washing</b>		
Touching money	40	80
Handling garbage	47	94
Blowing of nose	44	88
After eating meals	50	100
After using the toilets	50	100
Handling raw foods	42	84
Scratching	36	72
Continuous food handling	46	92

## Conclusion and Recommendations

The range of street foods vended in Accra include main meals such as banku and rice, processed foods such as sachet packed water and bottled soft drinks, snacks such as meat pie and doughnut, soups such as groundnut soup and stews such as tomato stew. Most of the units used for food vending were unlicensed and vendors lacked health certificate. Street food vendors generally demonstrated the knowledge of food safety and hygiene. The knowledge of food safety and hygiene of street-vended food can however be improved if a sufficiently high proportion of vendors receive training in basic hygiene skills. Vendors need to be aware of hygienic, sanitary and technological aspects of street food vending and consumption. Training and education on these issues should be carried out to help street vendors integrate into the urban food supply chain in the safest way possible.

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