CONSUMER FOOD SAFETY KNOWLEDGE IN THE HOMES OF RESIDENTS OF HO MUNICIPALITY, GHANA

N.K. KORTEI*, O. AHLIDOBU, D. ASANTE-DONYINAH, M. BOADI, P. ZAAZIE N. O. POBEE, S. N. Y. ANNAN & C. OSEI – TUTU

(N. K. K: Department of Nutrition and Dietetics, School of Allied Health Sciences, University of Health and Allied Sciences, Ho, Ghana; O. A. & D. A. D. : Department of Food Science and Technology, School of Applied Sciences, Ho Technical University, Ho, Ghana. MB: Department of Hotel, Catering and Institutional Management, Kumasi Technical University, Kumasi, Ghana; P. Z. : Department of Ecotourism, Recreation and Hospitality, University of Energy and Renewable Resources; N. O. P. : Department of Food Science and Technology, Faculty of Agriculture, Food and Consumer Sciences, University for Development Studies, Tamale, Ghana, C. O.-T.: Department of Family and Consumer Sciences, University of Ghana, Legon, Ghana.; S. N. Y. A.: Radiation Technology Centre, Biotechnology and Nuclear Agricultural Research Institute, Ghana Atomic Energy Commission, AE1, Atomic, Accra.)

**Corresponding author's email: nkkortei@uhas.edu.gh*

ABSTRACT

This study evaluated the safety knowledge of food prepared at home in the Ho municipality of Ghana. One hundred (100) respondents participated in the study by completing self-administered questionnaires after being selected by a convenience sampling technique. Results of the study showed that the majority (30%) of the respondents were mothers in the homes, while most (41%) were of high educational background up to tertiary level. There was adequate knowledge of the side effects of eating unhealthy foods (68.7%). Overall, knowledge of food safety practices and risk awareness at home was sufficient (60.1%). Most of the respondents adhered to good hygiene practices during both food preparation and storage. Its theme environment represents an important hub for the spread of pathogens responsible for foodborne diseases. Our findings scratch the surface of an important topic and the need to increase awareness about home consumer safety knowledge and practices. It is advised that a national survey should be conducted, followed by a properly designed food safety public health campaign, to enhance household food safety awareness.

Keywords- Food safety, knowledge, Ho municipality, Ghana, domestic, household

Introduction

Food safety is a scientific discipline describing the handling, preparation, and storage of food in a way that prevents foodborne illness (Allotey, 2011). In this context, food safety implies the assurance that food will not cause harm to the consumer when it is eaten according to its intended use. Safe food which, is a basic human right, contributes to health and productivity and provides an effective platform for development and poverty alleviation (WHO, 2002). Over the years, news headlines across the media have indicated widespread outbreaks of foodborne disease caused by lapses in food safety. The emerging pathogens have provided vivid reminders that food not

only nourishes and sustains us, but if handled unsafely, can be a major threat to health and well-being (Control and Prevention, 2011, Bryden, 2012). A report from World Health Organization stated it that foodborne disease takes a major toll on health and that thousands of millions of people fall ill, of which many die as a result of eating unsafe food (WHO, 2002). The WHO further estimates that 600 million food-borne diseases (FBDs) each year are related to poor food safety and hygiene practices with 420,000 deaths (Organization, 2015).

Worldwide, inquiry into foodborne disease incidence shows that the greatest mainstream of foodborne disease epidemics result from malpractice during food preparation in small food businesses, canteens, homes, and other places where food is prepared for consumption (Osei-Tutu, 2018, Tutu *et al.*, 2020). Hence, the concepts of Food Safety Management Systems have been espoused by food control, public health, and regulatory authorities internationally as reference methods for food safety assurance. The systems are however not sufficiently applied where they are most required. They are largely implemented in the major large and medium-sized food industries, and evidence of improved safety for foods produced under the HACCP system has been clear. However, where food safety problems are particularly important and better control of the risk is needed such as in homes, in small food businesses, HACCP or related Food Safety and/or Quality Management Systems have not been well implemented (Torres, 2000).

In Ghana, about 65,000 persons including 5000 kids below 5 years die yearly due to FBDs (Monney *et al.*, 2013). The risk factors such as inappropriate time intervals, unsuitable temperature, weather conditions, unhygienic activities, unacceptable handling of foods, foodstuff from insecure origins, impoverished self-cleanliness, improper cleaning of cooking materials, using untreated water, and improper food storage were attributed to the causes of FBDs (Cheng *et al.*, 2017, Saad *et al.*, 2013). Also, neglect of hygienic measures by food handlers has been implicated as an enabler for the spread of pathogenic microorganisms (Ayeh-Kumi *et al.*, 2009, Abdalla *et al.*, 2009) and the cause of infections among consumers (Ayeh-Kumi *et al.*, 2009).

Studies recount that 12 to 18% of food-borne illnesses are attributable to contaminations (Dagne *et al.*, 2019, Kuchenmüller *et al.*, 2009, Kortei *et al.*, 2021), poor food safety, and inappropriate hygiene practices which were accredited to food handlers (Ayaz *et al.*, 2018). Domestic (home) food handlers are people who are wholly or partly engaged in the food preparation, processing, and production value chain and who have a direct touch on food and cooking utensils (Saad *et al.*, 2013, Oridota *et al.*, 2014). The proportion of cases arising from food preparation practices in the home may be especially under-represented in outbreak statistics, due to many factors (Day, 2001). These prompt people to become increasingly concerned about the health risks posed by microbial pathogens and potentially hazardous chemicals in food.

Some local studies conducted in the four regions of Ghana such as Greater Accra, Northern, Western, and Central have reported adequate knowledge, good attitude, and positive behavioral practices of food safety and handling practices (Ayeh-Kumi *et al.*, 2009, Monney *et al.*, 2013, Odonkor *et al.*, 2020, Sarkodie *et al.*, 2014). Recently, Tuglo *et al.*, (2021) reported good knowledge in the North Dayi district of the Volta Region among street-cooked food handlers. Indeed, the lack of documented food safety activities at home

involving stored (poor warehousing) and documented processing of food for people's consumption is lacking, hence resulting in numerous food safety incidents.

On the whole, the cost of foodborne illness includes the cost of medical treatment, productivity loss, pain and suffering of affected people, and losses within the public health sector.

To the best of our knowledge, no study has been done on consumer food safety knowledge in the domestic homes of the Ho municipality of Ghana. We hypothesized that knowledge of food safety in the homes of the inhabitants of Ho was inadequate. This study aimed to evaluate the knowledge of food safety in the homes of inhabitants of the Ho Municipality, Ghana.

Experimental

Study Design

The current study adopted a descriptive research design. Descriptive design best aims at describing, observing, and documenting situations as they naturally occur rather than explaining them. It also makes use of randomization so that errors may be estimated when population characteristics are inferred from the observation of samples. The descriptive design attempts to establish the range and distribution of some social characteristics and to discover how these characteristics may be related to certain behaviors, patterns, or attitudes. This design type was therefore seen as appropriate for the study because of the nature of the topic, which required that data be collected through self-report measures, as well as large amounts of data being collected within a short period.

The main difficulty with the design, however, was demand characteristics, as respondents tried to give responses in ways that reflected their idea of what responses the researcher wanted from them. Despite these inherent disadvantages, it was deemed the most appropriate design for this study since it helped to specify the nature of the given phenomena with a description of the situation in a specified population.

Study Area

The study was conducted in households in the Ho township (Bankoe, Ahoe, Xeve, Dome, and Fiave), Ho Municipality (Fig.1 and Table 1). Ho is the administrative capital city of the Ho Municipal Assembly. By Location, Ho Municipality can have economic cooperation with neighboring Districts. The Ho Municipality is also home to the regional capital of the Volta Region. This, of course, makes it the largest urban center in the region. The town lies between Mount Adaklu and Mount Galenukui or Togo Atakora Range (Touring Ghana-Volta Region, 2012). It lies on latitude 6 °36‘43‘‘N and longitude 0 °28‘13‘‘E. Agriculture and related works are the major occupations. The population of the Ho Township according to the 2010 population and housing census stands at 104,532 with 49,378 males and 55,154 females. The 2010 PHC defined a household as a person or a group of persons who live together in the same house and have a common catering arrangement as one unit and in addition look up to one person as the household head. In all, there are 29,972 households in Ho Township (Service, 2014).

Sources of Data

The research used both primary and secondary data. A self-administered questionnaire was used in gathering primary data in the field survey. The primary data was collected to cover every aspect of the study, which helped to achieve the purpose of the study. Articles from journals, internet websites, and books were the secondary source for the study.

2.3 Study/Target Population

The population is defined as any set of persons or subjects that possess at least one common characteristic of interest under investigation located in a defined territory. In this current study, the study population is the sum of all consumers in the five study areas within the Ho township; Bankoe, Ahoe, Dome, Heve, and Fiave (Table 1) with an estimated population of 104,532 (Service, 2014).

Target Population on the other hand refers to the empirical units such as persons, objects, occurrences, and others used for the study Acquah, (2018). The target population is the group of interest to the researcher. It is the group to whom the researcher would like to generalize the results of the study. The target population in this study was all possible households in the Ho township, which was estimated to be 29,972 (Service, 2014). The 2010 PHC defined a household as a person or a group of persons who live together in the same house and have a common catering arrangement as one unit and in addition look up to one person as the household head (GIS PHC, 2010).

Sample and sampling procedures/ sample size

Self-designed structured questionnaires were used to collect data from 100 households on their demographic characteristics, and knowledge of food safety practices as well as assessing the risk level of food safety.

The sample size was determined as follows; **n: z^2 (p q) / d^2**

n= the required sample size

z = confident interval at 95% with a standard value of 1.00

p= estimated prevalence (0.5)

q= 1.0 – p

d = margin of error at 5% with a standard value of 0.05

n= $(1)^2$ (0.5) (0.5)/ $(0.05)^2$ = 100

The technique used is a convenient sampling technique. The technique is usually used when representativeness is not required and is where all units of the study population that the researcher comes into contact with at a certain period are selected.

TABLE 1

Distribution of households across communities

Communities	sample size
Bankoe	25
Dome	20
Fiave	25
Ahoe	15
Heve	15

source: Fieldwork, 2020

Research instruments

This study used the questionnaire as the main tool for data collection. A questionnaire is a formulated series of questions arranged in a predetermined order and commonly used in survey research (Acquah, 2018). The questionnaire was initially prepared in English and translated into Ewe and Twi for data collection. It consisted of three sections, namely: Part I, II, and III. Part 1 comprised the demographic profiles of the respondents such as gender, age, and level of education. Part II contained items on knowledge of food safety. A five-point Likert-type rating scale was provided for the respondents to indicate the strength of their opinions in Part II as follows: (5) strongly agree; (4) agree; (3) neutral; (2) disagree; (1) strongly disagree. Part III sought to assess their knowledge of the risks associated with food.

Data Analysis

Data obtained from the study was analyzed using percentages. Tables made up of frequencies and percentages were constructed from the coded schemes. Descriptive statistics (means and standard deviation) were used

in analyzing the data. Analyses were done according to each research question. The Statistical Package for Social Sciences (SPSS) version 20 (Chicago, IL, USA).

Results and Discussion

Sex distribution of respondents

The survey results showed that 25.0% of respondents were males as against 75.0% of females in Table 2. This made the study devoid of sex inequality. Therefore, the sex of respondents was useful as the study was able to identify the sex balance to make a constructive analysis devoid of sex inequality. The findings in the study also gave credence to the usual perception that females are dominant in food prepared at home because most men (males) are not good cooks. The study agreed with the findings of Langiano *et al.*, (2012) and Teffo and Tabit, (2020) who studied food safety knowledge and practices of individuals at the homes of people living around Cassino, Italy, and then the food safety assessment of people living in Limpopo, South Africa respectively.

The greater proportion of females who were found to be involved in food preparation in the home in this study reflects the sociocultural role of women in food preparation and serving in Ghana (Addo-Tham *et al.*, 2020). Again this observation affirms the participation of women in domestic activities in the home, which also points to the natural tendency of women to be at home and manage things at home. Similar findings have been reported in Benin City, Nigeria (Okojie and Isah, 2014), Ethiopia (Tessema *et al.*, 2014), and Uganda (Muyanja *et al.*, 2011).

Converse to the findings of this study, Samapundo *et al.*, (2015) and Muinde and Kuria, (2005) have reported predominantly male cooks in countries such as Haiti and Kenya respectively. Also in a related study, Cortese *et al.*, (2016) reported a predominantly male cook population in Florianopolis, Brazil.

Age distribution of respondents

The majority of the respondents were between the age range below 25 (54%). The least age group constituted respondents who were between the ages of above 47 (2.0%) in Table 2. Overall, the majority of the respondents who participated in the study were mostly young adults who constitute youth according to Ghana's definition of youth as persons between ages 15-30. Findings from the study reveal that foods prepared at home are not a preserve of a particular age category of persons, but all, irrespective of age, can prepare food at home. Our results were in agreement with the findings of Unusan, (2007) as he reported an age range of 21-30 years as the majority of participants in their study on food safety in homes in Turkey. (Langiano *et al.*, 2012) however, reported a much higher age range of 40-49 years in Italy.

Earlier studies in adults have indicated that food safety knowledge tends to increase with age and practice: females have higher scores than males, and younger respondents have shown the greatest need for additional food safety education (Bruhn and Schutz, 1999, Rimal *et al.*, 2001).

TABLE 2

The sex and age of the respondents

	Variables	**Frequency**	**Percent**
Sex	Male	25	25.0
	Female	75	75.0
	Total	**100**	**100**

Age	Under 25	54	54.0
	26-36	33	33.0
	37-47	11	11.0
	Above 47	2	2.0
	Total	**100**	**100**

Level of education of respondents

Analysis of the educational attainment of respondents showed that a majority (41%) were holders of Higher National Diploma Certificate (HND). Junior high school graduates followed closely with 38%. Respondents with first-degree certificates had 11% and those with post-graduate certificates (masters) were 10% in Fig. 2. One's educational level determines how knowledgeable the person is regarding how the person approaches life and issues such as food safety knowledge and attitudes (Frank, 2015, Unusan, 2007). The implication is that respondents with a high level of education mostly had much knowledge of food safety and its related risk issues. Most food safety surveys report that a high percentage of individuals, responsible for preparing meals for themselves and other family members, have not been properly informed about food safety procedures, especially regarding health risks during preparation in the home (Redmond and Griffith, 2003, Angelillo *et al.*, 2001) and so it is imperative to attain some level of education. In agreement with the findings of this study, Alimi, (2016) reported in their study that consumers with higher education were more conscious of possible health risks inherent in street food because of the information at their disposal while those with higher income would rather patronize regulated fast food outlets and supermarkets though expensive. He further indicated that educated respondents were more concerned about issues such as the validity of data labels (the product name, preparation date, and expiration date), product preservation, and the avoidance of cross-contamination. Again per food handling practices in the (Al-Shabib *et al.*, 2016) study, where the educated respondents were concerned with checking and throwing away expired food. These vendors, to avoid cross-contamination, used different utensils and cutting boards while they were preparing raw and cooked food at the same time.

On the other hand, some researchers (Samapundo *et al.*, 2015, Asiegbu *et al.*, 2016, Liu *et al.*, 2014) have reported a surprising trend where scarcely literate consumers had rather higher food hazards cognizance than highly educated consumers around the globe especially in China, Haiti and South Africa etc. It could be conjectured from these reports that higher levels of education and income most often do not necessarily denote good food safety consciousness and habit.

Albeit, it advised that food handlers in the domestic home in these modern times be moderately educated to acquire some basic reading and listening skills so as to be able to read simple food label instructions and apply them as required so as not to poison the household. Furthermore, be able to apply food basic knowledge possibly acquired from social media. There is a high probability of an individual not achieving all these aforementioned activities if she/he is illiterate.

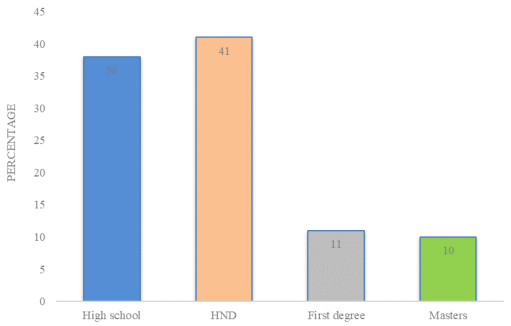

Fig. 2: Educational Level of the Respondents

TABLE 3

The status of respondents in the House

Variables	Frequency	Percent
Mother	30	30.0
Father	11	11.0
House help	10	10.0
None	49	49.0
Total	100	100.0

Respondents family status in the house

Frequencies and the corresponding percentages of the status of respondents in the house were estimated. A majority (49%) of the respondents identified themselves a s neither father, mother, nor house helper. Those who identified themselves a s m others w ere 30% as against 11% who were fathers.(Table 3). The study further discovered that 10% of the participants identified themselves a s house helpers. Although those who belonged to the 'none' class in the house constituted the majority, 30% of mothers imply that women engaged and play vital roles in preparing home-based food. This is in agreement with findings f rom a s tudy d one b y Ampofo, (2001) which highlights the perception among Ghanaians that wives are expected to cook for their husbands and family

Respondents knowledge of food safety in the house

Findings from the study indicated that participants agreed overall (60.1%) to know about food safety which was slightly above average (more than 50 percent), indicating that generally, the performance of the entire respondents was quite adequate regarding food safety knowledge. Nonetheless, (14.8%) of the respondents strongly disagreed/disagreed with the knowledge of food safety (less than 50 percent), while (20%) remained neutral and did not know whether those measures were food safety knowledge. This represents the fact that the respondents in the study are averagely knowledgeable in food safety. This result disagreed with findings from a study conducted by Angelillo *et al.*, (2001) on the knowledge, attitudes, and related behavior on foodborne diseases and handling practices

in Italy indicating that people in and around that geographical location had inadequate knowledge regarding food safety practices. In another related study, Langiano *et al.*, (2012) reported insufficient knowledge in the safety of food prepared in the homes of Cassino living area, Italy.

Our findings revealed that participants in the study; agreed (67%) that keeping the kitchen surfaces clean reduces the risk of illness with an average mean score of 3.80 ±0.974. Again, a majority (78%) agreed sponges and wiping cloth could be a probable means by which microorganisms could spread. An average mean score of 3.78 ±0.824 was recorded (Table 4). This supports the findings of previous studies which stated that dishcloths and sponges are found to be a reservoir for an array of microbes that spread fast to hands, kitchen equipment, and contact surfaces (Redmond and Griffith, 2003, Rossi *et al.*, 2013, De Roma *et al.*, 2017, Haysom and Sharp, 2005). A majority (80%) of the respondents agreed with the question that the same cutting board can be used for both raw and cooked foods provided it looks clean with an average mean score of 3.75 ±0.729 in Table 4.

This finding contradicts a study conducted in the United Kingdom by Worsfold and Griffith, (1997), which reported that many consumers were unaware that at least 60% of food poisoning originated in the home, believing that the responsibility lies instead with food manufacturers or restaurants.

The present study revealed a vast majority of respondents agreed that the same cutting board can be used for uncooked and prepared meals provided it looks clean. It is not proper for such to occur because this facilitates cross-contamination since microorganisms do not appear visible to humans. There should be a conscious effort to separate raw uncooked foods from cooked ones, especially with raw meat products. This separation technically prevents cross-contamination (Samapundo *et al.*, 2015) which agrees with the findings of a study done in Haiti (Samapundo *et al.*, 2015). This act of separating fresh foods from cooked food could help prevent cross-contamination, which in turn may prevent infections from happening and halt FBDs. This is one of the highly endorsed public health measures to prevent cross-contamination. These main findings are per food handling practices of the studies of Al-Shabib *et al.*, (2016) and Cortese *et al.*, (2016), where participants of the study avoided cross-contamination, by using different utensils and cutting boards while they were preparing raw and cooked food at the same time.

This study found that many (54%) respondents agreed that safe water could be identified by the way it looked. Water from the environment plays a very vital role in handling in the home as it is used to wash utensils, washing of hands, use as an ingredient in cooking, and clean other surfaces in the home and kitchen environments so it is imperative to determine its quality before use. It can serve as an important source of contamination considering its extensive applications in the domestic setting. Furthermore, in homes where water is scarce, bowls are used to fetch water and kept in the kitchen where hands are washed in these bowls for very long periods without changing them. The danger herein lies in the probability of contamination with fecal matter from the toilet facilities. Inadequacy or near absence of basic facilities in homes or food preparation sites have been mostly attributed to non-compliance with basic hygiene principles, in the study on the hygienic practices by food handlers worldwide. Benny-Ollivierra and Badrie, (2007) reported that most of the food handling sites and homes did not have pipe-borne water, and 97.5% did not have drains to channel waste water and toilet facilities.

This occurrence is not different for homes and other food vending sites in Kingston, Jamaica (Powell *et al.*, 2004), Lima, Peru (Bhat and Gómez-López, 2014), Philippines (Azanza, 2000) and Uganda (Muyanja *et al.*, 2011). The lack of toilets and lavatory facilities at the vending sites forced most street food hawkers to seek secluded areas within the vicinity like bushes and uncompleted buildings for excretion.

For example, studies reported that most vendors knew that they must bath regularly and not attach the bath to visible dirt or objectionable odor (Omemu and Aderoju, 2008), washed their hands during food preparation, serving, after using the toilet, sneezing, coughing and handling contaminated materials like exchange of money (Muyanja *et al.*, 2011) hence the need for clean water.

In agreement with the findings of this study, Bigson *et al.*, (2020) reported dirty water made while cooking and thrown in front of the cooking areas, went a long way to worsening the hygienic conditions of the environment. Additionally, it is a common practice to use bare hands to fetch food in our homes which is also considered a channel for contamination. A comparative study on the risks involved in the use of hands and cutleries to serve street foods in Ghana by Pradeilles *et al.*, (2021) showed that the use of bare hands to serve increased the level of contamination. Their study recognized serving with bare hands as a critical point in the food industry. The hands are vehicles of transport of pathogens to entry points of the body to cause illnesses. To buttress this point, Mensah *et al.*, (2002) reported that enteropathogens, such as *Salmonella typhi* which can survive on human hands for more than three hours have been isolated in vendors' hands in Ghana. Similarly, Alimi, (2016) also reported that enterogenic *E. coli* of the type isolated in diarrhea cases were isolated in some women's hands in Thailand. By and large, serving food with bare hands is a common practice in most developing countries not except Ghana.

Most (67%) of the respondents agreed that keeping surfaces in and around the kitchen where cooking activities are carried out safe; helped reduce the risk of contracting germs and diseases. Scott and Herbold, (2010) and Fein *et al.*, (2011) reported from their respective studies which contradicted the views of this study that nearly all respondents in their respective studies reported washing their kitchen utensils after using them with raw meat or produce, yet per observing their working area and utensils indicated that most of these consumers did not clean their items sufficiently enough to prevent possible contamination as well as cross-contamination. A majority (35%) disagreed that leftover foods can be kept at room temperature. This view of theirs is endorsed since the mere observance of food makes it impossible for an individual to detect microorganism's presence and subsequent proliferation in the food and so it must be reheated thoroughly to ensure the killing of microbes to a large extent of which the respondents perfectly agreed (76%) to. In line with their views, Alimi *et al* (2016) noted some food handlers used leftover perishable food as well as raw materials for the next day's preparation without storage facilities. From their study, not a single small restaurant owner interviewed by Alimi, (2016) had a refrigeration facility.

The majority (74%) agreed that meat or chicken which is not thoroughly cooked could cause foodborne diseases. Inadequate cooking of ingredients with heavy microbial loads could result in the survival of pathogens of significant health importance to the consumers (Abdussalam *et al*, 1993).

TABLE 4
Knowledge on Food Safety

Variables	*Str.Dis (%)*	*Dag. (%)*	*Neu. (%)*	*Ag (%)*	*Str. Ag. (%)*	*M*	*Sd*
Sponge and wiping cloth can spread microorganisms	4	6	5	78	7	3.78	0.824
The same cutting board can be used for both raw and cooked foods provided it looks clean	3	5	9	80	3	3.75	0.729
Cooked foods should be thoroughly reheated	4	2	14	76	4	3.74	0.747
Safe water can be identified by the way it looks	15	16	11	54	4	3.16	1.204
Leftover foods can be kept at room temperature	6	37	31	25	1	2.78	0.927
Pasteurized milk is safer than bulk milk	5	4	42	47	2	3.70	0.812
Consuming foods from swollen cans may cause death	6	6	49	34	5	3.26	0.883
Keeping kitchen surfaces clean reduces the risk of illness	7	3	8	67	15	3.80	0.974
Keeping raw and cooked food separate helps prevent illness	4	5	20	66	5	3.63	0.825
Meat or chicken that is not cooked thoroughly can cause disease	3	7	11	74	5	3.71	0.795
Overall Percentage	**5.7**	**9.1**	**20**	**60.1**	**5.1**		

Risk knowledge in food safety

The respondents registered their overall risk on food safety knowledge score of 68.7% which is above average (more than 50 percent), indicating that generally, the performance of the entire respondents was quite adequate regarding risk on food safety knowledge. However, 31.3% of the respondents had insufficient knowledge of the risk associated with food safety (less than 50 percent) in Table 5. The study sought respondent's knowledge on the side effects of eating unhealthy foods of which slightly below average 47% indicated to be very knowledgeable whereas 23% suggested not knowledgeable. However, 30% of the respondents could not state whether they were knowledgeable or not in Figure 2. Research studies have proven beyond the necessary presumption that the hand is a major source for spreading pathogens around the kitchen (Fischer *et al.*, 2007, Kennedy *et al.*, 2011). Based on this, a question was asked if the respondents washed their hands before and during food preparation; 81% stated YES and 19% NO to this question. The finding from the study is in agreement with the studies conducted by Quick *et al.*, (2013) and Kennedy *et al.*, (2011), whose study reported that virtually all consumers in their studies, report washing their hands with soap for about 20s before preparing food most frequently.

In related studies, consumers stated their awareness of why the need to frequently wash their hands, yet they do not engage in proper and thorough washing of their hands. The study sought to evaluate the respondents whether to use separate knives and cutting boards when preparing raw and cooked foods; 57% said yes and 43% indicated no to this question in Table 5. The findings in the study contradict a study by the American Dietetic Association (2011), which reported that nearly three-quarters of consumers in as much as possible keep their raw meat, poultry, and seafood separate from ready-to-eat food products whereas nine in every ten use different plates for raw and cooked meat (Byrd-Bredbenner *et al.*, 2013). The study further sought from the respondents whether they stored raw and cooked foods in the refrigerator separately in covered dishes; the majority (74%) indicated to have practiced that whereas 26% stated 'no' to that.

The findings from the study contradict the view of the studies by Kennedy *et al.*, (2005) and Byrd-Bredbenner *et al.*, (2013) where only a quarter of consumers reported regularly checking and assessing refrigerator temperatures, and another quarter did not even have a refrigerator thermometer.

From our study, a majority (47%) were ignorant about the dangers of eating unhealthy foods (Fig.3).

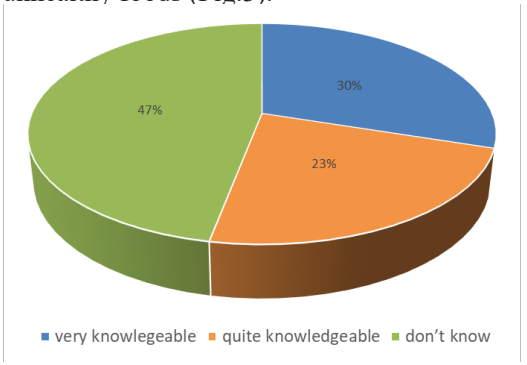

Fig. 3: Knowledge of side effects of unhealthy food

We also found that many (57%) participants believed it was necessary to separate knives and cutting boards between preparing different foods. (Mosupye and Von Holy, 2000) observed that raw meat and poultry as well as gravy and salad being sold by a vendor in Johannesburg, South Africa were cut and chopped with the same knife on the same surface without cleaning in-between.

Furthermore, they were more likely to use wooden cutting boards, thus increasing the potential risk of cross-contamination. A large number (81%) did believe it was necessary to wash their hands after handling raw meat, poultry, or fish. Alimi, (2016) reported that this practice is usually not made possible due to the scarcity of water in some areas. These behaviors are associated with the spread of pathogens like *Salmonella spp., Campylobacter spp, Listeria spp, Escherichia coli* O157:H7, and *Yersinia enterocolitica* (Oldfield 3rd, 2001, Langiano *et al.*, 2012, De Giusti *et al.*, 2010).

Some surveys found that some individuals consumed raw foods which facilitates the toxic abilities of foodborne pathogens in which adequate cooking is effective in killing such pathogens. Many outbreaks of *Escherichia coli* O157:H7 infection have been associated with the consumption of undercooked beef, while an invasive *Listeria monocytogenes* infection has been linked to undercooked hot dogs (Meng and Doyle, 1998, Oldfield 3rd, 2001). Good housekeeping in food production can therefore be described as Good manufacturing practices (GMP) and vice-versa and it can ensure the production of safe food products with consistent quality (Nordenskjöld, 2012) in our homes.

TABLE 5

Risk Knowledge on Food Safety

Variables	*Yes (%)*	*No (%)*	*M*	*Sd*
Do you wash your hands before and during food preparation?	81	19	1.19	0.394
Do you separate knives and cutting boards when preparing raw and cooked foods?	57	43	1.43	0.498
Do you reheat cooked food until it is piping hot though?	82	18	1.18	0.386
Do you thaw meat in a cool place or refrigerator	81	19	1.19	0.394
Do you store cooked foods in a cool place within two hours after cooking	43	57	1.57	0.498
Do you store raw and cooked foods in the refrigerator separately in covered dishes	74	26	1.26	0.441
Do you wash fruits and vegetables with safe water, dishwashing liquid, and disinfectant	63	37	1.37	0.485
Overall Percentage	**68.7**	**31.3**		

The purpose of this study was to assess the safety knowledge of food prepared at home in the Ho Municipality. The study found females to be the majority of the respondents which are within the age bracket of 25 years. This gives credence to the usual perception that females are dominant in food prepared at home because most men (males) are not good cooks. The majority of the respondents attained a higher level of education. The implication is that respondents with a high level of education mostly had much knowledge of food safety and its related risk issues. The study also identified mothers, although not the majority imply that women engaged and play a vital role in preparing home-based food.

Conclusion

The study explored the knowledge of participants on the safety of food prepared at home and its risk awareness in the Ho Municipality. The study found that a higher number of participants had adequate knowledge of food safety which is slightly above average (more than 50 percent), indicating that generally, the performance of the entire respondents is quite adequate regarding food safety knowledge. Most pointed out that keeping the kitchen surfaces clean reduces the risk of illness. Most of the respondents registered their overall risk on food safety knowledge score to be above average (more than 50 percent), indicating that generally, the performance of the entire respondents is quite adequate regarding risk on food safety knowledge

Although television and other mass media have a wider reach, government publications are more trusted and, hence, can be used more effectively in educating consumers. Educational materials need to emphasize safe food handling practices to begin in childhood and continue to be refined throughout the lifetime to avoid food-borne illnesses. Food safety information should be age-specific, school-based, and reinforced

through classes. For food safety education to be effective, it must be a collaborative effort between children, parents, educators, and food safety professionals.

In conclusion, educational efforts among seniors should include the most current, research-based scientific facts associated with food safety, the link between inappropriate practices and threats to their health, and preferred delivery methods. Such educational efforts will support safe food handling at home and, thus, the continued independence of consumers in their homes.

Acknowledgment

The authors gratefully acknowledge the support from all the participants in the Ho Municipality.

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Received 21 Nov 22; revised 10 May 24.