

Knowledge and Practices of Food safety among Senior secondary school students of Ambassadors College, Ile- Ife, Nigeria

Article by Lamidi Rasheed Emmanuel
Ph.D. in Public Health, Texila American University
E mail: adelam77@yahoo.com

Abstract

Background: Food safety is a public health concern and it remains a critical issue with outbreak of food- borne illness resulting in substantial costs to individuals, the community health systems, the food industry and to the economy in general. College students are one of the most at- risk population groups due to their unsafe behavior in food consumption. Knowledge and practices of food safety is very important among students since they are also consumers.

Methods: This study is a cross- sectional study to investigate food safety knowledge and practices of senior secondary school, Ile –Ife, Osun State, Nigeria. A pre-tested 27- item, purpose designed, self- administered questionnaires were used to collect information on knowledge and practices of the respondents on food safety. Data were collated and analyzed based on descriptive and inferential study design.

Results: The result showed that the total percentages of respondents with good level of food safety knowledge is 75.8% (310) with only 24.2% (99) respondents having poor food safety knowledge level as majority of the respondents 65.8%(269) also have high level of food safety practices with only 34.2% (140) of them having low practices on food safety. In addition, the result showed significant association between mothers' educational level and food safety knowledge scores and significant association between food safety practice scores and age, gender, class and household composition of the senior secondary school students ($p < 0.05$). The results also showed no significant correlation between food safety knowledge and practices of the students ($p < 0.05$).

Conclusion: Senior secondary school students of Ambassadors College, Ile- Ife have good food safety knowledge and high food safety practices.

Keywords: Food safety, knowledge, practices

Introduction

Food safety is known as a scientific discipline describing handling, preparation and storage of food in such a way to prevent food borne illness. It is the process of ensuring foods is with minimal risks from harmful effects of bacteria, parasites, viruses, toxins or contaminants. It is the conditions and practices meant to preserve the quality of food to prevent contamination. It involves food hygiene as well as guidelines for management of government import and export inspection and certification systems. It also has to do with safe delivery and preparation of food for the consumers. It is an important issue which relates to the quantity of food production, allocation as well as consumption avoiding the contaminated and deteriorated food (Dong, 2015).

Each year, millions of people all over the world suffer from food- borne diseases and illnesses resulting from the consumption of contaminated food, which has become one of the most wide- spread public health problems in the contemporary world (Sanlier, 2008). So many people get ill and even die each year as a consequence of consuming unsafe food (Dong, 2015). In less developed countries like Nigeria, many people are poisoned because of the consumption of foods produced under unhygienic conditions; lack of hygienic education, contaminated waters; lack of cleaning; inappropriate food storage conditions and pesticide residue (Sanlier, 2008). There is

spread of more than 200 diseases through food- borne illnesses. Food safety is indeed a global concern. (Dong, 2015).

Food safety remains a critical issue with outbreak of food- borne illness resulting in substantial costs to individuals, the community health systems, the food industry and to the economy in general. It is a constant public health concern (Webb & Morancie, 2014). The most common factors contributing to food- borne disease outbreaks include safe keeping of food, poor personal hygiene, contaminated equipment, inadequate cooking, and food from unsafe sources (Sanlier, 2008). Children and adults are usually unaware of basic methods of food handling and preparation, although a substantial proportion of food-borne illnesses can be attributed to improper preparation (Sanlier, 2008).

College students are one of the most at- risk population groups due to their unsafe behaviour in food consuming (Dong, 2015). Knowledge of food safety is very important among students since they are also consumers. Food safety education requires basic training in safe food handling practices, preparation and storage of foods. Lifestyles such as student's eating habit could have an effect on his or her present health and well- being, as habit established during early childhood can continue into later life (Turnbull-Fortune & Badrie 2014).

There are many studies about the knowledge and practices of food safety which were done on different groups (Dong, 2015; Musa & Akande, 2013; Webb & Morancie, 2014). There are limited research findings to determine practices and knowledge of food safety among secondary school students in Nigeria. However, this study is, therefore, directed to investigate the knowledge and practices of food safety among senior secondary school students of Ambassadors College, Ile-Ife, Nigeria as a case sample and to determine the association of certain demographic characteristics of the students with their food knowledge and practices.

Significance of study

There is need to assess the food safety knowledge and practices of this target group because they are more likely to engage in risky eating behavior and practices than other group of people and thus they are more susceptible to food- borne illnesses. Furthermore, assessing their basic knowledge is essential for developing an effective food safety education programs. In addition, the findings from this study can also provide basic and useful information for policy formulation and strategic interventions on food safety.

Statement of problem

Several studies have shown that consumers have inadequate knowledge about procedures needed to prevent food borne diseases and that prevention of food borne illnesses requires educating consumers on safe food handling practices. However, prior to education, it is important to assess food safety issues relevant to consumers. Studies have also shown that College students are one of the most at- risk population groups due to their unsafe behavior in food consumption and that this category of students can be vulnerable to food poisoning and other food borne diseases in institutions such as schools and other places where food and drinks are served or sold. Food borne diseases have been found to continue to be a serious public health environmental problem in developing countries like Nigeria and people often affected are school children.

Moreover, to the best of my knowledge, limited studies focused on young students have been found in the literature and there is no formal study conducted concerning food safety knowledge of secondary school students in Ile- Ife, Nigeria. Therefore, this study aimed at assessing food safety knowledge and practices of these senior secondary school students and to investigate the association between food knowledge

and practices and certain demographic characteristics of these students.

Research questions

The major research questions for this study include the followings:

1. Do senior secondary school students of Ambassadors College in Ile-Ife know about food safety?
2. Do senior secondary school students of Ambassadors College in Ile-Ife engage in food safety practices?
3. Is there any association between food safety knowledge of these students and their socio-demographic characteristics?
4. Is there any association between food safety practices of these students and their socio-demographic characteristics?
5. Is there any correlation between food safety knowledge and practices of the senior secondary school students of Ambassadors College?

Research objectives

1. To assess the knowledge of the senior secondary school students of Ambassadors College, Ile- Ife on food safety.
2. To assess the practices of the senior secondary school students of Ambassadors College, Ile- Ife on food safety.
3. To determine the association between food safety knowledge level and socio-demographic characteristics of senior secondary school students of Ambassadors College, Ile- Ife.
4. To determine the association between food safety practices level and socio-demographic characteristics of senior secondary school students of Ambassadors College, Ile- Ife.
5. To determine the correlation between food safety knowledge and practices of senior secondary school students of Ambassadors College, Ile- Ife.

Literature review

Food safety is a public health concern. Every year in the United States an estimate of 48 million illnesses, 128,000 hospitalization and 3,000 deaths are the consequences of food borne illnesses (Chapman et al, 2010). Food safety continues to be a concern for consumers, regulatory agencies and food industries. Every year millions of people all over the world die and many are hospitalized from food borne diseases and illnesses as a result of consumption of contaminated food (Osailli et al, 2011). Numerous devastating food borne outbreaks of Salmonellosis, Escherichia coli infections, listeriosis, and other diseases. They are the result of ingesting contaminated food items (Webb & Morancie, 2014). Food borne illness can result in long term health consequences and even death especially in young children. Approximately one half of reported food borne illness occurs and an estimated one-third of all related health costs (\$2.3 billion dollars per year) are due to illness in infants and children (Meysenburg et al, 2014).

Food poisoning and other food borne diseases could occur in institutions such as schools, hostels, hospitals and prisons, where food and drinks are served or sold to groups by food vendors or other food handlers (Musa & Akande, 2013). In the last decade a lot of countries began to teach people how to fight pathogens to reduce the occurrence of food borne illnesses (Haapala & Probart, 2004). Several factors are known to favor food borne disease during food handling processes such as poor personal and environmental hygiene, improper preparation and cooking, poor storage of food/ drinks and carrier state with unclean hands (Musa & Akande, 2013). World Health Organization developed preventive steps to enhance food safety based on these risk factors. These steps are referred to as “golden rules for safe food preparation”.

They are thorough cooking of food, avoiding contact between raw foods and cooked foods, keeping the food at adequate temperature, thorough re-heating of stored food and protection of food from rodents, insects and other animals. It is unfortunate that despite the “Golden rules” food borne diseases continue to be a serious public health problem in developing countries like Nigeria and the categories of people often affected are children (Musa & Akande, 2013). School children are the few set of people that survived the high infant and childhood mortality and they are known as high risk group for intestinal parasitic infection and they are further exposed to hazard of purchasing food from vendors who may harbor dangerous pathogens or have the potentials of spreading infection to a large number of students (Musa & Akande, 2013). Young children have a higher risk than adults for food borne illness due to their under developed immune system, lower body weight and lack of control over meal preparation (Meysenburg et al, 2014).

In the last decades, the epidemiology of food borne diseases is changing with new or unexpected pathogens often emerging on a countrywide or worldwide scale, new foods expanding the range of potential vehicles of pathogens, wider social contexts being involved and new classes of individual also being at higher risk (Buccheri et al, 2007).

Knowledge of food safety is very important among students since they are also consumers (Turnbull-Fortune & Badrie 2014). Knowledge is defined as the capacity to acquire, retain and use information. It is also a mixture of comprehension, experience, discernment and skill (Dong, 2015). It is a complicated construction characterized by the structure and the content of the information stored in the memory (Dong, 2015). Practice is regarded as the application of rules and knowledge that leads to action (Dong, 2015). Food safety knowledge is important to prevent food borne illness (Chapman et al, 2010). Learning about basic knowledge and practices of young consumer is essential for the development of effective health education programs in Nigeria. The need for enhanced food safety education started to be recognized in developed countries with the launch of national initiatives to find way to educate consumer effectively, especially youngsters and adults who prepare food (Sanlier, 2008).

Food safety knowledge and behavior among young adults have been studied in different parts of the globe. The result revealed that this group of consumers are engaged in food safety behavior that put their health at risk for food borne diseases. A recent study showed that over 50% of the Saudi college students consumed raw eggs and raw white cheese and 34% believed that there is no risk of disease from eating cooked food kept at room temperature for one day if covered. About one third of the American college students reported eating fried eggs with soft yolks and about half reported eating raw cookie dough, and undercooked chicken and hamburger. In Turkey, more than half of young consumers (Chapman et al, 2010) did not know that internal temperature of the food is the safest way to know if the meat was cooked well (Osailli et al, 2011).

Nowadays, in spite of general knowledge about the importance of hygiene, the incidence of food borne illness is high. A FAO/WHO assessment in 1983 said that consumption of infected food caused most of the illnesses and the biggest expense around the world (Haapala & Probart, 2004). National and international survey show that people still do not have appropriate knowledge of food safety. As a result, more and more countries organize educational courses to improve skills and knowledge regarding food safety (Haapala & Probart, 2004). Inadequate food safety laws, weak regulatory systems, lack of financial resources to invest in safer, inadequate knowledge of food borne diseases and their causes, improper handling of food and unhygienic environments among others have been identified as some of the causes of food borne diseases (Adebukola, Opeyemi & Awosika, 2015). Foods that are served to

customers should be clean and safe, free from poisonous substances, contaminants or spoilage. If foods are not clean and safe, health hazards may occur (Musa & Akande, 2002).

Methods

Research design, study area and population

A cross-sectional study was conducted in November 2015 on food safety knowledge and practices of senior secondary school students of Ambassadors College, Ile-Ife, Osun State, Nigeria. The study was carried out in Ambassadors College, a well-known and reputable private secondary school in Ile-Ife town. Ile-Ife is an ancient city of Yoruba land situated in Osun State which is located in the South-Western part of Nigeria. The study population consisted of the secondary school students' boys and girls in the senior secondary one, two and three (SS1, SS2, and SS3) of the College.

Data collection

Information was collected from respondents by means of a pre-tested 27-item, purpose designed, self-administered anonymous questionnaire containing closed ended questions.

The questionnaire was divided into three major sections: Section A contained 7 items focusing on socio-demographic characteristics of the senior secondary school students. Section B contained 10 items focusing on questions related to knowledge of the senior secondary school students on food safety while section C contained 10 items focusing on questions related to food safety practices of the senior secondary school students of the College. Answers were graded by assigning 1 point for the right answers and 0 point for the wrong answers given to the questions on food safety knowledge. Scores regarding food safety knowledge range from 0 to 10. Answers to the questions on food safety practices were graded as follows: 'almost never', 1 point, 'sometimes', 2 point, 'often', 3 point and 'always', 4 point. Scores regarding food safety practices vary from 11 to 44. Each questionnaire takes approximately 4 minutes to administer.

Sample size determination

The minimum sample size was calculated using the **Leslie and Kish formula** for descriptive studies $N = P(1-P) Z^2/D^2$ where N is the minimum sample size needed; D is the level of error that can be tolerated (0.05 chance of error) and P, the estimated proportion of food safety knowledge among college students from a previous study (Osaili et al, 2011) was 33.9% i.e. $p= 0.80$. Z is the standard variation corresponding to confidence level. At confidence level of 95%, $Z= 1.96$. Therefore, $N = 0.34(1-0.34) 1.96^2/0.05^2 N= 344$. To give allowance for an anticipated non-response rate of 10% (34 respondents), the sample size was increased by 34 to make **378** respondents. A total of 420 questionnaires were then taken to the school to be distributed for the study.

Sampling method

Each secondary class level from SSI to SS3 has four arms. A simple random sampling technique was employed to select a minimum of 140 senior secondary school students at random from each class level (i.e. 140 from SS1, 140 from SS2 and 140 from SS3) of the senior classes of Ambassadors College, Ile-Ife with age ranges from 12 – 20 years to make a total of 420 students to participate in the study. Of the 420 questionnaires distributed, 409 (response rate of 97%) were returned and used for the analysis. Each respondent was provided with an assurance of confidentiality of information provided in the questionnaire.

Data analysis

The completed questionnaires were collated, analyzed and presented using descriptive statistics of simple percentages and frequency distribution. All statistical analyses were performed using the Statistical Package for the Social Sciences, Version 22.0 (SPSS, Inc., Chicago, IL, USA). Means and standard deviation were used to present the scores of food safety knowledge and practices of the students. Chi-square test was performed to test for differences in socio-demographic and Academic variables between students who passed the food safety knowledge questions and those who failed. Findings with a P-value < 0.05 were considered to be statistically significant. Analysis was stratified by gender to show how responses to the variables of knowledge and practices on food safety differ for males and females. Also inferential statistics of chi squares was used to determine the association between socio-demographic variables and food safety knowledge and also between socio-demographic variables and food safety practices of the respondents. Inferential statistics of Person product moment correlation coefficient was used to determine the correlation between food safety knowledge and practices of senior secondary school students of Ambassadors College, Ile- Ife.

Results

Demographic characteristics of the study population

A total number of 409 senior secondary school students of Ambassadors College participated in the study in which 48.9% of them were males and 41.1% were female. Majority of the respondents (58.9%) were between the ages of 12 and 14 years. The result also showed that the percentage distribution of the students in their various classes were very close as we have 38.9% in SSI, 33.5% in SS2 and 27.9% in SS3. Largest percentages of them were Christians (94.6%) as shown by the result. The results also showed that largest percentages of them were Yoruba (93.9%), living with parents (94.6%) and having their mother educational level being 12 or more years (91.0%) as shown in Table 1.

Table 1. Demographic characteristics of the study population

Socio- demographic characteristics	Number of respondent N (%)	Percentage (%)
Age:		
12-14	241	58.9
15-17	157	38.4
18-20	11	2.7
Total	409	100.0
Gender:		
Male	200	48.9
Female	209	51.1
Total	409	100.0
Class:		
SS1	159	38.9
SS2	137	33.5
SS3	113	27.6
Total	409	100.0
Religion:		
Christianity	387	94.6
Islam	21	5.2
Traditional	1	0.2
Total	409	100.0
Tribe:		

Yoruba	384	9.39
Igbo	23	5.2
Hausa	2	0.5
Total	409	100
Household Composition:		
Living with parents	387	94.6
Living alone	8	2.0
Parents separated	14	3.4
Total	409	100.0
Mother educational level:		
< 12 years	37	9.0
12 years or more	372	91.0
Total	409	100.0

Food safety knowledge levels of the respondents

To determine the level of food safety knowledge, scoring for each question is assessed for correctness and the total score obtained is between 0- 10. The total percentages of respondents with good level of knowledge of food safety scoring between 5- 10 of the total score is 75.8% (310) and only 24.2% (99) respondents have poor level of knowledge of food safety with total food knowledge scores between 0-4 (as in Table 2a). The mean of the food safety knowledge score of the respondents was calculated to be 5.50 ± 1.482 . Table 2b shows the total number and the percentages of correct responses given by the senior secondary school students of Ambassadors College on the whole questionnaire on food safety knowledge. Close to three- quarter (70.2%) of the respondents knew that they should look at the expiry date to understand if the milk is safe or not for consumption. Less than half (44.5%) of the respondents knew that it is wrong to eat tinned food if the cover of the tin is bloated or tight. Approximately half of the respondents (49.9%) know that the safest way to control if meat has been cooked well is to check its internal temperature with a food thermometer as 68% of the respondent knew that the internal temperature of chicken must be high for safe cooking. The result also showed that 75.8% of the students knew that pasteurized milk can be stored at refrigerator temperature for a maximum of 3 days in its unopened box as 44% of the students gave the right answer to the question on the most suitable temperature ($4-7^{\circ}\text{C}$) at which bacteria grows and 13.7% to the question about how to clean cutting- boards. Less than half (42.1%) of the respondents knew that raw chicken, fish and meat should not contact each other as majority of them (91.9%) knew that bacteria transmitted from hands to food can result in the growth of harmful microorganisms in food. Also, 48.9% of the respondents knew that holding hands under cold tap water before touching food so as to get rid of bacteria is not enough.

Table 2a. Food safety knowledge levels of the respondents

Scores	Grade	N	%
0-4	Poor	99	24.2
5-10	Good	310	75.8
Total		409	100.0

Table 2b. Responses to food safety knowledge questions

Questions	Correct answers		Incorrect answers	
	N	%	N	%
1. You should test milk rather than look at its expiry date to understand if it is safe or not. Yes or No? (No)	287	70.2	122	29.8
2. It is wrong to eat tinned food if the cover of the tin is	183	44.5	226	55.3

bloated or tight. Yes or No? (Yes)				
3. The safest way to control if meat has been cooked well is to check its internal temperature with a food thermometer. Yes or No? (Yes)	204	49.9	205	50.1
4. Internal temperature of chicken must be high for safe cooking. Yes or No? (Yes)	278	68.0	131	32.0
5. Pasteurized milk can be stored at refrigerator temperature for a maximum of 3 days in its unopened box. Yes or No? (Yes)	310	75.8	99	24.2
6. The most suitable temperature (4–7 °C) at which bacteria grows is the temperature of the refrigerator. Yes or No? (No)	180	44.0	229	56.0
7. If a cutting-board will be used to cut different types of food such as vegetables and meat, you should clean the board with a clean towel to prevent bacterial growth. Yes or No? (Yes)	56	13.7	353	86.3
8. Raw chicken, fish and meat should not contact each other. Yes or No? (Yes)	172	42.1	237	57.9
9. Bacteria transmitted from hands to food can result in the growth of harmful microorganisms in food. Yes or No? (Yes)	376	91.9	33	91.9
10. It is enough to hold your hands under cold tap water before touching food so as to get rid of bacteria. Yes or No? (No)	300	48.9	209	51.1

Food safety practices level of the respondents

The result showed that about two- third of the respondents (269) have high level of practices on food safety with total score of 65.8%. Only 34.2% (140) respondents have low practices on food safety as in Table 3a. The calculated mean and standard deviation of food safety practices score of the respondents are 21.41 ± 9.295 with the scores ranging from 0 -40. Food safety practices of the senior secondary school students are presented in Table 3b. The result showed that 80% of the students always ensure purchasing food that is clean and in fresh condition and 70.1% always wash their hands before preparing and eating food at home while 42.5% always wash their hands before eating food in the school canteen/restaurant. The results also showed that 50% of the students always check the expiry date on the food packages before purchase, 42.6% always do not eat raw or uncooked eggs and foods made from raw eggs and 58.7% always put the easy-to-spoil foods into the refrigerator as soon as they buy them. In addition, 28.1% always taste food to see if it is safe or not and 43.2% always dry their hands with paper towel or tissue after washing them. Besides, a very large percentage (84.1%) always eat meat after it has been cooked well and do not consume raw meat while approximately one- third (35.5%) of the respondents always prefer to reheat the leftovers by using microwave oven.

Table 3a. Food safety practices level of the respondents

Scores	Grade	N	%
0-19	Low	140	34.2
20-40	High	269	65.8
Total		409	100.0

Table 3b. Responses to food safety practices questions

Practices	Almost never (%)	Sometimes (%)	Often (%)	Always (%)
1. I always ensure purchasing food that is clean and in fresh condition.	2.4	7.6	10.0	80.0
2. I wash my hands before preparing and eating food at home.	1.0	14.2	14.7	70.1
3. I wash my hands before eating food in the school canteen/restaurant.	10.0	28.4	19.2	42.5
4. I check the expiry date on the food packages before purchase.	5.1	25.0	19.9	50.0
5. I do not eat raw or uncooked eggs and foods made from raw eggs.	24.8	23.3	9.2	42.6
6. I put the easy-to-spoil foods into the refrigerator as soon as I buy them.	8.1	16.2	17.0	58.7
7. I taste food to see if it is safe or not.	26.7	30.1	15.2	28.1
8. I dry my hands with paper towel or tissue after washing it.	7.4	28.4	21.0	43.2
9. I eat meat after it has been cooked well, I do not consume raw meat.	5.1	6.1	4.7	84.1
10. For leftovers, I prefer to reheat it by using microwave oven.	19.1	26.2	19.1	35.5

Association between socio- demographic characteristics and food safety knowledge level of the students

The association between socio- demographic characteristics and food safety knowledge level of the students is shown in Table 4. Using Pearson Chi- square test, significant association was found only between mothers' educational level and food safety knowledge scores of the respondents among other socio-demographic variables considered in this study ($p < 0.05$).

The association between socio- demographic characteristics and food safety practices level of the students

The association between socio- demographic characteristics and food safety knowledge level of the students is shown in Table 5. Also, using Pearson Chi- square test, significant association was found between food safety practice scores and age, gender, class, household composition of the respondents among the socio-demographic variables considered in this study ($p < 0.05$). There was no significant association between food safety practice scores and religion, tribe and mothers' educational level of the respondents ($p < 0.05$).

Table 4. The association between socio- demographic characteristics and food safety knowledge level of the students

Variable	Total knowledge scores		p- value
	Poor	good	
Age:			
12-14	20.7	79.3	0.125

14-17	28.7	71.3	
18-20	36.4	63.6	
Gender:			
Male	24.5	75.5	0.892
Female	23.9	76.1	
Class:			
SS1	23.3	76.7	0.901
SS2	24.1	75.9	
SS3	25.7	74.3	
Religion:			
Christianity	24.8	75.2	0.467
Islam	14.3	85.7	
Traditional		100.0	
Tribe:			
Yoruba	24.2	75.8	0.670
Ibo	21.7	78.3	
Hausa	50.0	50.0	
Household composition:			
Living with parents	23.3	75.7	0.072
Living alone	25.0	75.0	
Parents separated	50.0	50.0	
Mothers educational level:			
< 12 years	37.8	62.2	0.042
12 years or more	22.8	77.2	

Correlation between food knowledge and food safety practice scores of the respondents

Table 6 shows the correlation between food knowledge and food safety practice scores of the senior secondary school students considered in the study. The result showed that there was no significant relationship between food knowledge and food safety practice scores of the respondents ($p < 0.05$).

Table 5. The association between socio- demographic characteristics and food safety practices level of the students

Variable	Total practice scores		p- value
	low	High	
Age:			
12-14	25.5	70.5	0.049
14-17	41.4	58.6	
18-20	36.4	63.6	
Gender:			
Male	41.5	58.5	0.002
Female	27.3	72.7	
Class:			
SS1	25.2	74.8	0.006
SS2	38.0	62.0	
SS3	42.5	57.5	
Religion:			
Christianity	34.9	65.1	0.448
Islam	23.8	76.2	
Traditional		100.0	
Tribe:			

Yoruba	34.1	65.9	0.525
Ibo	39.1	60.9	
Hausa	-	100.0	
Household composition:			
Living with parents	33.6	66.4	0.025
Living alone	12.5	87.5	
Parents separated	64.3	35.7	
Mothers educational level:			
< 12 years	35.1	64.9	0.903
12 years or more	34.1	65.9	

Table 6. Correlation between food knowledge and food safety practice scores of the respondents

Correlations

		Food safety practice scores	Food safety knowledge score
Food safety practice scores	Pearson Correlation	1	.069
	Sig. (2-tailed)		.161
	N	409	409
Food safety knowledge score	Pearson Correlation	.069	1
	Sig. (2-tailed)	.161	
	N	409	409

Discussion

This study was conducted to assess the food safety knowledge and practices of the senior secondary school students of Ambassadors College, Ile- Ife and to determine the association that exists between food safety knowledge level and between food safety practices level and socio-demographic characteristics of these students and also to determine if any correlation exists between their food safety knowledge and practices.

Food safety is a public health concern and it remains a critical issue with outbreak of food- borne illness resulting in substantial costs to individuals, the community health systems, the food industry and to the economy in general (Webb & Morancie, 2014). Knowledge of food safety is very important among students since they are also consumers (Turnbull-Fortune and Badrie, 2014).

The sex distribution in this study had more male respondents than female respondents. This result is similar to a study carried out in 2012 which also reported male respondents higher in number than female respondents (Norazmir et al, 2012). The result also showed higher Christian respondents and Yoruba respondents than any other religions and tribes respectively. This result can be explained by the fact that the sampled private school is primarily a Christian college school located in Yoruba land. This invariably shows that the study environment will usually reflect the characteristics of the study population.

Majority of the students considered in this study have good level of knowledge on food safety. This study is in line with a related study conducted by Osaili et al, 2011 who rated the food safety knowledge of their respondents to be excellent/good. The result is also in line with that of Norazmir et al, 2012 who obtained that their respondents have a good knowledge on food safety which is about 88.7% (354) and only 0.3% respondents take in poor level of knowledge.

The result in this study also showed that about two- third of the respondents (269)

have high level of practices on food safety with total score of 65.8% and only 34.2% (140) respondents have low practices on food safety. The percentage obtained by Norazmir et al, 2012 in their study was 79.1% which was higher than the one obtained in this study. The outcome of this study also showed that significant association was found only between mothers' educational level and food safety knowledge scores. Osaili, et al (2011) on the contrary in their study showed that there was strong association between college status, students major and self-rated food safety knowledge and food safety knowledge score.

The result also showed that significant association was found between food safety practice scores and age, gender, class, household composition of the respondents in this study. This implies that age, gender, class and household composition of the respondents are associated with their food safety practices. Finally, there was no significant correlation between food safety knowledge and food safety practices of the students while Norazmir et al, 2012 in their study showed correlation between food safety knowledge and practices on food safety indicating a small positive correlation with [$r = 0.148$, $n = 221$, $p < 0.05$] for Sekolah Tinggi Arab Maahad and [$r = 0.053$, $n = 178$, $p < 0.5$] for Sekolah Menengah Kebangsaan Gelang Patah.

Limitation of the study

This study is not without some limitations. One, the study is based on self-reported information and thus is subject to self-report bias. To correct this, effort was made to reduce the impact of this bias by making the questionnaire a guided self-administered process. Two, the students used for this study were drawn mainly from a private high school in Ile-Ife and therefore the outcome of the study cannot be generalized as they are not true representatives of all the secondary school students in Ile-Ife.

Conclusion

The outcome of this study reveals that majority of the senior secondary school students considered in this study have good level of food safety knowledge and about two-third of them have high level of food safety practices. Also, the study shows a significant association between mothers' educational level and food safety knowledge scores and significant association between food safety practice scores and age, gender, class and household composition of the senior secondary school students. Lastly, in this study, there was no significant correlation between food safety knowledge and food safety practices of the students.

Recommendation

In view of the above conclusion, the followings are therefore recommended:

1. Attention should be given to the monitoring and evaluating food safety practices among Ambassadors College students.
2. There is need for continuous educational programs to improve the food safety practices of these students.
3. Food safety knowledge and practices of these private college students can be compared with those in the public or rural secondary schools.
4. Food safety knowledge and practices of students from other Colleges for the entire Ile-Ife town in a larger way can also be conducted.

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