

# **Awareness Regarding Healthy Eating Practices to Prevent Food Borne Disease among Somali Students Living in Bashundhara, Dhaka Bangladesh**

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## **Abstract**

**Background:** Food borne disease is one of the major global emerging health problems in the world. Prevalence of is Increasing daily. Overall awareness and modifying one's lifestyle could be beneficial to the reduction of food borne diseases. Majority of the cases are found in the developing countries. South Asian countries such as India and Bangladesh have a higher risk of food borne diseases which is rapidly increasing. True incidence of FBDs is difficult to evaluate, as many cases remain undeclared. WHO estimates that, worldwide food borne and water borne diarrheal diseases taken together kill about 2.2 million people annually and 1.9 million of them are children.

**Method:** A cross sectional survey study was used to determine awareness regarding healthy eating practices to prevent food borne disease among Somali students living Bashundhara Dhaka, Bangladesh. Structured questionnaire was used and face to face interview were carried out by the researcher himself. A total of 217 Somali students were selected by using convenient sampling technique. Chi square was employed to examine the association between socio demographic characteristics and awareness regarding healthy eating practices to prevent food borne disease of Somali students after adjusting for significant variables  $p < 0.05$  level associated with awareness and within study site.

**Results:** Regarding awareness on food borne disease and healthy eating practices 51% Somali students were aware of food borne disease; the level of awareness was not good also their attitude towards healthy eating and hygiene practice of Somali students 68.2% they store raw or cooked food for use at house hold in refrigerator, according their utensils in a kitchen 53.0% they are properly manage utensils after food properly cooked, and 92.2% they cooked well in chicken and meat.

**Conclusion:** Awareness regarding healthy eating practices and prevention of food borne disease in Somali student was not good. Thus, there is a need for public health educational interventions.

**Keywords:** Awareness; Healthy Eating Practices; Food Borne Disease; Somali Students

**Abbreviations:** FBD: Food-borne diseases; FBS: Food borne Sickness; WHO: World health organization; FSIS: Food safety and inspection service; CDC: Center of disease control.

## Introduction

Food-borne diseases (FBD) are defined by the World Health Organization (WHO) as “diseases of infectious or toxic nature caused by agents that enter the body, or thought consumption of food or water” [1]. More than 250 FBDs have been described. In many countries, national health care organizations record FBD outbreaks, defined as the occurrence of two or more cases of a similar illness resulting from the ingestion of a common food [2]. The causes of food borne illness include viruses, bacteria, parasites, toxins, metals and prions, and bio toxins or pesticides occurs primarily through eating food and drinking water contaminated with pesticide residues, whereas substantial exposure can also occur in or around the home. Regarding the adverse effects on the environment (water, soil and air contamination from leaching, runoff, and spray drift, as well as the detrimental effects on wildlife, fish, plants, and other non-target organisms), many of these effects depend on the toxicity of the pesticide, the measures taken during its application, the dosage applied, the adsorption on soil colloids, the weather conditions prevailing after application, and how long the pesticide persists in the environment [3-6].

The symptoms of foodborne illness range from mild gastroenteritis to life- threatening neurologic, hepatic and renal syndromes. True incidence of FBDs is difficult to evaluate, as many cases remain undeclared. WHO estimates that, worldwide food borne and water borne diarrheal diseases taken together kill about 2.2 million people annually and 1.9 million of them are children [7].

The global incidence of food borne disease is difficult to estimate, but it has been reported that in 2005 alone 1.8 million people died from diarrheal diseases. A great proportion of these cases can be attributed to contamination of food and drinking water. Additionally, diarrhea is a major cause of malnutrition in infants and young children [2,7].

Factors contributing to foodborne illness include improper cleaning of raw foods, cross contamination with microbes such as E. Coli 0157:H7 (found in unpasteurized apple cider), salmonella (found in raw and undercooked eggs), Campylobacter (found in milk), inadequate heating, and improper cooling of foods [8-10].

The high prevalence of diarrheal diseases in many developing countries suggests major underlying food safety problems. In industrialized countries, the percentage of the population suffering from food borne diseases each year has been reported to be up to 30%. In the United States of America (USA), for example, around 76 million cases of food borne diseases, resulting in 325,000 hospitalizations and 5,000 deaths, are estimated to occur each year in Australia, there are an estimated 5.4 million cases of food borne illness every year, causing 18,000 hospitalizations, 120 death [2,11].

In developing countries, a large segment of the population, including children, students, the urban poor, depend largely on street foods to meet their daily nutritional needs which are unhygienic, as it is cost-effective. During recent years, there has been an increasing food poisoning outbreaks resulting in serious health problems [3,12]. In most countries (including the USA and France) bacteria are the leading cause of FBD and appear to be the causative agents of more than two thirds of the recorded FBD outbreaks. *Staphylococcus aureus* is one of the most common agents in bacterial food poisoning outbreaks. Staphylococci being ubiquitous, common inhabitants of human and animal skin, gain entry into the food products under poor hygienic and sanitary conditions. *S. aureus* is commonly found in the nose, throat, hair and skin of more than 50% of healthy individuals [10,13]. Staphylococcal food intoxication is estimated to cause 185,000 cases of food borne illness annually [10,14].

Moreover, majority of the developing countries have limited capacity to implement rules and regulations regarding food safety. Also, there is lack of effective surveillance and monitoring systems for foodborne illness, inspection systems for food safety, and educational programs regarding awareness of food hygiene [1,15].

But there are ways to prevent harmful bacteria from contaminating your food and potentially making you sick, don't leave foods that need to be chilled sitting out. refrigerate and freeze necessary foods right away, do use a meat thermometer to make sure your food is cooked thoroughly, do wash your hands for at least 20 seconds with warm, soapy water before and after handling any raw meats, fruits and vegetables, do wash utensils and disinfect surfaces before and after use ,don't defrost food on the kitchen counter instead use the refrigerator, cold running water, or the microwave oven, don't let food

marinate at room temperature, keep marinating food refrigerated and don't over pack the refrigerator [8,13].

## Methodology

A cross-sectional study will be conducted on a sample of 217 included both male and female Somali students living Bashundhara (Dhaka, Bangladesh), Structured questionnaire was used and face to face interview were carried out by the researcher himself, A convenience sampling technique was applied to select Respondents and Chi square was employed to examine the association between socio demographic characteristics and awareness regarding healthy eating practices to prevent food borne. The Target Population was Somali students living Bashundhara and sampled population will be 217 Somali students living Bashundhara, Dhaka Bangladesh. Bangladesh is a country in South Asia. It shares land borders with India and Myanmar. Bangladesh is the 92nd-largest sovereign state in the world, with an area of 147,570 square kilometers (56,980 sq. mi) and population 164.7 million. Dhaka is the capital city of Bangladesh, in southern Asia. Set beside the Buriganga River, it's at the center of national government, trade and culture [16]. Bashundhara is a private residential area of Vatara Thana in Dhaka District in the Division of Dhaka, Bangladesh [17].

To assess Attitude towards healthy eating and hygiene practice;

Following questions were asked to the respondent Do you wash your hand before and after meal because of Washing your hands before you eat is an effective way to avoid becoming sick. Our hands spread and pick up illness-causing germs quite easily. They spread 80% of communicable diseases and after touching a hard surface, pick up 30-50% of the microorganisms on it [1].

To know how they stored foods by asking this question

Where do you store raw or cooked food for use at house hold?

Because of Raw food and cooked food should be stored separately in the fridge. Bacteria from raw food can contaminate cold cooked food, and the bacteria can multiply to dangerous levels if the food is not cooked thoroughly again. I asked this question to the respondent to know where they mostly eat the food, where do you eat

the food most of time. In developing countries, most of the population, including children, students, they depend largely on street foods to meet their daily nutritional needs which are unhygienic, as it is cost- effective. Resulting outbreak in serious health problems [8,18].

## Ethical Considerations

Ethical approval for this study was obtained from North South University [19], Dhaka, Bangladesh. In addition, informed written consent was obtained from each and every respondent before the data collection. Privacy and confidentiality were strictly maintained and participants had rights to refuse or withdraw from the study at any time.

## Data Analysis

Statistical Package for the Social Sciences (SPSS) version 21.0 were used to analyze the data. Appropriate statistics such as mean, median and standard deviation has been used. Chi-square test has been carried out for comparing proportions in categorical variables. Logistic regression was used to find out adjusted odds ratio. All difference has considered statistically significant at  $p < 0.05$  level.

## Results

A total of 217 of Somali students were recruited in this cross sectional study design. Different independent variables have been measured to find-out outcome. Table 1 shows the frequency of socio-demographic variables of the study population. Study found 50.7% of respondents were in the age 18-24 years, while 46.1% Age group 25-31 years and 32-38 years were 2.3%, 39 years and above were 0.92% .90.8% of respondents were male students and 9.2% were female students. Regarding their monthly income (monthly expenses), Most of students they get their monthly expenses between 16000-20000 Tk (63.6%) while 23.0% they get <16000 Tk and 13.4% of student they get >20000 Tk monthly. Regarding religion of Somali students 100% are Muslim. In their marital status most students 90.8% were single, 9.2% were married. According educational level of Somali students most of students 52.1% were graduate level while 47.9% were undergraduate level. According the number of Somali students living in every flat mostly 47.5% 4-6 person while 27.6% 6-10 person in a flat and 24.9% 2-4 person stay in a flat.

Characteristics	Frequency (n=217)	Percentage (%)
<b>Age of the respondents (year)</b>		
18-24	100	46.1
25-31	110	50.7
32-38	5	2.3
39 and above	2	0.92
<b>Gender</b>		
Male	197	90.8
Female	20	9.2
<b>Monthly income</b>		
<16000 Tk	50	23.0
16000-20000 Tk	138	63.6
>20000 Tk	29	13.4
<b>Religion</b>		
Muslim	217	100.0
<b>Marital status</b>		
Single	197	90.8
Married	20	9.2
<b>Educational level</b>		
Graduate Undergraduate	113	52.1
	104	47.9
<b>Number of persons/Members in your house</b>		
2-4 person	54	24.9
4-6 person	103	47.5
6-10 person	60	27.6

**Table 1:** Socio demographic variables.

Table 2 Shows the distribution of Somali students respondents based on knowledge related variables. The 57.1% of students they know that food borne disease result from consumption of food containing pathogen, toxin chemicals while 23.5% they answer incorrectly about result of food borne disease and 19.4% of students they do not have knowledge about result of food borne disease. According illness feeling of Somali students while they are in Bangladesh 53.9% they feel food illness while they are in Bangladesh and 46.1% of Somali students they do not feel any illness related in food bore disease. 31.8% of Somali students who feel food borne disease they visit a doctor while 13.8% they use home remedies “rest, drink lots of water, etc.” and 8.8% of them they do not used no thing they become well after few days, (NOTE: 99 missing

value because they do not feel any illness and they did not use any treatment). About 52.1% of Somali students they agree that the most common symptoms of food poisoning include upset of stomach, nausea, vomiting and diarrhea while 34.6% strongly agree, 9.2% of them they respond disagree and 4.1% they replay strongly disagree. Their knowledge about most common serious complication of food poisoning is dehydration mostly they respond yes 57.1% while 9.1% they respond no and 33.2% of them they respond we do not know the most common serious complication of food borne disease. Most 54.8% of student they get their knowledge related in food borne disease in internet while get health workers, 13.4% get in newspaper and 12.0% get their knowledge related in food borne disease their family members.

Characteristics	Frequency (n=217)	Percentage (%)
<b>Food borne illnesses result from consumption of food containing pathogen, toxin chemicals</b>		
Yes	124	57.1
No	51	23.5
I do not know	42	19.4
<b>Do you feel any food illness while you are in Bangladesh?</b>		
<b>If you feel any food illness while you are in Bangladesh how did you treat your self</b>		
I visit a doctor	69	31.8
use home remedies "rest, drink lot of water, etc."	30	13.8
Nothing used	19	8.8
Missing value	99	45.6
<b>The most common symptoms of food poisoning include upset of stomach, nausea, vomiting and diarrhea</b>		
Agree	113	52.1
Strongly agree	75	34.6
Disagree	20	9.2
Strongly disagree	9	4.1
<b>The most common serious complication of food poisoning is dehydration</b>		
Yes	124	57.1
No	21	9.7
I don't know	72	33.2
<b>Where did you get information about food borne disease</b>		
Newspaper	29	13.4
Internet	119	54.8
Health workers	43	19.8
Family members	26	12.0

**Table 2:** knowledge related variables.

Table 3 Shows the attitude towards healthy eating and hygiene practice of Somali students 99.1% of respondents mentioned that they used to wash their hands before and after meal while 0.9% of them they don't wash their hands before and after meal. Mostly 68.2% they store raw or cooked food for use at house hold in refrigerator while 22.1% left on the kitchen bench raw or cooked foods and 9.7% store raw or cooked foods in ideal temperature. According their utensils in a kitchen 53.0% they are

properly manage utensils after food while 47.0% left their utensils scattered all over the kitchen for hours before being washed after food. Regarding properly cooked chicken and meat 92.2% they cooked well in chicken and meat while 7.8% they do not concentrate well cooked chicken and meat. Mostly 89.4% of Somali students they eat and cook food in home 9.7% they eat food in a restaurant and 0.9% they food in street foods.

Characteristics	Frequency (n=217)	Percentage (%)
<b>Do you wash your hand before and after meal</b>		
Yes	215	99.1
No	2	0.9
<b>Where do you store raw or cooked food for use at house hold</b>		
Refrigerator	148	68.2
Left on the kitchen bench	48	22.1
Store at ideal temperature	21	9.7
<b>Are household food utensils left scattered all over the kitchen for hours before being washed</b>		
yes	102	47.0
No	115	53.0

<b>Do you ensure food is properly cooked before eating especially meat and chicken</b>		
Yes	200	92.2
No	17	7.8
<b>Where do you eat the food most of time</b>		
At home	194	89.4
Restaurant	21	9.7
Street foods	2	0.9

**Table 3:** Attitude towards healthy eating and hygiene practices.

Table 4 shows that, there was no significant association age of respondents and knowledge of food borne illness ( $P=0.793$ ). There was no significant association gender of respondents and knowledge of food borne illness ( $P=0.438$ ). Monthly income was also not associated with knowledge of food borne illness ( $P=0.067$ ). The marital status of respondents were also

found not associated knowledge of food borne illness ( $P=0.324$ ). There was also statistically association between educational level of respondents and knowledge of food borne illness ( $P=0.000$ ). Number of members stay in a flat were found to be associated knowledge of food borne illness ( $P=0.006$ ).

Variables	Total	food borne disease result from consumption of food containing pathogen, toxin or chemicals		P value
		Good 51%	Poor 49%	
		<b>What is your age</b>		
		<b>Correct</b>	<b>In correct</b>	P= 0.793
18-24	100	59(59)	41(41)	
25-31	110	61(67.8)	29(32.2)	
32-38	5	2(40)	3(60)	
39 and above	2	2(100)	0(0)	
<b>What is your gender</b>				P=0.438
Male	197	114(58)	83(42)	
Female	20	10(50)	10(50)	
<b>What is your monthly income</b>				P=0.067
<16,000 Tk	50	24(48)	26(52)	
16,000-20,000 Tk	138	87(63)	51(37)	
>20000 Tk	29	13(45)	16(55)	
<b>What is your religion</b>				No statistics are computed because what is your religion "is a constant"
Muslim	217	124(57)	93(43)	
<b>What is your marital status</b>				P=0.324
Single	197	113(57.4)	84(42.6)	
Married	20	11(55)	9(45)	
<b>What is your educational level</b>				P=0.000
Graduate	113	70(62)	43(38)	
Undergraduate	104	54(52)	50(48)	
<b>Number of members in your house hold</b>				P=0.006
2-4 person	54	38(70)	16(30)	
4-6 person	103	61(59)	42(41)	
6-10 person	60	25(42)	35(58)	

**Table 4:** Relationship between Socio Demographic Factors and Knowledge of Food Borne.

## Discussion

This cross-sectional study was designed with the justification regarding healthy eating practices to prevent food borne disease among Somali students living in Bashundhara Dhaka Bangladesh. This study has used different types of variables; these are socio-demographic, and knowledge related factors. In this study 217 subjects were enrolled (197 male and 20 female) Somali students living in Bashundhara Dhaka Bangladesh. In this study Percentage of knowledge awareness of food borne disease was 51%, a very similar study in Italy about knowledge of main food pathogen has found bit lower 48.7% knew the main foodborne pathogen [13]. Regarding the distribution of Somali student's respondents based on knowledge related variables, the 43% of students they do not know that food borne disease result from consumption of food containing pathogen, toxin chemicals. Likewise, this is similar in Study conducted on Taif University students, Saudi Arabia which is to evaluate the knowledge, attitude and practice (KAP) on food poisoning of Results showed over 50% of the students lack the knowledge that raw eggs and raw white cheese have high risk for food poisoning. Also over 50% have negative attitude and they believe there is no risk from eating raw egg or drinking raw milk of she camel Sharif L, et al. [18] Previous study shows that knowledge was significantly ( $P < 0.05$ ) greater among those with a higher education level, in practice from a longer period of time, and who had attended education courses is one of correctly indicated and classified a common vehicles for food borne diseases [13]. However in this study it also reveals that There was also statistically association between educational level of respondents and knowledge of food borne illness ( $P = 0.000$ ). Number of members stay in a flat were found to be associated knowledge of food borne illness ( $P = 0.006$ ).

About half 52.1% of Somali students they agree that the most common symptoms of food poisoning include upset of stomach, nausea, vomiting and diarrhea. And their knowledge about most common serious complication of food poisoning is dehydration half of them 42.9% they do not know because they do not feel any food borne illness while they are in Bangladesh.

A study found that 99.1% of Somali student they wash their hands before and after meal and they have good personal hygiene, but 22.1% Left on raw or cooked food for use at house hold bench in the kitchen Despite continuing progress made in food quality and safety, several foodborne disease outbreaks, and the most

frequently identified factors were cross-contamination, improper cooling, improper storage or holding foods at room temperature for long duration [8].

The participants showed a positive attitude, because vast majority (92.2%) ensure food is properly cooked before eating especially meat and chicken agreed that the correct application of routine food contamination control procedures provide adequate cooking for killing microorganisms. However, it should be pointed out that these findings were supported by food practices. Indeed, because food products consumed raw or without further cooking may become infected during harvesting and processing and that outbreak investigation indicate that food may also become contaminated by the unwashed hands of an infected food handler [13]. Thus, there is a need for public health educational interventions.

## Conclusion

The findings of my Study revealed the student's level of awareness about Regarding Healthy Eating Practices to Prevent Food Borne Disease among Somali Students Living In Bashundhara, Dhaka Bangladesh Was not good; most of the respondents have adequate knowledge food borne disease with significant predictor of level of knowledge related in food borne disease they get in internet usage But their attitude towards healthy eating and hygiene practice were poor such as they do not stored properly so they risk with or vulnerable food borne diseases and cross contamination of foods.

Similarly, more than half of the respondents left scattered household food utensils all over the kitchen for hours before being washed, it is very important to keep worktops and chopping boards clean because they touch the food you are going to eat. If they aren't properly clean, bacteria could spread to food and make you ill. And most of student they feel ill about food borne disease when they come Bangladesh because different food types they eat.

It also reveals that there was significant association age of respondents and knowledge of food borne illness. There was no significant association gender of respondents and knowledge of food borne illness. There was also statistically association between educational level of respondents and knowledge of food borne illness.

Numbers of members stay in a flat were found to be associated knowledge of food borne illness. Overall awareness of food borne disease and prevention was not

good, thus there is a need for public health educational interventions.

### Recommendations

Based on the findings of study the are to of: Awareness among Somali students should be strongly increased, through health promotion, health education and nutritional programs that encourage increase in consumption of fruits and vegetables which is recommended for a good health

- Most foodborne illnesses can be tracked to infected food handlers. Therefore, it is important that strict personal hygiene measures should be adopted during food preparation [8].
- The Somali students should also take precautions for prevention of foodborne illness. These include cooking food at appropriate temperatures and following standard hygiene practices, proper storage and prevention of cross-contamination of food, thus integrated intervention strategies are required to prevent foodborne illness at community level [15].
- Successful implementation of these interventions requires inter-sectorial collaboration including agriculture industry, food industry and health care sector [4,6].
- The contamination of food is influenced by multiple factors and may occur anywhere along the food chain. Good agriculture practice and good manufacturing practice should be adopted to prevent introduction of pathogens into food products [20].

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