

Street food eating habits for university students: A Cross Sectional Study.

#### **SUBMITTED TO**

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# **APPROVAL**

The project paper entitled, "Street food eating habits for University students: A Cross Sectional Study" has been submitted to fill partial supplement for Bachelor of Pharmacy (Honors) degree from Daffodil International University, Dhaka, Bangladesh, Pharmacy Department.

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#### Certificate

This is to certify that the results of degree of Bachelor of pharmacy, is based on the result of Ananna Sarker Mou, (ID: 171-29-1050) own investigation. The investigation that are embodied in this project are original and have not been submitted before in substance for any degree of this University. The entire present work submitted as a project work for the partial fulfillment of the degree of Bachelor of pharmacy, is based on the result of Ananna Sarker Mou, (ID: 171-29-1050) own investigation.

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**DECLARATION** 

I here by declare that, this project report is done by me under the supervision of Md. Mizanur Rahman,

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requirements for the degree of Bachelor of Pharmacy. I am declaring that this Project is my original

work. All information that was envolved from literature has been duly acknowledged in the text

and list of references provided.

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# **DEDICATION**

THIS PROJECT WORK IS DEDICATED TO MY PARENTS AND TEACHERS FOR THEIR DEEP AMICABLE SUPPORT AND HELP.

#### **ABSTRACT**

Food borne disease is one of the most serious health problems in many developing countries in the world including Bangladesh, India, etc. The problem is getting more remarkable because of governing poor quality of food handling techniques and also poor quality of sanitation practices and habits due to lack of proper knowledge. Street food vending has been increasing for several years in many countries all around the world and also has become very popular to the consumers but this has also exposed with alarming rate of public health challenges with evidence of food borne diseases.

The objective of this study is to get the assessment of the level of knowledge, attitude, habits and practices about food safety among street food consumers of university students. The study was conducted using a crosssectional online survey. A total of 100 street food consumers of university students were selected with a purpose of sampling technique and the data were collected by conducting online media as it was an online survey and it was done through several questionnaire. In this study participants majority were of the age group 20 to 29 years old and male were 58.6% and female were 41.4%. All the consumers were university students and majority of them were in 4th year in their study level.95% of the consumers were heard food hygiene but the majority of these participants (62%) don't consult with a doctor and take home remedies. 84.8% of these participants spend below 200Tk daily to consume street food. In case of choosing street food 68% of these participants gives priority on price and quality, as well as 47.5% consumers choose street food in which the vendors are doing more business. 93.9% participants believe in washing hands before eating and 69.4% participants ensure that the street food they buy is cooked and served.80.2% use portable drinking water. 70% participants observe that the vending cart and surroundings kept clean, 64.6% participants observe that vendors kept the raw food and cooked food seperately and 58.6% observe that vendors kept the food covered but only 15% participants are satisfied with surrounding environmental conditions of street food vendors and majority of the participants (76%) are not satisfied. All this findings are very much significant and important as it express the risk which is related with safety appearance of street food. The importance of carrying out food safety education programmes and training programmes for all the consumers as well as the vendors of street food in establishing an overall knowledge based on a proper attitude, good practices which in association with the food industry, regulatory agencies as well as the administration of the government is emphasized.

**Keywords**: Attitude, food safety, knowledge, practices, street food, vendors, personal hygiene.

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#### CHAPTER - 1

#### **Introduction:**

Street foods are the foods and drinks which are prepared in order to sold by the vendors in streets as well as in the public places for the instant consumption by the consumers so that they don't need further processing or preparation. Street food includes various types of foods, fresh fruits and vegetables in various area for the immediate consumption by the consumers. The common characteristics of street food includes they are inexpensive, convenient. Besides food value street food is a great source of income for a large number of street food sellers. As a results it gives a great opportunity for self employment and also give a chance to develop skills about business [1].



Fig. 1: Street Food

Besides this, street food can be explained as the food which is ready-to-eat foods or drinks and it is sold by a the vendor, in a street or other public place, for example footpath, market, rail or bus station, outside of the educational institutions, fair etc. street food is usually sold from a bearable food booth, food cart, food van. Most of the time street foods that are sold has regional recognition but nowadays many street food have spread beyond their region of origin. The types of street food varies among regions and cultures in different countries around the world [2]. In 2007 study from the Food and Agriculture Organization (FAO), almost 2.5 billion people eat street food regularly and the majority of middle-income buyers rely on the very quick access and affordable service of street food for their daily meals and this is a very common scene almost in all developing countries [3]. Nowadays, the consumers of street food purchase street food for several reasons, for example avail, amenities to get palatable and toothsome food for affordable price.

There are many alarming matters of street food such as health hazards and sanitation issues, health problem, environment pollution, prohibited conduct of public or private areas, social and

moral problems, and traffic jam. At the ancient Greece, small fried fish were a type of street food though the Greek philosopher Theophrastus held the custom of street food in low regard. Precedent of a huge number of street food were discovered during the mining of Pompeii. The poor urban citizens of ancient Rome whose lodging homes did not have ovens or cooker. Chickpea soup with the bread pieces and cereal paste were the most common food. In ancient China, street food generally served to the poor and middle income people, however wealthy people also would send their servants in order to buy street food and bring the street foods for them so that they can eat the street foods in their homes [4].

#### 1.1Food Truck:



Fig. 1.1: Food Truck

A food truck is a motorized vehicle or van which is organized to cook, make, serve, as well as sell food [5,6]. In some food truck the vendor store and sell prepackaged food or frozen food like ice-cream, chips, cookies etc and in other type of food truck there has on-board kitchen facilities and prepare food instantly, or they heat up food that was prepared previously in other kitchen. Sandwiches, burgers, French fries, cold coffee and other regional fast food is usually sold through the food truck [7]. Food trucks may also sell other varieties of cold beverages such as soda pop and water, fruit juice etc. Food trucks and food carts are major components of the street food industry that serves an estimated 2.5 billion people every day.

#### 1.2 Food Cart:



Fig. 1.2: Food Cart

A food cart can be called a mobile kitchen which is usually seen on the street to make and sell street food to the consumers. Food carts are also found in cities all around the world selling different types of food [7]. Food carts can be categorized in two different manner. In the first style of food cart the vendor sit or stand inside of the cart and serve food by a means of a window. In the other style the vendor stands next to the food cart, while all the spaces of the cart is used for the storage of the food as well as the cooking machineries and ingredients, The cart style determined mainly by the category of food [8]. Food carts are different from food trucks in the consideration of traveling power. Some food carts are run by another vehicle or man power or animal power. On the other hand food trucks are motorized vehicles [5, 6, 7, 8]. Food trucks and food carts are major components of street food industry which serves a lots of consumers every day in all around the world.

#### 1.3 Street food in different country:

Street food is sold all over the world, but the street food varies depending the regions and cultures of the people as well as the available food ingredients and the tastes of the people.

#### 1.3.1 Bangladeshi Street Food:



Fig. 1.3: Bangladeshi Street Food

Bangladeshi food has it's specific varieties which is influenced by the various historical conditions and river-line geography of Bangladesh. Traditional food items of Bangladesh includes: Mustard seed Ilish curry, Dhakai biriyani, pitha etc. Restaurant food items: Fried rice, chicken fry, beef curry, chicken wings etc. There are various types of sweet items are included in the food menu of Bangladesh, such as rasagolla, rajbhog, mihidana, rasamalai, chamcham, jilapi, jarda polaw, sandesh etc. The people of Bangladesh keep some cultures about eating food such as warm hospitality, food serving way, inviting warmly at weeding or other occasion for a meal etc. and these are known as Bangaliketa. [9]The cooking style of Bangladesh has been greaty influenced by the Mughlai cooking style which was come to the Bangladesh by the Mughal rulers. For this reason Bangladeshi cooking style has been enriched with various items of foods such as food items with rich aroma for example biriyani and korma which requires various types of spices as well as large amount of ghee[10]. As Dhaka was the Mughal capital of the Bengal subah which was a major trading area in South Asia, so many cooking styles from all over the world has been influenced the cooking style of Dhaka. Dhaka has also adopted various cooking styles of Persian, Turkish and Arabic-influenced food items which has become popular [11].

#### 1.3.2 Special regional food items in Bangladesh:

#### 1.Balish Misti:

It is a special desert item of Netrokona in Bangladesh. It is also called little pillow sweet because of it's pillow like shape. This sweet has a story of almost hundred (100) years.

#### 2.Bogurar Doi:

In Bangladesh sweet yogurt is a very popular dessert item and the people of Bangladesh are known with the Bogurar misty doi in one word because the best misti doi of Bangladesh is prepared in Bogura.

#### 3. Cumillar Ras Malai or Rassomalai:

It is a dessert item which was originated in Indian subcontinent. Ras malai is sugary white cream or yellow in colour. Ras malai is consists of balls of chhana which is soaked in malai. Sometimes cardamom flavour is used in rasmalai. The "Matree Bhandar" of Cumilla is the oldest and best of Ras malai in Bangladesh and it is very popular all around the Bangladesh. [12]

#### 4. Chowk Bazaar Iftar:

During the ramadan period a large amount of iftar items are prepared in Chowk Bazaar. Almost 500 items are prepared in that time. This was influenced by the Mughal cuisine.

#### **5.Chui Jhal Mangsho:**

Chui jhal is also called Piper Chaba. In the south region of Bangladesh like Khulna, Bagherhat, Norail, Satkhira, Jessore chui jhal is a very popular item. This is cooked with fish and meat specially with mutton. Chui jhal is a expensive spice in Bangladesh specially It's roots is more expensive than It's seems because of the aroma. The taste of chui jhal is similar with horseradish.

#### 6.Haji Biriyani:

Hajir biriyani is also called Hajir biriyani. The recipe of hajir biriyani is unique and the recipe was handed over by the founder to the next generation. Hajir biriyani is made of special type of rice, mutton and a various types of spices.

#### 7. Muktagachhar Monda:

It is a traditional sweetmeat dessert item of Muktagachha, Mymensingh.It was first made in 1824, for the taste, flavour and originality it is famous in Bangladesh and many countries.

#### 8. Natorer Kachagolla:

Natorer kachagolla is a famous dessert item in Bangladesh. It has not have exact size or shape like other sweet. The demand of the street foods in Bangladesh is very high. The reasons behind it can be the tastes and varieties of foods, easy availability, low cost, readily made, attraction to the tasty foods and most commonly the necessity of the street people. Street food is very popular and has a large demand to the all around of Bangladesh. A lots of food items are prepared to sell as street food in Bangladesh which includes traditional food items, foreigners food items and so many things. The most popular and common street food items of Bangladesh are:

#### **Fuchka:**



Fig 1.4: Fuchka

Fuchka is a crispy round shell which is filled with depending on the type of fuchka like mashed potatoes, yogurt, tamarind syrup, chili powder or chili flakes. It is a mouthwatering street food in Bangladesh. And is definite that the best fuchka is find on the streets.

#### **Badam and Boot:**



Fig. 1.5: Badam and Boot

Bangladeshi street food list will be incomplete without Badam and Boot. We can find Badam and Boot selling van on almost every corner in Bangladesh. They also sell a mix of mostly peanuts, chickpeas, and different types of beans. The seller always carries a burner to roast them immediately so that we can be able to eat them hot, crispy and fresh.

#### Peyaju, Beguni and Chop:



Fig. 1.6: Peyaju, Beguni and Chop

The people of Bangladesh are fond of fried food and we can see the reflects of it in the street food in all around the Bangladesh. Peyaju is mainly prepared with mashed lentils and Beguni is made of brinjals with flour. Both of this two items are deeply fried in oil. In a peyaju and beguni shop we will also find chop which is made of mashed potato and egg which is also prepared by frying. In these shop we can also find prawn chop.

#### Jhalmuri:



Fig. 1.7: Jhalmuri

It is very hard to find a single one in Bangladesh who doesn't like Jhalmuri, this is why this food item is so tasty and mouthwatering. It is made of mixing various ingredients with muri such as peanuts, cucumbers, onions, chillies, tomatoes, chanachur, lemon. All the ingredients are mixed up and shaken in order to make the mouthwatering food.

#### **Roasted Corns:**



Fig. 1.8: Roasted Corns

Roasted corn is a very common look of the street food in Bangladesh because it is seen in almost every street of Bangladesh. The roasted corn sellers keep the corn in a van with burner and when anyone order they roasted it instantly and served with salt as well as with sause in somewhere. For the vegetarian consumer it is one of the most favourite street food in Bangladesh.

#### Bhorta:



Fig. 1.9: Bhorta

In the list of street foods in Bangladesh bhorta is the most favourite item to the female consumers. The street food bhorta can be found in several types but the best ones are the mashed of different types of fruits. All the ingredients are mixed together and served with a various types of sauces. The bhortas are mostly sour in taste with slightly sweetness.

#### Halim:



Fig. 1.10: Halim

Halim' is one of our most favorite local and it is also a street food in Bangladesh. It is prepared by a mixture of different types of lentils, meat and a lot of spices. It is a spicy food and the people of Bangladesh like it very much.

#### **Chanachur:**



Fig. 1.11: Chanachur

The street food vendors make chanachur using special oil and also some other ingredients. It's a crispy type of street food which is liked by everyone. Sometimes the vendors speak out loudly by calling it Gorom Chanachur to catch the attention of the consumers.

#### Singara:



Fig. 1.12: Singara

Singara is looked like a triangular ball shape in which a mixture or curry or different ingredients are file and then fried in deep oil. The size and shape as well as the thickness of the mixture and outer layer can be vary but the among the ingredients potato is a must item. Singara is usually served with chutney[13].

#### Paan:



Fig. 1.13: Paan

In the street of Bangladesh the paan stall is a very common scene because almost in every road anyone can find the paan shop for this reason sometimes It's called that paan is the king of street foods in Bangladesh, someonea called it mouth fresher, drug and someone also called it a digestive. The betel leaf is served with betel nut, tobacco which is optional and different types of sweetener. Usually by chewing it people take the taste and it is also helpful for digestion.

#### Hawai Mithai:



Fig. 1.14: Hawai Mithai

Hawai Mithai is a colorful street food which is beloved by every children even every adult person also have a sweet memory in their childhood about hawai mithai. It seems disappeared when anyone take it in mouth and gives a sweet taste that's why it is called hawai mithai.

#### Fruit Juice:



Fig. 1.15: Fruit Juice

Nowadays a variety of fresh fruit juice has become very popular to the people of Bangladesh in the list of street food. We can find many juice cart in the street specially in the urban area. The includes various types of fruit juice like lemon, malta, watermelon, pineapple, tamarind, mango and so on and these are able to give anyone a very good feeling at the time of their thirst.

#### 1.3.3 Indian Street Food:

Indian foods lists are made of a lots of regional and traditional food items which is inherent to the Indian subcontinent. The variety of the diversity in soil, weather, climate, culture, tradition, ethnic groups, and occupations, these food items vary substantially as well as the availability of locally available spices, herbs, vegetables, and fruits has a great impact on the variety of food items in India [1].

Besides these the Indian foods are also greatly subjugated by religion, cultural view and traditional mean. As well as the centuries of Islamic rule, specially by the Mughals, which has a great impact on Indian food and the most popular mughal items are samosa and pilaf. Many historical events such as invasions, trade relationships as well as the colonialism have played a vital role in making the several food items in Indian cuisine. One of the most important discovery was the Columbian discovery of the New World which brought a lots of new vegetables and fruits items to India. The most common food items which a regularly used in Indian food lists were discovered that time for example potatoes, tomatoes, chillies, peanuts and guava have become most common and popular in many regions of India[14]. Indian street food is as differs as Indian cooking style. We know that each region has its intrinsic prominences to grant.

The most popular street food dishes of India are vada pav, misal pav, chole bhature, parathas, bhel puri, sev puri, gol gappa, aloo tikki, kebabs, tandoori chicken, samosas, kachori, idli, pohe, egg bhurji, pav bhaji, pulaw, pakora, lassi, kulfi and falooda. In Hindi the places of India, street food is popularly called Nukkadwala food which means "corner" of food. In India the street food also varies for example in South India, the most common street foods are mirchi bajji, punugulu and mokkajonna which called the corn roasted on coal, in the breakfast they also like to eat various items of street foods such as idli, dosa and bonda. Many street food vendors have choosen to sell the most popular food items for their business. The popularity of street food is so high that many owners of restaurants have inspired to sell the street food items. [15]

We know that street food is beloved by everyone but the variety and popularity of street food in India is world famous.

The attractive flavours and taste have made Indian street food unique and delicious that's why everybody is very much interested about the street food of India. It doesn't matter where the place is, may be it a market, a mall, bus or train station, school college or university area or even in the normal road there will be always the availability of the street food in India. In India there is no outing which is completed without some chaat or pani puri egg rolls or pakode [16]. Here are a few delicious street food from all over India that you simply cannot say no to:

#### Egg Roll:



Fig. 1.16: Egg Roll

Egg rolls are delicious, mouth-watering tasty food items which are sold on the street sides of Kolkata. It is said that without taking egg rolls the visit of Kolkata is incomplete. [17]

#### Pani Puri:



Fig. 1.17: Pani Puri

Pani Puri is one of the most popular street foods in India. Its' round flatbreads which is called puri is filled with a mixture of various ingredients such as chickpeas, onions, potatoes, chutney, chaat masala, chutney, and soupy water. The mixtures which is made of various ingredients varies from region to region. As well as the name is also varies from state to state. For example in Uttar Pradesh this dish is called Golgappa, in West Bengal it is known as Phuchka, in Central India it's called Gup [16].

#### **Aloo Chaat:**

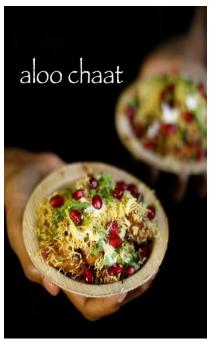


Fig. 1.18: Aloo Chaat

Aloo chaat is a snack which is mainly made of potatoes and beloved by everyone and everywhere. It is popular in not only India but also in Bangladesh and Pakistan. The street food stall of aloo chaat is seen in almost every city in India. Though aloo chaat is made of mainly potatoes it also contains some other ingredients like chutney and spices. The types of spices vary from city to city. Aloo chaat is one of the most popular, mouth-watering snacks in the list of Indian street food.

#### **Ghugni Chaat:**



Fig. 1.19: Ghugni Chaat

In the eastern and northeastern area of India ghugni chaat is one of the most popular street food. This delicious Indian street food is prepared with dried white peas which is doused in a savory gravy and it is topped with some fresh vegetables and regional herbs. This is a vegetarian snacks and it is very much rich in health value when comparing with other street food. [9]

#### 1.3.4 Street Food in China:

#### Jianbing:



Fig. 1.20: Jianbing

Jianbing is also known as Chinese Crepes. It is one of the most common street foods which is eaten for breakfast in China. It is easily available at the street corners of China. The types of jianbing may vary by city, but the main ingredients are generally the same. In the preparation of Jianbing the base is made of egg with fried on a pan and the dough is made of wheat and grain flour. The centre is also filled with different types of ingredients such as scallions, lettuce, cilantro, rich chilli sauce etc.

#### **Huo Guo:**



Fig. 1.21: Huo Guo

Huo guo is more commonly known as Hotpot in China which is a Sichuan specialty and that has spread its influence all over the country. By the passes of time, many variations have been included in each area of China by using various types of meat as well as soup bases, sauces and condiment. The best or the most famous of all huo guo is the Chongqing ma la hotpot, in which addition of Sichuan pepper to the boiling meat broth. It is done to make a burning and spicy sensation in the tongue.

#### Bing tanghulu(Candied hawthorns):



Fig. 1.22: Bing tanghulu (Candied hawthorns)

Bing tanghulu are a type of Chinese hawthorns which is covered with a strong sugar syrup coating and skewered onto long thin sticks of wood. The bing tanghulu is tasted both sour and sweet and it is similar to mini candy apples, but more sour and granular in shape. The most common and popular version of bing tanghulu is found in central Beijing which is stuffed with haws but it can also make from other fruits for example strawberries or apple. The external part of bing tanghulu is crunchy and sweet but the internal part is soft, sweet and also sour because of the fruit.

# 1.3.5Street food in Japan:

#### Takoyaki:



Fig. 1.23: Takoyaki

Takoyaki are golden balls of fried batter which is filled with little amount of spices of various items like octopus, tenkasu, pickled ginger and spring onion. It is originated from Osaka, the dough balls are fried in special cast-iron pans and takoyaki vendors are watched to skillfully flip the balls at a rapid speed, using chopsticks [18]. The cooked takoyaki are eaten piping hot, it is slightly crisp on the outside, sticky on the inside and served in Japanese mayonnaise, a spicy scented brown sauce similar to Worcestershire, aonori and katsuobushi which is made of dried bonito fish flakes. Although iy is originated in Osaka, takoyaki are now widely enjoyed in Japan, specially in Tokyo.

#### Imagawayaki:



Fig. 1.24: Imagawayaki

Imagawayaki is a Japanese street food which is sweet in taste and it treat that is made from different ingredients like a batter of eggs, flour, sugar and water that is baked in disk-shaped molds. The end-product is a golden, bite-sized sponge filled which can be different items like anko or red bean paste, chocolate, or custard. It is named after an Edo-era bridge in Tokyo where this food item was sold for the first time. Imagawayaki is also familiar as taiko-manju in the region of Kansai [18].

#### Yaki Imo:



Fig. 1.25: Yaki Imo

Yaki Imo is a distinctly simple Japanese street food which is made of a baked sweet potato and it is served in a brown paper bag.

To prepare, it is baked over a wood fire. The skin is pleasingly chewing, the inside of Yaki Imo is soft and fluffy and it's taste a little like caramel [19]

#### 1.3.6Street food in Mexico:

**Tacos:** 



Fig. 1.26: Tacos

Tacos is the most important item on the list of Mexican street food [20]. Mexican tacos are generally filled with meat and some consumers may select some of the more interesting animal parts including brains, eyes, tongue. In case of vegetarian consumers they will also find some taco filling with various types of vegetable items like mushroom, potato, beans, or cheese.

#### **Tamales:**



Fig. 1.27: Tamales

Tamales is one of the most favourite street food items in Mexico and it can be found almost everywhere in Mexico. It is also popular in the rest of Latin America, the Caribbean and the US but the Mexican version is undoubtedly one of the best [36]. To prepare tamales the steamed corn dough is wrapped in corn bran or banana leaves and then it is stuffed with cheese, chicken, pineapple. This is the Mexican street food people don't need a plate to eat [21].

#### 1.3.7 Street food in France:

#### Jambon Beurre:



Fig. 1.28: Jambon Beurre

Jambon beurre in France is more than just a ham and butter sandwich which is the combination of the classic baguette, good French butter with a high-quality ham. It is a great street food in France and It's also served in picnics and others meal [21].

#### **French Crepes:**



Fig. 1.29: French Crepes

Crepes is found all over the France and in France there is very few markets where crepes are not found or not sold. The preparation of French crepes is very easy that it can be also made at home [21]. French crepes is very smooth and served with jam, chocolate and also it can be simply served with a little lemon and sugar.

#### 1.4 Importance of Street Food:

- ★In the list of street food we can see that almost in every country's traditional and cultural food menu are included in their street food items. So we can say that street food represents the culture, lifestyle and habits of the people.
- ★In the street food items, we get the prepared food instantly which saves our time and our hunger also. Besides this the working people can take their meal with a very low cost because almost all street food is cheap.

Street food can give us a perspective knowledge with about the lives and mores of the regional people with the various ingredients and aroma across different states and regions. [22]

#### 1.5 Consumers of Street Food:

The customer survey was undertaken by FAO 2006 [23] and other investigators showed that the main consumers of street foods in most of the countries were other members of the informal sector for example hawkers and busier people, casual day laborers. Other important categories of customer of street food were children and students, office workers as well as housewives also [24]. The studies also has learned that street foods were brought across all income groups of people and they spent a proportion of their daily food budget spent on street foods was high, at the range which start from 25 percent to 47 percent in Chonburi, Thailand and many other countries. The frequency of consumption varies in many countries such as street foods were consumed daily and has turned into an integral part of the diet, in others country like in Bangladesh, people brought as supplementary, only a few customers bought them daily. Some of the consumers were found to buy almost all their food from the vendor. The cost of street foods can be compared with that of foods purchased from larger well known food sellers, such as restaurants and fast food stalls. Because of the high costs of fuel and ingredients in urban region economies of scale can help in making a street food cheaper than the same food prepared at home [25,26].

#### 1.6 Increasing Demand of Street Food:

We know that the population in urban region of Bangladesh is increasing day by day. As a result of development has led to an growing demand for mostly the cheaper or low cost and ready-toeat foods as most of the urban citizens spend most of the day outside of their residence and have very little time and money to spend on food [27]. The growing and rapid urbanization has already turned street-food vending into an important business such as in Dhaka city alone almost 200,000 people are earning their livelihood by selling street foods [23]. The cheaper cost, accessibility, easy availability and convenience are the main reasons for the increasing popularity of street foods. Nowadays, not only the male but also the women are playing a very vital role in the sector of street food by the means of their direct or indirect involvement and contribution in the street food business sector [28]. Moreover a remarkable number of street food vendors are woman-headed households. The variety which is exists among street food vendors is occurs by the reflection of some factors such as the variety of food they prepared and sell, the range of their business, the mode in which they are operating their business and service, the region in which area they prepare and sell their food, the type of consumers to whom they sell their food, etc. There are also so many category that it is not possible to give a list of all the different street foods that are consumed all over the world. [12]

# CHAPTER – 2 OBJECTIVE OF THE STUDY

# 2.1 General Objective:

Understanding the awareness, attitude and practice of undergraduate students of public and private universities in Bangladesh about the safety of street food.

#### 2.2 Specific Objective:

- a) To know the general knowledge of consumers about safe food.
- b) To understand the experience of consumers about food born diseases.
- c) To learn about the habits of consumers towards street food.
- d) To understand the experience of consumers about the street food vendors.
- e) To increase the awareness of consumers about the safety of street food.

# CHAPTER – 3 METHODOLOGY

#### 3.1 Study Design:

This was a cross-sectional online survey study conducted from February to April 2021 in undergraduate students of different public and private universities in Bangladesh. Data were collected via an online survey using a Google Form. The online link of the survey was shared via email, Facebook, and other social media.

#### 3.2 Inclusion Criteria:

The inclusion criteria were that participants had to be at least 18 years old, university student and currently residing in Bangladesh.

#### 3.3 Exclusion Criteria:

The students who were not willing to participate were excluded from the study.

#### 3.4 Survey Tool Development, Pre-Testing and Validation:

The questionnaire was self developed based on previous studies carried out in India, Saudi. It was piloted among 10 students. The questionnaire was further revised based on their feedback and further advice from two senior experts. The final

questionnaire was comprised of five categories and included 34 questions on the following:

- a) Basic information about consumers.
- b) General knowledge of consumers about safe food.
- c) Experience of consumers about food born diseases.
- d) Habits of consumers towards street food.
- e) Experience of consumers about street food vendors.

#### 3.5 Data Analysis:

Filled up forms are collected back from the students and are analyzed for the results. The statistics was done by using MS Excel for obtaining the results. Final data was expressed as frequency and percentages.

#### CHAPTER – 4 RESULT

This study was conducted by a total 100 consumers who were students and studying in university. This study was done with several types of questions to learn about the knowledge and attitude of consumers about street food safety. These questions give us ideas about the meaning of safe food, food borne illness and diseases, cleaning hands before eating, using clean utensils, keeping raw and cooked food separately, clean water, thorough cooking, food labels, food safety laws and personal hygiene. The knowledge of the consumers about street food safety was tested using a questionnaire. The answers of the questions were collected through a percentage pattern. Most of the consumers (95%) have heard about food hygiene as well as 85% of the consumers believe that lack of food hygiene is a cause of diseases. A large number of the consumers are concern about the importance of washing hands before eating and the necessity of using clean utensils. The consumers also have the knowledge that the raw and cooked foods should be kept separately and keep the food covered. Consumers choose the food in which the vendors are doing more business and most of the consumers are choosing street food which is low in price and quality.

**Table-01: Basic Information about consumers** 

Variable	Category	Frequency
Gender	Male	58.6 %
	Female	41.4 %
Age	21-25	98 %
	26-30	2 %
Level of Study	1 <sup>st</sup> year	01 %
	2 <sup>nd</sup> year	03 %
	3 <sup>rd</sup> year	25.3 %
	4 <sup>th</sup> year	71.7 %

Tab. 1: Basic Information about consumers.

This is the table which contains the study of basic socio-demographic information of the consumers. This table shows that the study was conducted between 58.6% of male & 41.4% of female consumers. This study was taken among the consumers whose age includes 21 to 30yeas old where 21-25years old group includes 98% and 26-30years old group includes 2% and the consumers in which the study was taken are university students including 71.7% of 4th year students, 25.3% of 3rd year students, 03% of 2nd year students and 1% of 1st year student.

Table-02: General knowledge of consumers about safe food

Queries related to knowledge	Options	Frequency
What is 'safe food'?	Which has acceptable level of contamination	42.4 %
	Which are free all level of contamination	48.5 %
	None	9.1 %
Have you heard of food	Yes	95%
hygiene	No	5 %
Lack of food hygiene as a	Yes	85 %
cause of disease	No	13 %
	Don`t know	2 %
Food borne diseases result	Yes	86 %
from consumption of food	No	12 %
containing pathogen from chemicals	Don't know	2 %

Tab. 2: General knowledge of consumers about safe food.

Table 02 expresses the general knowledge of consumers about street food. 42.4% of the consumers believe that safe food is that which has acceptable level of contamination and 48.5% of the consumers believes that safe food is free from all levels of contamination. From this study we can learn that 95% of the consumers have heard about food hygiene and 5% of the consumers have never heard it. This table also shows that the study gives us the information that 85% of the consumers believe that lack of food hygiene is a cause of disease and 13% of the consumers don't believe this. Besides, this study shows that 86% of the consumers believe that food borne illnesses are results from consumption of food containing pathogens from chemicals and 12% of the consumers don't believe that.

Table-3: Experience of consumers about food borne diseases

Questionaires related to experience.	Options	Frequency
If you feel any food borne diseases how did you treat yourself?	I visit a doctor	31 %
yoursen:	Use home remedies	62 %
	Nothing used	5 %
The most common symptoms of food poisoning include	Agree	62 %
upset stomach, nousea, vomiting and diarrhoea.	Strongly agree	32 %
	Neutral	3 %
	Disagree	1 %
	Strongly disagree	2 %
The most common serious complication of food	Yes	75 %
poisoning is dehydration.	No	9 %
	Don't know	16 %
Where did you get 1 <sup>st</sup> information about food borne	Television	15 %
disease?	Health workers	12 %
	Text books	27 %
	Family members	36 %
	Teacher	10 %

Tab. 3: Experience of consumers about food borne diseases.

This table contains the study which is related with the experience of consumers about food illness. With the help of the study we can know that only 31% of the consumers visit a doctor if they feel any food illness and in this case 62% consumers use home remedies. Besides this 5% consumers don't use anything. About the most common symptoms of food poisoning 62% consumers agree with upset stomach, nausea, vomiting and dehydration, 32% consumers strongly agree with that and 1% consumers disagree. From the study we get the information that 75% consumers believe that the most serious complication of food poisoning is dehydration, 09% consumers don't believe that and 16% consumers don't know. From the study we also get the information that the consumers have got the information about food borne diseases from various types of media including television, health workers, text books, family, teacher, etc but in this case the percentage of family is the highest than all other media and it is 36%.

Table -4: Habits of consumers towards street food:

Questionaries related to habits	Options	Frequency
Money spend on consuming street	Below Tk 200	84.8 %
food per day	Tk 200 to 400	12.1 %
	Tk 400 to 600	2 %
Choosing a street food vendor who is	Yes	47.5 %
doing more business	No	19.2 %
	Maybe	33.3 %
Choosing a street food vendor who is	Yes	49.5 %
using safe water	No	30.3 %
	Maybe	20.2 %
Reason for consumption street food	Taste	47 %
	Cheap	12 %
	Variety	10 %
	Convenience	9 %
	Cultural factors	8 %
Most important belief when	Price and Quality	68 %
considering buying food	Quality	16 %
	Price	11 %
	None	5 %
Do you believe in hand washing	Yes	93.9 %
	No	4.1 %
	Maybe	2 %

Tab. 4: Habits of consumers towards street food.

**Table -4: Habits of consumers towards street food: (Continue)** 

Ensure that the street food	Yes	69.4 %
that you buy is cooked and served	No	8.2 %
	Maybe	22 %
Use safe and portable water	Yes	80.2 %
	No	10.4 %
	Maybe	9.4 %
Hand washing before eating	Yes	86.9 %
	No	6 %
	Maybe	7.1 %

Tab. 4: Habits of consumers towards street food.

This table is about the study of the habits of consumers towards street food. From this table we get the information that 84.8% consumers spend below 200 Tk for buying street food per day, 12.1% consumers spend 200-400Tk daily to buy street food and 2% consumers spend 400-600Tk daily. From this study we know that 47.5% of consumers choose a vendor of street food who is doing more business and 19.2% of consumers don't. Moreover, not even 50% consumers, only 49.5% consumers choose a street food in which the vendor is using safe water. There are various reasons of consumption of street food by the consumers which includes taste 47%, cheap 12%, variety 10%, convenience 9% and cultural factors 8%. From this study we also get the information that the most important belief of consumers when buying street food are price and quality is 68%, quality 16%, price 11% and 5% consumers none of these. Among the street food consumers 93.9% consumers believe in hand washing and 4.1% don't believe that. 69.4% consumers ensure that the street food items that are bought by them are cooked and served, 8.2% consumers don't ensure that. This study also shows that 80.2% consumers use safe and portable drinking water and 10.4% consumers don't use that. In case of hand washing before eating street food 86.9% consumers wash their hands before eating street food and 6% consumers don't wash their hands.

**Table-5: Experience of consumers about vendors:** 

Questionaries	Options	Frequency
Observe that vending card	Yes	70 %
and sorroundings kept clean.	No	7.8 %
	Maybe	22.2 %
Vendor keep the raw food	Yes	64.6 %
and cooked food separate.	No	9.1 %
	Maybe	26.3 %
Vendor keep the food	Yes	58.6 %
covered	No	15.2 %
	Maybe	26.3 %
Vendor makes arrangement	Yes	58.2 %
for waste disposal	No	7.01 %
	Maybe	33.7 %
Are you satisfied with	Yes	15 %
surrounding environmental	No	76 %
conditions of street food vendor?	Maybe	9 %

Tab. 5: Experience of consumers about vendors.

This table is related with the experience of consumers about street food vendors. From the study we get the information that 70% consumers have observed that the vending cart and surroundings are kept clean of street food, 7.8% consumers haven't observed and 22.2% consumers are not sure. 64.6% consumers agree with keeping the raw food and cooked food separate from the vendors, 9.1% consumers do not agree with this and 26.3% consumers are not sure. In the case of keeping the food covered by the street food vendors 58.6% consumers agree with this, 15.2% consumers do not agree and 26.3% consumers are not sure. From this study we also get the information that 58.2% consumers agree with the waste disposal arrangement by the street food vendors, 7.01% consumers do not agree with this and 33.7% consumers are confused with this case. From this study we know that only a few numbers of consumers (15%) are satisfied with the surrounding environment conditions of street food vendors and a huge number of consumers are not satisfied with the surrounding environment conditions of street food vendors and the percentage is 76%.

#### CHAPTER – 5 DISCUSSION

Nowadays all over the world most of the country people are familiar with street food and street food is consumed and prepared almost all countries in the world. As a result we can see that because of the nutritional value as well as a meal, people consumed street food all around the world. Street food is preferred by consumers, especially students and other working people who spend a long period of time outside in their home. The reasons for the popularity of street food include its delicious and mouthwatering taste, accessibility, variety and low cost. Most studies on street food have detected that street food is not ample in terms of cleanliness, hygiene, and quality and many reports have expressed that the food safety knowledge and attitude of young consumers is less acceptable than adults. A larger number of consumers preferred street food occasionally and comparatively a lower number of consumers preferred street food daily.

This study expresses the consumer's knowledge, attitude, behaviour and practices towards street food consumption and by observing these characteristics a person can enrich his or her attitude and habits related to food safety about him or her as well as the availability [29]. This cross sectional study was conducted among the street food consumers of university students in Bangladesh. The study included 100 participants in which 58.6% participants are males and 41.4% participants are female who are studying in University. Street food satisfies a majority necessity of people because of its reasonable price and easy availability. The knowledge assessment was conducted based on the knowledge, attitude, habits and practices of consumers toward street food.

# CHAPTER – 6 Conclusion

The study was conducted in order to contribute to the understanding of the knowledge, attitude, habits and practice of consumers related to street food safety which is an issue that is linked with food borne diseases and it is one of the most serious problems to public health. Knowledge, attitude, habits and practices study of consumers were seemed to be positive which correlated with each other and indicates that consumers with a better knowledge and a expected attitude following a satisfying food safety related practices but there is a very important issue that it need to spread awareness related to food safety to ensure that good practices and habits which are inculcated in the consumers. The consumers should increase more concern about the consequences of health hazards that occur because of poor hygiene maintenance and negligence towards food safety. The results of this study can help in planning a health intervention programs for street food consumers as well as the vendors for the improvement of knowledge, attitude, habits and practice towards food-borne diseases and food safety. If it can be done then it will be a great step towards reduction in food-borne diseases.

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