



**Daffodil**  
*International*  
**University**

**Project On**

**A Survey on Knowledge and Awareness About Typhoid  
Fever Severity at Mirpur Area in Bangladesh.**

**Submitted To**

The Department of Pharmacy,  
Faculty of Allied Health Sciences,  
Daffodil International University

In the partial fulfillment of the requirements for the degree of Bachelor of  
Pharmacy(B.Pharm)

**Submitted By**

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## APPROVAL

This Project **A survey on knowledge and awareness about typhoid fever at mirpur area in bangladesh**, submitted to the Department of Pharmacy, Faculty of Allied Health Sciences, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Pharmacy and approved as to its style and contents.

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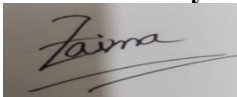
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## DECLARATION

I, at this moment, announce that I am carrying out this project study under the supervision of "Ms. Tahmina Afroz," Assistant Professor, Department of Pharmacy, Faculty of Allied Health Sciences, Daffodil International University, Impartial Compliance with the Bachelor of Pharmacy Degree Requirement (B. Pharm). This project, I declare, is my original work. I also state that neither this project nor any part thereof has been submitted for the Bachelor's award or any degree elsewhere.

### Supervised By:



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**Ms. Tahmina Afroz**

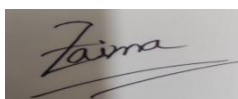
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I am grateful to the God for the good health and wellbeing that were necessary to complete this work.

I wish to express my sincere thanks to **Professor Dr. Muniruddin Ahamed**, Department Head of Department of pharmacy of Daffodil International University for providing me with all the necessary facilities for the research.

I am also grateful to my research supervisor **Ms. Tahmina Afroz**, Assistant Professor Department of Pharmacy, Daffodil International University. I am extremely thankful and indebted to her for sharing expertise, and sincere and valuable guidance and encouragement extended to me.

I take this opportunity to express gratitude to all of the Department faculty members for their help and support. I also thank my parents for the unceasing encouragement, support and attention. I am also grateful to my partner who supported me through this venture.

I also place on record, my sense of gratitude to one and all, who directly or indirectly, have put their hand in this venture.

**Zaima**

**Author**

## **DEDICATION**

I dedicate this work to my parents and my teachers

## **Abstract**

The abstract of the survey on knowledge and awareness about typhoid fever in Bangladesh provides an overview of the study's purpose, methods, and findings. The study aimed to evaluate the level of knowledge and awareness of typhoid fever among Bangladeshi residents and to identify factors influencing their knowledge and awareness. The study was conducted using a cross-sectional survey design, and data were collected through face-to-face interviews with 400 respondents. The results showed that a majority of the respondents had heard of typhoid fever, but their knowledge about the disease was limited. Many respondents were not aware of the causes, symptoms, and preventive measures for typhoid fever. Education level, occupation, and income were identified as significant factors influencing knowledge and awareness about the disease. The study recommends the need for targeted educational programs and awareness campaigns to increase knowledge and awareness of typhoid fever in Bangladesh.

**Keywords: Typhoid, Fever, Disease, Cross sectional survey, Preventive measures .**

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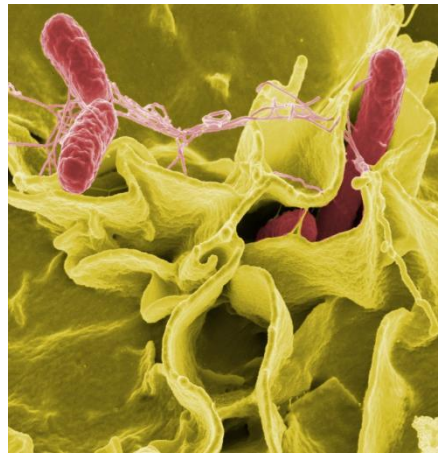
# **CHAPTER -1**

## **INTRODUCTION**

## 1.1. Typhoid fever

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The Salmonella bacteria of the serotype Typhi cause the illness typhoid. It is more commonly known as simple typhoid. Another name for typhoid is typhoid fever. [1] The symptoms normally occur six to thirty days after being exposed to the sickness and can range in severity from mild to severe. [2] An extremely high temperature typically comes on gradually over several days. [3] Some of the typical side effects of this illness include feelings of weakness, moderate vomiting, abdominal pain, constipation, headaches, and abdominal pain.



**Fig 01:** Salmonella

If left untreated, the symptoms could persist for a few weeks or even months. Despite how infrequently it occurs, it could be rather serious. [5] Despite the fact that some individuals may harbor the germs without exhibiting any symptoms of infection, they are nonetheless capable of transmitting the illness to others. [6] Typhoid fever and paratyphoid fever are both considered to be enteric fevers. The typhoid germs are the source of the disease's name. A. Enterica S. Typhi is thought to only be able to travel between humans and grow inside the bodies of those who already carry the virus. [7] . This bacterium can spread to other persons by the consumption of tainted food or water. This bacterium can potentially breed in the intestines, Peyer's patches, mesenteric lymph nodes, liver, gallbladder, bone marrow, and blood. Another location where it might be discovered is the gallbladder. Consuming or drinking food or water that has been contaminated with the feces of an infected person is the most common way that typhoid fever is

spread. [8] In recent years, scientists have been successful in developing more specialized tools for diagnostic testing. The detection of varying abundances of extremely small molecules in the blood is one of these methods, which may be particularly diagnostic of typhoid fever. Recent improvements in the realm of large-scale data collection and processing allowed for these more recent breakthroughs. Without these more recent advances, these more recent advancements would not have been possible. [9] There are diagnostic tests available in areas of the world where typhoid fever is most common, but both their specificity and accuracy are quite low. Inadequate funding for healthcare systems also causes issues with the amount of time needed for an accurate diagnosis, the rise in antibiotic resistance, and the cost of testing. A person's likelihood of contracting the illness within the first two years after receiving the typhoid vaccine is decreased by 40% to 90%. [10] Up to seven years after the vaccination has been given, there is a chance that it will still function in some way. It is strongly encouraged that persons who are more susceptible to the illness or who will be going to a location where it is widespread get immunized against it. The danger of contracting the disease is drastically decreased in those who have taken the sickness vaccine. Additional preventative measures include the availability of clean, potable water, the maintenance of strict hygiene standards, and the regular hand washing. The sick person must refrain from preparing food for others until the sickness is known to be entirely under control. To completely destroy the infection, this guideline must be followed forever. Antibiotics are used to treat typhoid; as examples of particular antibiotic classes, third-generation cephalosporins, fluoroquinolones, and azithromycin are used. This number increased when compared to the previous year. There were numerous fatalities in these incidents. [13] India is the nation having the greatest number of confirmed cases of the disease. The great majority of persons who have been diagnosed with this illness are young children. Improvements in sanitation and a surge in the use of antibiotics led directly to a decline in typhoid incidence in the industrialized countries in the 1940s. This was the case throughout the entire decade. Typhoid fever is expected to affect 6,000 persons in the United States annually, with approximately 400 new cases being reported. [14] It is predicted to have resulted in roughly 149,000 deaths worldwide in 2015, a considerable decrease from the 181,000 deaths it was responsible for in 1990. [15-16] It is difficult to totally rule out the likelihood that this might occur, but there is a chance that the risk of mortality could increase to 20% if medication is not administered. There is a one to 4% probability that adverse effects will appear if therapy is given. Even though they

shared many symptoms and many characteristics, it wasn't until the 1800s that medical professionals realized they were two distinct disorders. The phrase "resembling typhus," which characterizes the illness' signs and symptoms, is where the name "typhoid" first appeared. [18]

## 1.2. History

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### The earliest descriptions

The plague that plagued Athens during the Peloponnesian War is generally believed to have been caused by typhoid illness, which first appeared during that fight. The Athenians retired to a city that had been fortified during the battle to defend themselves against a Spartan assault. This city's name was Milon. There were undoubtedly filthy circumstances as it grew tougher to procure fresh water and transfer garbage outside of the city limits due to the demand on the water supply and waste facilities created by the massive inflow of people into a small area. T. This large surge of people into a glaringly small space put a strain on the infrastructure responsible for cleaning up waste in the city. When the bones from an Athens mass grave from the time of the plague (roughly 430 B.C.) were examined, DNA fragments similar to the DNA of the contemporary *S. Typhi* virus were discovered. Before the epidemic, the location had been chosen. The area has a lengthy past that predates the outbreak of the disease. On the other hand, illnesses caused by bacteria include those caused by *Yersinia pestis*, commonly known as the plague, *Rickettsia prowazekii*, also known as typhus, *Mycobacterium tuberculosis*, the cowpox virus, and *Bartonella henselae*. It is widely recognized that the death of the Roman Emperor Augustus Caesar was brought on by either a liver abscess or typhoid. Additionally, it's believed that the only things keeping him alive were the ice baths and cold compresses he used to treat his fever. The only explanation given for how he managed to survive is this. A memorial was erected in honor of the Greek physician Antonius Musa after he was successful in healing the patient's illness. [19]



**Fig 02:** Rickettsia prowazekii

### **Definition and evidence of transmission**

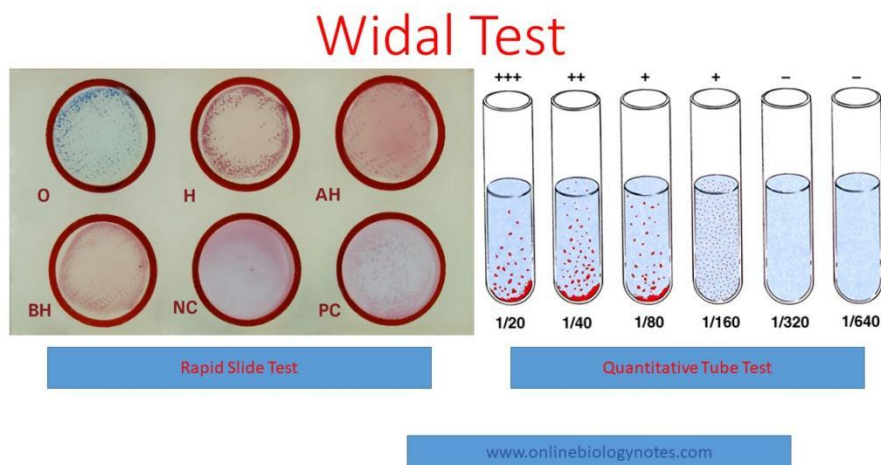
The initial descriptions of typhoid fever as a distinct illness distinct from typhus are widely attributed to the French physicians Pierre-Fidele Bretonneau and Pierre-Charles-Alexandre Louis. Both physicians conducted autopsies on individuals who had passed away from fever in Paris, and the findings of their inquiries revealed that many of the deceased had lesions on the Peyer's patches. The symptoms that the individuals had before they died were consistent with these lesions. Typhoid and typhus were both widespread diseases in Britain at the time, making it difficult for medical professionals to distinguish between the two. However, only typhoid was discovered to be widespread and circulating among the French population. Pierre-Charles-Alexandre Louis also performed statistical analysis and case studies to demonstrate that typhoid was contagious and that people who had previously experienced the sickness appeared to be

immune to catching it. Then, several American physicians confirmed these findings, and Sir William Jenner persuaded any skeptics who were still left that typhoid is a distinct illness distinguished by lesions in the Peyer's patches. [19-20]

### 1.3. Signs and symptoms

Traditionally, there are three phases of untreated typhoid fever, each one lasting approximately a week. These phases are characterized by the patient's gradual decline into exhaustion and malnutrition. [21]

- The first week of intermittent fever is marked by a low heart rate (Faget sign), a general malaise, a headache, and a cough. 25% of cases of nosebleeds, or epistaxis, also accompany stomach pain. Blood cultures show eosinopenia, leukopenia, and relative lymphocytosis in addition to the presence of *Salmonella enterica* subsp. *enterica* serovar Typhi. Leukopenia is a reduction in the amount of circulating white blood cells. Frequently, the Widal test produces unsatisfactory results. [22]



**Fig 04:** Widal test

- .In the second week, the patient frequently displays a dicrotic pulse wave and, while too weak to leave bed, reaches a high temperature plateau of 40 °C (104 °F). This is indicated by the Faget sign or the sphygmothermic dissociation sign. Symptoms of delirium in

patients might range from growing agitation to comparatively calm behavior. The delirium that typhoid causes is what gives it its reputation as "nervous fever". A third of people have rose patches on their lower breast and belly. The lower portions of the lungs are where rhonchi, or rattling breathing sounds, are created. Right below the stomach, there is a rumbling sound coming from an area that is swollen and painful.

- Transaminases in the liver are increased, and both the spleen and liver are enlarged and painful (hepatosplenomegaly). Strongly positive antiO and antiH antibodies in the Widal test. A positive blood culture result is not always a sure thing.
- Several issues related to typhoid fever might arise during the third week:
  - ✓ A distal ileal perforation is a catastrophic consequence that often results in death. When septicemia or widespread peritonitis starts in, there may be no outward signs of the condition's presence.
  - ✓ Chronic obstructive pulmonary disease (COPD), asthma, and other lung conditions
  - ✓ Encephalitis
  - ✓ Behaviors indicative of neuropsychiatric disorders, such as mumbling delirium, coma vigil, and plucking at bedsheets or made-up items.
  - ✓ Cholecystitis, endocarditis, osteitis, and metastatic abscesses are all possible complications of this infection.
  - ✓ Thrombocytopenia, or a low platelet count, may occur.[23]

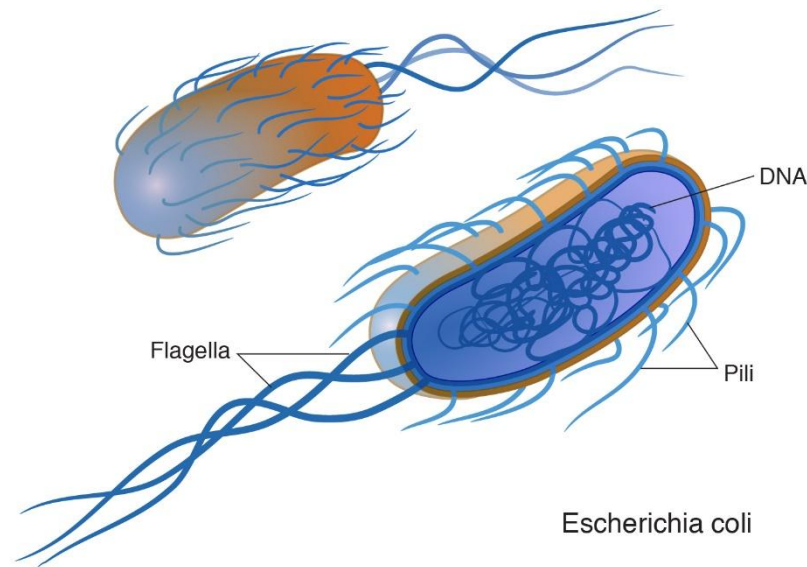
## 1.4. Causes

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### Bacteria

Subspecies of *Salmonella enterica* serovar Typhi are the Gram-negative bacteria known as Typhi are the pathogens responsible for the spread of typhoid fever. The MLST subtyping method identified ST1 and ST2 as the two primary sequence types of *S. Typhi*, and both can be found in different regions. [24] The most prevalent haplotype, also known as H58, was discovered in a global phylogeographic analysis of drug resistance. It is 58. The spread of this haplotype, which most likely originated in India in the late 1980s and is now occurring all over the globe, [25] In 2016, researchers introduced a more comprehensive method of genotyping, which is currently in

general use. According to these standards, the H58 genotype is now known as the 4.3.1 genotype. [26]



**Fig 05: Bacteria**

### **Transmission**

The fecal-oral pathway can be used to spread the virus to people who are already infected with Typhi as well as to people who are carriers of the infection but are not yet showing any symptoms. If a person continues to excrete typhoid germs for at least a year after the acute stage of infection but shows no signs of the sickness, they are considered to be a human carrier of the disease. Humans can contract typhoid from individuals who already have it. [27]

### **1.5. Diagnosis**

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When antibodies against Salmonella antigens O-somatic and H-flagellar are present, cultures from blood, bone marrow, or stool are also used to make the diagnosis in addition to the Widal test. While awaiting the results of the Widal test as well as blood and stool cultures, a therapeutic



trial period with chloramphenicol is usually carried out in less developed nations or areas afflicted by epidemics after ruling out malaria, dysentery, or pneumonia. [28]

### **Widal test**

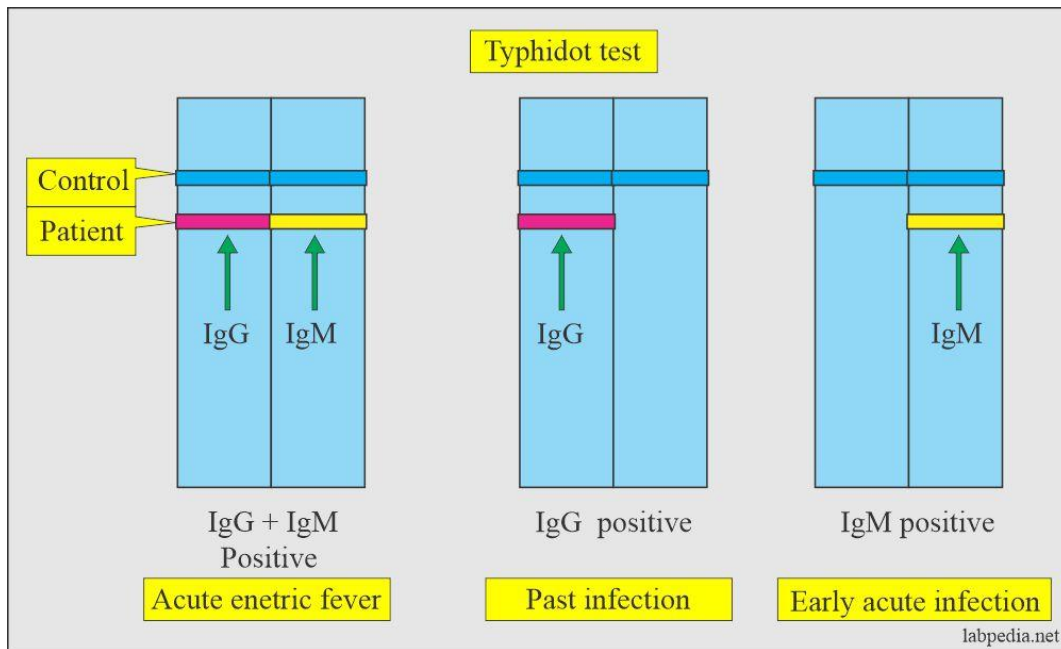
Through the use of antigen-antibody interactions, the Widal test can pinpoint specific antibodies that are present in the serum of typhoid patients. In this particular test, a dead, specific antigen-containing salmonella bacterial solution is incorporated with the serum. If the patient's blood has antibodies that are effective against particular antigens, the antibodies will bind to the antigens and cause them to clump together. The results of the test are considered negative if there is no clumping. The Widal test requires a lot of time and frequently results in dangerous false positives. A false negative outcome could occur in patients who have just received the virus.

### **Rapid diagnostic tests**

Tests like Tubex, Typhidot, and Test-It, which are considered to be rapid diagnostic tests, have demonstrated only modest diagnostic accuracy.[30]

### **Typhi dot**

For the Typhi dot test, specific IgM and IgG antibodies must be present to a particular 50Kd OMP antigen. This test involves attaching test lines to a cellulose nitrate membrane together with a specific outer membrane protein from *S. typhi*. The membrane is then subjected to the test. It makes a distinction between IgM and IgG antibodies. IgM indicates a more recent infection, whereas IgG indicates a more persistent infection. This kit's sample pad includes colloidal gold-anti-human IgG or gold-anti-human IgM. The target antigens will react and turn red if the sample contains IgG and IgM antibodies that are specific to those antigens. The fact that Typhidot can only provide either positive or negative information is its most significant drawback. [31]



**Fig 06: Typhi dot**

### Test for tubex

Both blue indicator particles coated with O9 antibody and brown magnetic particles coated with antigen are produced by the Tubex test. The appropriate antibodies are coated on both varieties of particles. If the serum contains antibodies, the antibodies will bind to the brown magnetic particles during the test, causing them to sink to the bottom of the container. As long as the blue indicator particles are there, the solution will turn blue. This indicates that the test was successful. If there is no antibody present in the serum, the blue particles will bind to the brown particles and sink to the bottom, resulting in a colorless solution. This indicates that the test was negative.[32]

## 1.6. Stages of typhoid fever

The symptoms of typhoid fever might appear gradually, in a progression of four phases. Treatment with antibiotics at an early stage helps prevent the disease from advancing to a later stage.

**Stage 1.** It takes five to fourteen days for stage 1 typhoid fever to manifest after the initial S. Typhi exposure. Symptoms of stage 1 typhoid fever include: The initial sign of fever is an

elevated temperature that gradually rises over a few days; this kind of fever is referred to as "stepwise" since it rises in stages. The bacteria are now getting into your bloodstream.

**Stage 2.** The bacteria in your Peyer's patches (a region of your immune system that detects hazardous intruders) start to multiply in the middle of the second week of having a fever. This illness may first cause stomach discomfort along with other digestive symptoms including diarrhea or constipation. You may get "rose spots," which are little pink patches that show up on your skin and resemble a rash.

**Stage 3.** Around the third week following the onset of your symptoms, if you do not get antibiotic treatment, the germs may cause significant harm if they are not stopped. Some patients have life-threatening consequences, such as internal bleeding and encephalitis (inflammation in your brain).

**Stage 4.** The fourth stage, or stage four, is when the majority of patients start to feel better. The high temperature you've been experiencing starts to come down. Because *S. Typhi* may exist in your gallbladder without generating symptoms, it is possible that you might still be infectious even after you have started to feel better.[33-34]

## 1.7. Complications of typhoid

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If you fail to get treatment for typhoid, you put yourself at risk for a number of serious sequelae, including the following:

- ✓ Bruising and bleeding within.
- ✓ Perforation of the intestinal lining (a hole in your intestines).
- ✓ Swollen or ruptured gallbladder.
- ✓ Symptoms related to the nervous system or brain, such as disorientation, delirium, and seizures
- ✓ Increasing pressure around your head (meningitis).
- ✓ Respiratory conditions such as bronchitis, pneumonia, and others
- ✓ Bone inflammation (osteomyelitis).
- ✓ Inflammation of the heart
- ✓ Failure of the kidneys
- ✓ Miscarriage.

## 1.8. Prevention

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Sanitation and cleanliness are essential in the fight against the typhoid virus. Only situations where human feces might come into touch with food or water allow it to spread. By following good food hygiene practices and often washing one's hands, typhoid fever can be prevented. The eradication of typhoid disease was significantly aided by the growth of industry. This was due to the fact that industrialization eliminated horse excrement from public streets, thereby lowering any potential health risks. [31] Horse manure supported a sizable fly population that acted as the carrier of several infectious diseases, including Salmonella species. [32] The chlorination of drinking water has reportedly resulted in significant reductions in the spread of typhoid fever, as shown by data compiled by the Centers for Disease Control and Prevention in the United States. [33]

### Vaccination

The two typhoid vaccines that have been authorized for use in the prevention of typhoid are the injectable typhoid polysaccharide vaccine (marketed and sold as Typherix by GlaxoSmithKline) and the live, oral Ty21a vaccine (marketed and sold under the brand name Vivotif by Crucell Switzerland AG). Due to an increased risk of side effects, most notably soreness and inflammation at the injection site, it is no longer recommended to use this vaccination. [34] The World Health Organization (WHO) began supporting the implementation of a vaccination campaign in 1999 in an effort to lower the incidence of typhoid fever in developing nations. Communities under financial hardship are more likely to benefit from the vaccines because of the low cost. Although typhoid vaccination campaigns have been shown to be successful, they fall short of completely eradicating the disease. [35] Unlike the ViPS immunization, which is given intravenously, the Ty21a vaccination is taken orally as a capsule. The ViPS immunization should only be administered to children who are at least two years old, and it should be repeated every two to three years in order to be successful between 55 and 72% of the time. The success rate of the Ty21a vaccination, which is advised for people above the age of five, ranges from 51% to 67%. There is also a variant of the vaccine that is administered in conjunction with a hepatitis A vaccination.[36] In December 2019, the findings of a phase 3 study of the typhoid conjugate vaccine (TCV) indicated an 81% reduction in the number of illnesses among children.[38-39]

## Treatment

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### Oral rehydration therapy

Oral rehydration therapy, which was rediscovered in the 1960s, offered a straightforward approach to reducing the number of fatalities associated with diarrheal disorders in general.[39]

### Antibiotics

Antibiotic therapy using a fluoroquinolone, such as ciprofloxacin, is the recommended course of action in regions with low rates of drug resistance. This is due to the fact that fluoroquinolones stop the development of bacteria that are resistant to antibiotics. [40-41] Cephalosporin antibiotics from the third generation, like ceftriaxone or cefotaxime, are the most effective treatment option for any condition that is not covered by the first two groups. [42-45] Cefixime is an alternative therapeutic strategy that has promising results that can be given orally. [46-47] Typhoid fever rarely results in death in otherwise healthy people when treated effectively with medical care. Antibiotics like amoxicillin, ciprofloxacin, ampicillin, chloramphenicol, and trimethoprim-sulfamethoxazole have traditionally been used to treat the condition. Recent antibiotics, such as trimethoprim-sulfamethoxazole, have been shown to be more effective. Trimethoprim-sulfamethoxazole is one of the most current antibiotics that has been discovered to be more effective than prior antibiotics. [48] Treatment with antibiotics lowers the case fatality rate by roughly 1%. The drop is due to fewer patient deaths. [49] Some people may develop symptoms like a persistent fever, bradycardia, hepatosplenomegaly, gastrointestinal issues, and even pneumonia if they do not receive therapy. Up to 20% of the time, pink spots might develop on people with white skin. As a direct consequence of this, it is estimated that between 2% and 5% of individuals who have previously been diagnosed with the condition are regarded to be chronic carriers of the infection. [50]



**Fig 07:** Ciprofloxacin

### **Surgery**

As the most sophisticated form of treatment, surgery is frequently suggested as the next step in treating an intestinal perforation. According to the results of one study, the countries with the fewest resources are also those most responsible for bearing the burden of the disease. The rate of surgical site infections in these nations was found to be 67% (59/88) whereas the risk of passing away during the first 30 days following surgery was reported to be 9% (8/88). Both of these rates are significantly higher than the average for the world. [51] The vast majority of surgeons believe that the only stages in the most successful surgical treatment are to close the perforation and drain the peritoneum. Even in patients who do not have gallstones, the cholecystectomy treatment has a chance of being effective because it removes the gallbladder. [52-53]

### **Resistance**

Due to the high prevalence of antibiotic resistance, ampicillin, chloramphenicol, trimethoprim-sulfamethoxazole, and streptomycin are no longer regarded as first-line treatments for typhoid fever. Different antibiotics are now considered to be preferable substitutes. This is a result of the drugs' dangerously quick global spread of drug resistance. [54] Typhoid that is resistant to

several different treatments is referred to as multidrug-resistant typhoid. [55] The prevalence of germs that are resistant to the antibiotic ciprofloxacin is an increasing global problem, despite its relevance in Southeast Asia and the Indian subcontinent. This is confirmed by the fact that azithromycin kills more germs than ceftriaxone. This is because azithromycin is more effective than other medicines at eliminating the bacterium that causes typhoid. Azithromycin can be used orally and is less expensive than ceftriaxone. However, ceftriaxone is the more expensive option. Injections are the most typical method of giving ceftriaxone to patients. [56] The laboratory tests used to determine if an organism is sensitive to ciprofloxacin are a different issue that has gotten less attention. The most recent recommendations advocate testing clinical isolates for ciprofloxacin (CIP) and nalidixic acid resistance at the same time. This was determined based on the findings of the study that analysed the different isolates. Following an examination of the findings of the investigation, the researchers arrived at this conclusion. [57]

# **LITERATURE REVIEW**



**2.1. Khanam, F., Sayeed, M. A., Choudhury, F. K., Sheikh, A., Ahmed, D., Goswami, D., ... & Qadri, F. (2015). Typhoid fever in young children in Bangladesh: clinical findings, antibiotic susceptibility pattern and immune responses. PLoS neglected tropical diseases, 9(4), e0003619.**

Young children under the age of five make up the majority of cases of Salmonella enterica serotype Typhi (S. Typhi) infection in areas where typhoid fever is common. In order to study the mucosal and systemic immune responses in young children with S. Typhi bacteremia, we examined the IgA reaction in lymphocyte culture secretion as well as the IgA, IgG, and IgM responses in plasma using ELISA (ages, 1 to 5 years). A 3H-thymidine incorporation assay was also performed to gauge T cell proliferation. Age-matched healthy controls and older children (ages 6 to 17) and adults (ages 18 to 59) with S. Typhi bacteremia were included in the comparison groups (HC). This study shows that the immune response to naturally occurring disorders may occur in both young newborns and adults.

**2.2. Brooks, W. A., Hossain, A., Goswami, D., Sharmeen, A. T., Nahar, K., Alam, K., & Breiman, R. F. (2005). Bacteremic typhoid fever in children in an urban slum, Bangladesh. Emerging infectious diseases, 11(2), 326.**

Throughout the course of fever surveillance in an urban slum in Dhaka, we were able to determine that there were 3.9 cases of bacteremic typhoid fever per 1,000 person-years. The relative risk for preschool-aged children was 8.9 times that of older individuals. Our regression model suggested that these children were clinically ill, highlighting the significance of immunisation in early childhood settings.

**2.3. Saha, S. K., Baqui, A. H., Hanif, M., Darmstadt, G. L., Ruhulamin, M., Nagatake, T., ... & Black, R. E. (2001). Typhoid fever in Bangladesh: implications for vaccination policy. *The Pediatric infectious disease journal*, 20(5), 521-524.**

538 out of the 4,650 patients whose blood was examined for bacterial infections had them on average 11.6% of the time. *S. typhi* was the pathogen that was isolated the most frequently, accounting for nearly 75% (391 of 583) of all isolates. It was discovered that *S. typhi* isolation rates were highest during the summer and monsoon seasons and lowest during the winter. The majority of *S. typhi* isolates (54.5%; 213 of 391) came from children under the age of five, with newborns and toddlers accounting for 27.0% (105.1%; 105 of 391) of the isolates. Social isolation was most prevalent in children in their second year of life (17.4%, or 68 out of 486). The amount of bacteria in blood, as measured in colony-forming units per milliliter of blood and split down by age group, correlated negatively with advancing age.

## **Purpose of my studies**

Typhoid sickness is a severe hazard to the public's health in Bangladesh. Salmonella typhi, the bacterium that causes sickness, may be found in contaminated food or water and can pass from person to person. Bangladesh is particularly prone to typhoid outbreaks due to the nation's limited access to clean water and sanitation, as well as the people's lax observance of good hygiene standards.

My aim of this studies,

- A. To determine the primary contributor to the spread of typhoid in Bangladesh.
- B. To get information on the present therapy.
- C. To learn what other people think about it, ask them.
- D. To understand the challenges that this condition presents.
- E. To usher in a brand-new era of advanced academics.

# Methodology

#### **4.1. Target Population:**

The survey begins with an overview and 12 pertinent questions. 110 people with ages ranging from under 10 years old. This research was conducted in the Bangladeshi city of Mirpur.

#### **4.2. Research Design:**

The goal of this survey was to find out how people felt about the severity of typhoid fever and how it affects their health and happiness in their lives. The survey's target population was extended an invitation to take part in the field research, in which they would be expected to provide in-person responses to each and every inquiry.

#### **4.3. Method of Data Analysis:**

After an assortment of information, all information was checked for precision and internal consistency to deny missing or clashing data, and those were discarded. Information investigation was done through Microsoft's dominant refreshed rendition.

#### **4.4. Ethical Considerations:**

Before beginning the information assortment, educated verbal permission was taken from the investigation members. The obscurity of the respondents was kept private, and study subjects were educated that they could have the option to leave the program at any.

#### **4.5. Survey Question**

1. Patient Name .....

2. Gender

- Male
- Female
- Others
- 

3. Do you know about Typhoid?

- Yes
- No

4. Did you suffer from Typhoid?

- Yes
- No

5. How long have you suffered from Typhoid?

- 15 days
- 20 days
- More than 20 days

6. What do you think about the cause of Typhoid?

- Contaminated water, food
- Using public toilet
- All of this

7. Do you ever suffer the severity of Typhoid?

- Yes
- No

8. Which symptoms you have suffered most for Typhoid beside fever?

- Abdominal pain
- Weakness
- Loss of appetite
- All of this

9. Do you know about the microorganism of typhoid?

- Yes
- No

10. Which type of medical therapy do you take for typhoid?

- Antipyretic
- Intravenous fluid

- Antibiotics
- All of this

11. Did you Drink untreated water before two days of fever?

- Yes
- No

12. Did you Participated in swimming before two days of fever?

- Yes
- No



# Result and Discussion

## 5.1. Gender of respondents

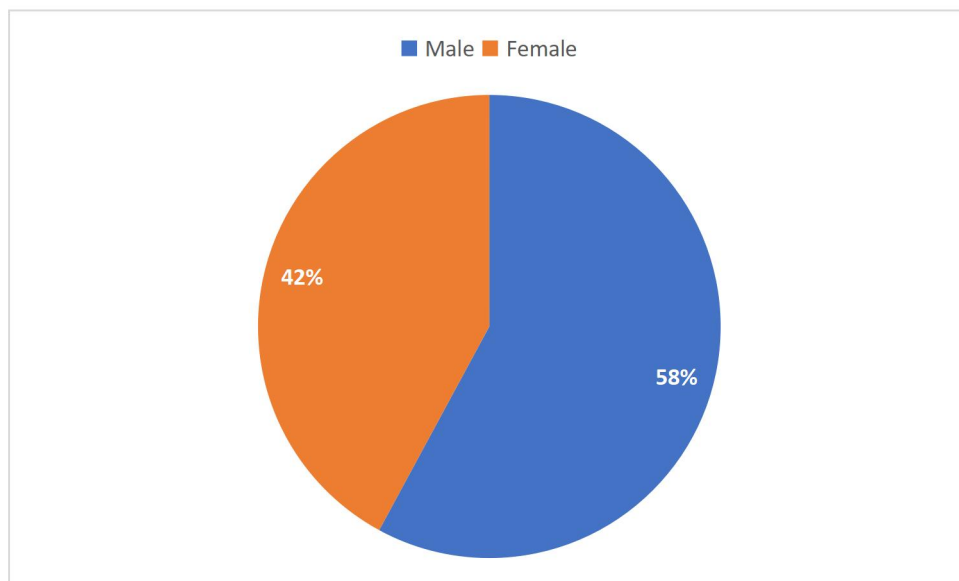


Fig 4: Gender

In this survey around 58% respondents are male and 42% respondents are female. Males' rates are higher than female.

## 5.2. Knowledge about Typhoid

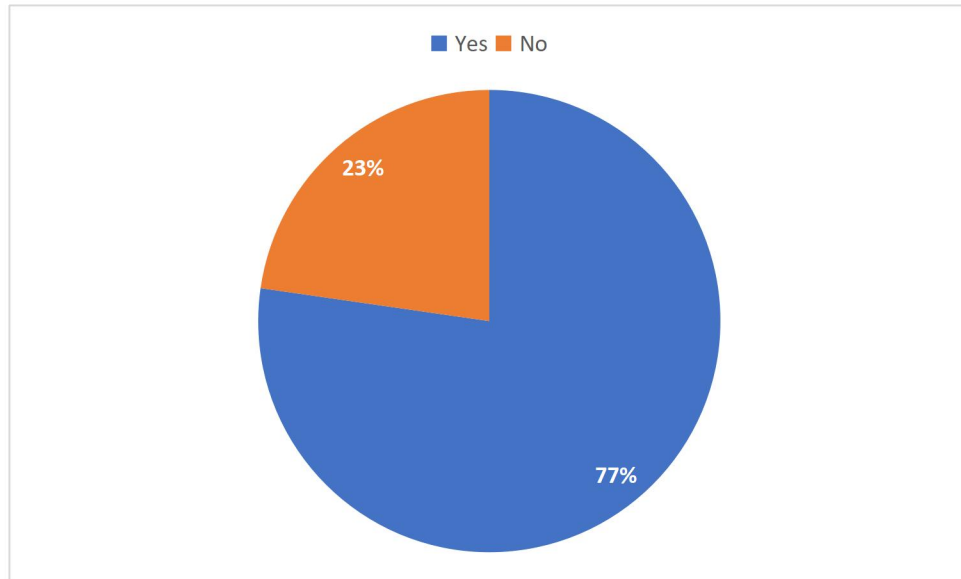


Fig 5: Knowledge about Typhoid

According to this survey around 77% participants has knowledge about S. Typhoid and another 23% respondents has no knowledge about that.

### 5.3. Suffering from typhoid

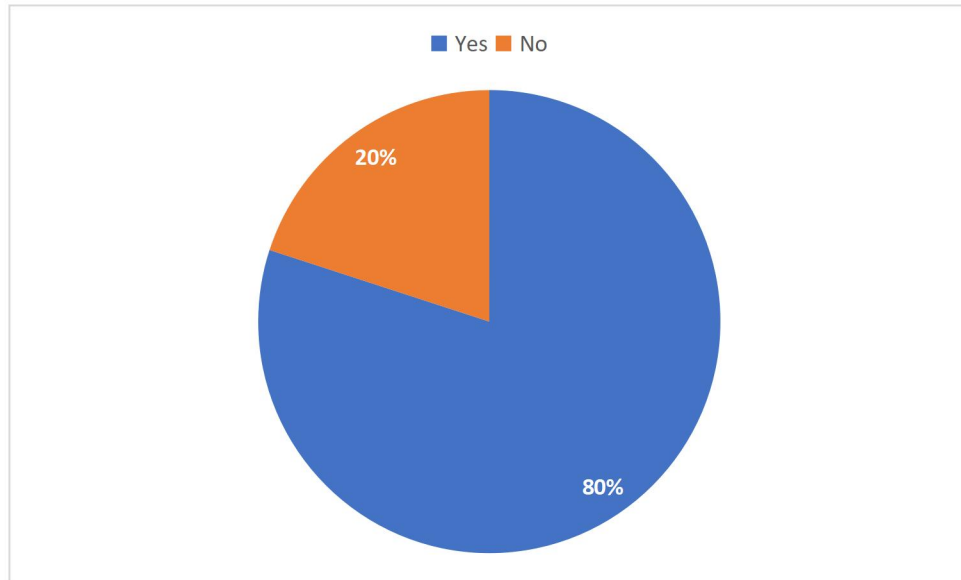


Fig 6: Suffering from typhoid

In this survey, over 80% of respondents had previously been diagnosed with typhoid, whereas the remaining 20% had not received a diagnosis and hence are unsure.

#### 5.4. Duration of suffering from Typhoid

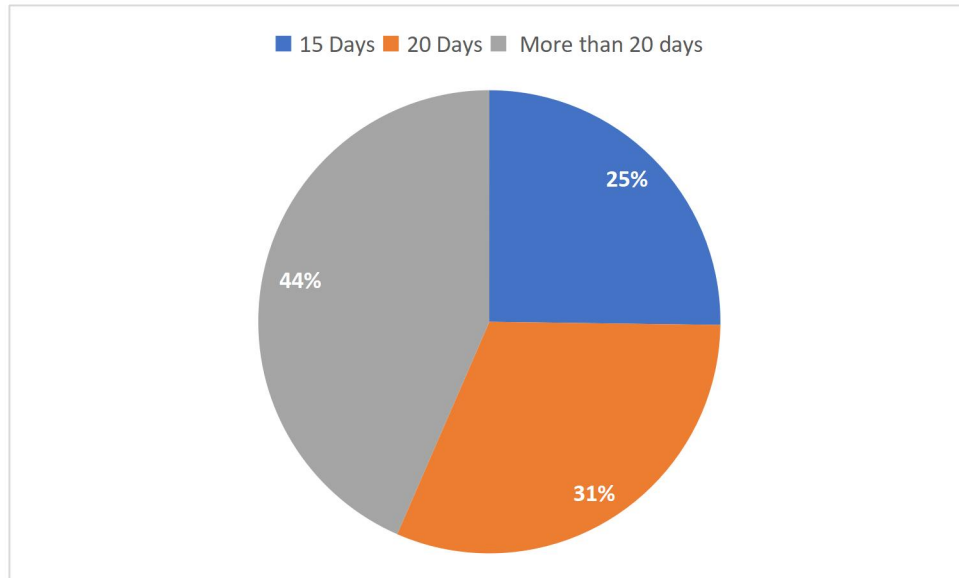


Fig 7: Duration of suffering from Typhoid

According to the findings of this study, around 44% of participants had been afflicted with typhoid for more than 20 days, 31% of participants had been afflicted with typhoid for 20 days, and 25% of participants had been afflicted with typhoid for 15 days.

## 5.5. Cause of Typhoid

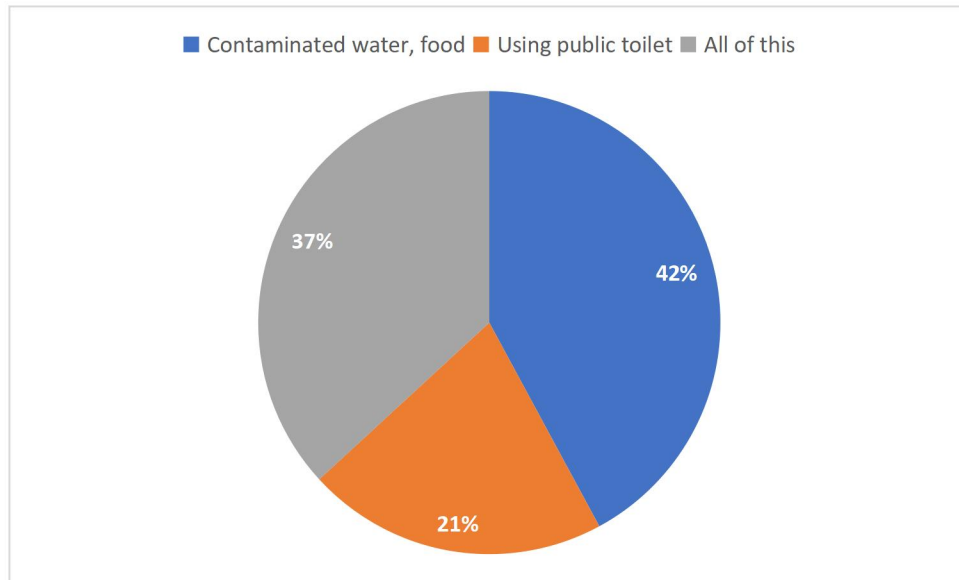


Fig 8: Cause of Typhoid

The findings of this survey indicate that 42% of respondents believe that typhoid is caused by drinking contaminated water and eating contaminated food, while 21% of respondents believe that using public toilets is the cause of typhoid, and 37% of respondents believe that all of these factors cause typhoid.

## 5.6. Suffering from the severity of typhoid

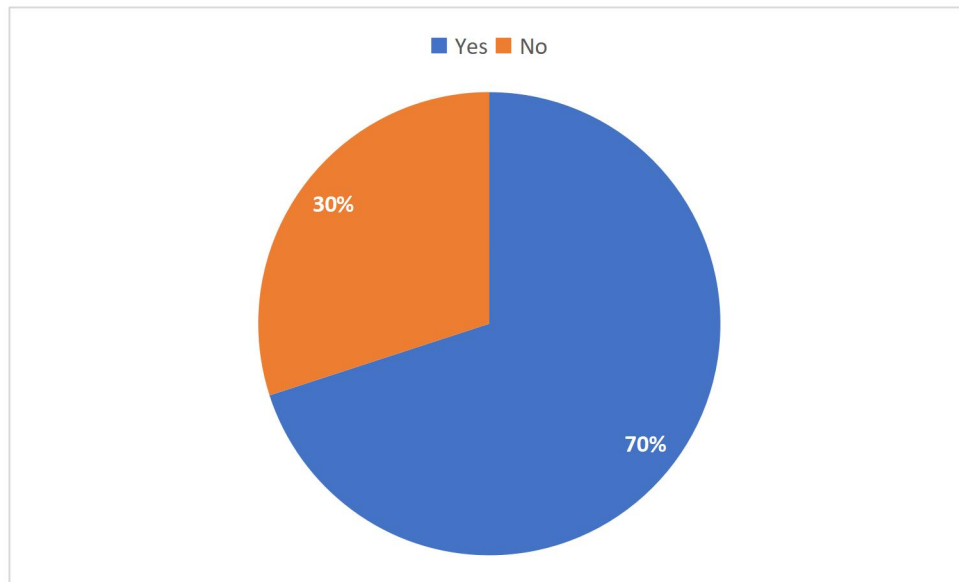


Fig 9: Suffering from the severity of typhoid

According to this survey around 70% participants they have suffered from the severe typhoid and 30% had no relation with that.

## 5.7. Symptoms of Typhoid beside fever

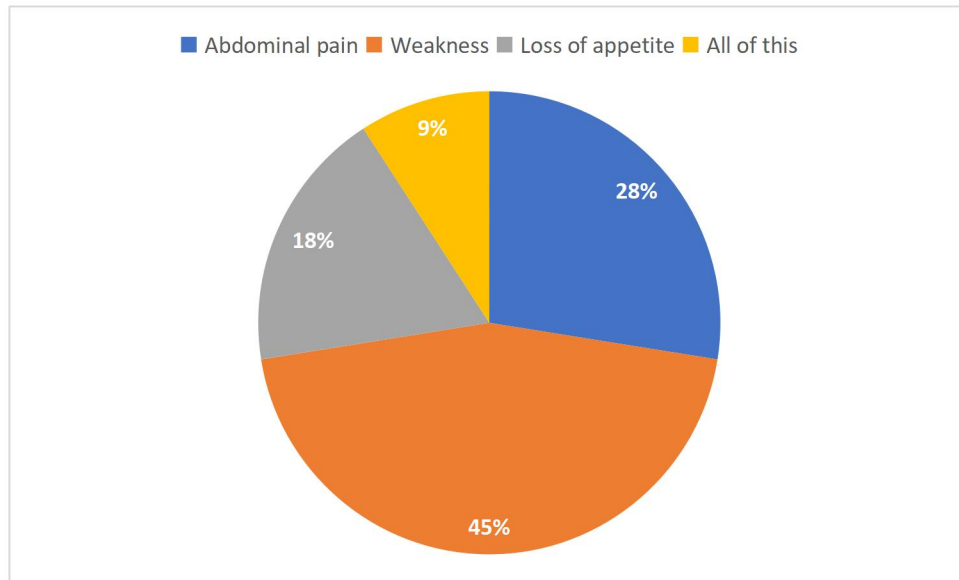


Fig 10: Symptoms of Typhoid beside fever

This research found that almost 45 percent of people who participated in the survey reported having weakness in addition to fever, 28 percent said they had abdominal discomfort in addition to typhoid, 18 percent said they had lost their appetite in addition to fever, and 9 percent reported having all of these symptoms in addition to fever.

## 5.8. Knowledge about Microorganism of Typhoid

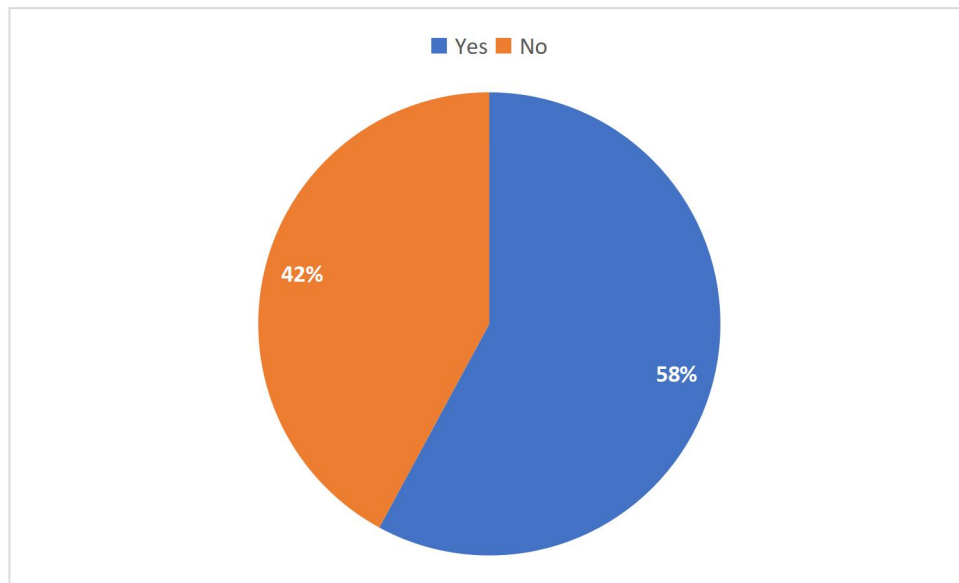


Fig 11: Knowledge about Microorganism of Typhoid

According to this survey around 58% participants has knowledge about microorganism of typhoid and another 42% has no knowledge about that.



## 5.9. Treatment for typhoid

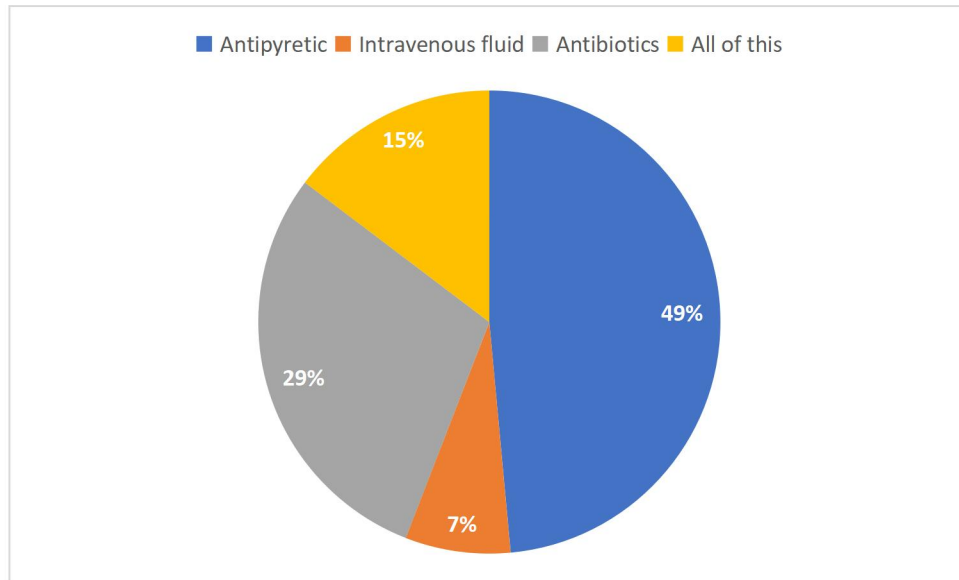


Fig 12: Treatment for typhoid

As part of their treatment for typhoid, around 49% of respondents reported using antipyretics, 29% reported using antibiotics, 15% reported using all of these therapies, and 7% reported using IV fluids.

### 5.10. Drink untreated water before two days of fever

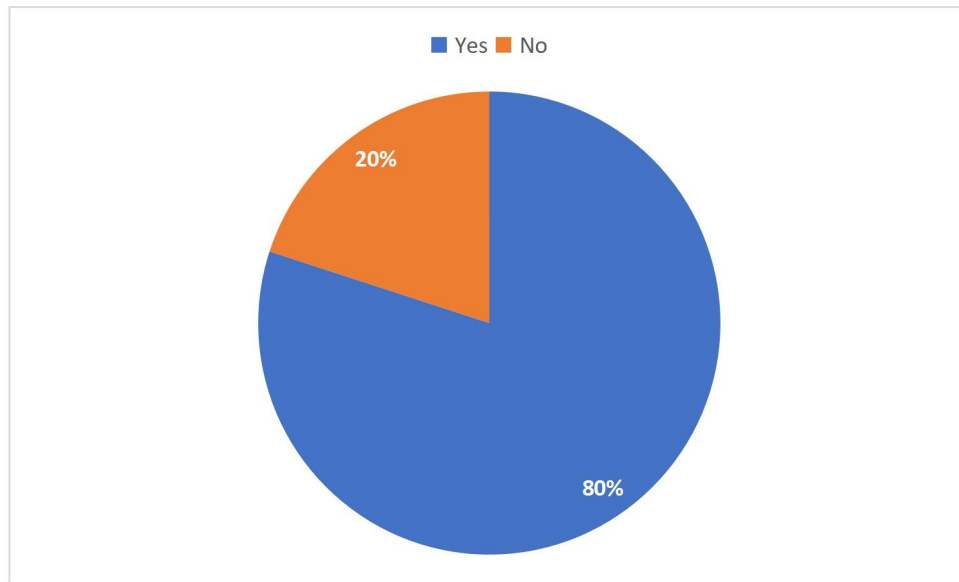


Fig 13: Drink untreated water before two days of fever

In this survey, almost 80% of subjects claimed to have drunk untreated water before experiencing two days of fever, while 20% were unable to recall.

### 5.10. Participated in swimming before two days of fever

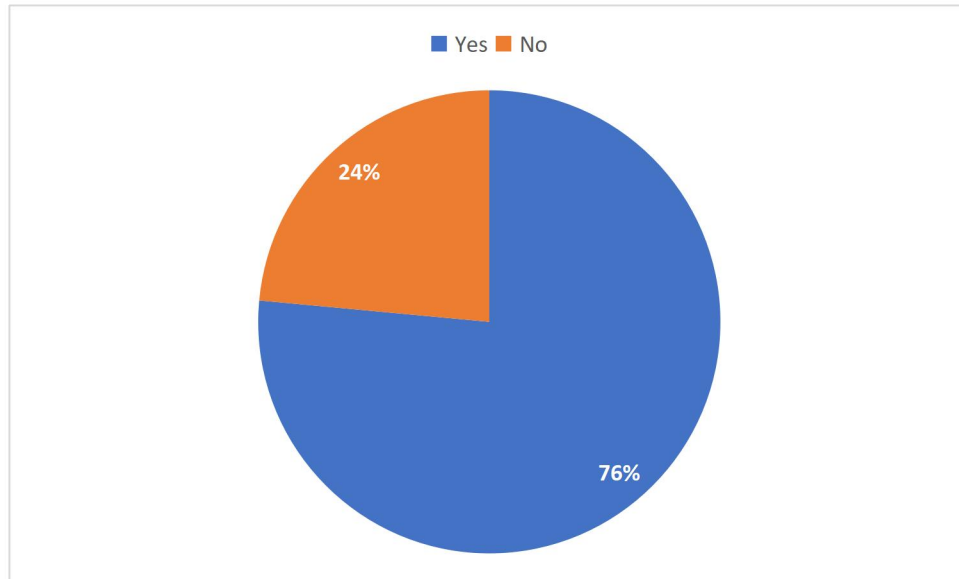


Fig 14: Participated in swimming before two days of fever

Around 76% of individuals in this study claimed to have swum prior to two days of fever, while 24% could not remember.

## ***CONCLUSION***

People can contract *Salmonella typhi* by consuming infected food or drinking contaminated water. Children are more vulnerable to typhoid than adults because of their developing immune systems. Some of the symptoms include fever, headache, tiredness, loss of appetite, and stomach pain. In the worst-case scenarios, complications including intestinal perforation or meningitis could manifest. If children in Bangladesh are to avoid acquiring typhoid, they must have access to clean water, excellent sanitation, and basic hygiene practices including regular hand washing. Treatment for typhoid fever often involves the administration of antibiotics; nevertheless, prompt diagnosis and treatment are essential for limiting the risk of complications and ensuring a full recovery.

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