Project on

A survey on the knowledge and awareness of diarrhea in children on the rural area of Bangladesh

[In the partial fulfillment of the requirements for the degree of Bachelor of Pharmacy]

Submitted To

The Department of Pharmacy,

Faculty of Allied Health Sciences,

Daffodil International University

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APPROVAL

This project paper, **"A survey on the knowledge and awareness of diarrhea in children on the rural area of 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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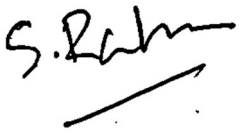

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DECLARATION

I hereby declare that this project report, **"A survey on the knowledge and awareness of diarrhea in children on the rural area of Bangladesh",** is done by me under the supervision Dr. Mohammed Shafikur Rahman Associate Professor, I am declaring that this Project is my original work. I also declare that neither this project nor any part thereof has been submitted elsewhere for the award of Bachelor or any degree.

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I'm a lot of thankful to my honorable project supervisor Dr. Mohammed Shafikur Rahman Associate Professor, Department of Pharmacy, Daffodil International University.

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My Parents

The persons who always encourage me in every sphere of my life

Abstract

The nutritional effects of infectious disorders, such as diarrhea caused by certain bacteria, have been assessed using district-based monitoring information collected in long-term research in rural Bangladesh. In this 2-month and 1-year periods, the incidences of particular illnesses were correlated with the ponderable and linear development of babies and toddlers. Only diarrhea, out of the most prevalent diseases, had an important negative correlation with increases in weight over 2-month intervals and in length over 1-year periods. It is typically a symptom of a digestive disease, which may be caused by a variety of bacterial, viral, or parasitic organisms. The objectives of the project are to determine general public awareness of diarrhea and their capacity to avoid diarrhea. In the Satkhira region, a survey that was made employing questionaries' was given out face-to-face. According to survey results, a bacterial infection is the primary reason of diarrhea in 57% of respondents. A few respondents (11%), compared to many respondents (32%), claimed that parasitic illness is the primary cause of diarrhea. 89% of participants reported having encountered diarrhea in their children, but only 6% of participants were informed that their children had never experienced diarrhea. The majority of respondents (91%) agreed that poor restroom conditions can lead to the spread of diarrhea. (94%) of respondents said that a lack of adequate drinking water infrastructure could contribute to the spread of diarrhea. According to the survey, the majority of individuals (57%) have taken medications without seeking a doctor's advice. Metronidazole was consumed by 46% of respondents, ciprofloxacin by 33%, and loperamide by 19% of respondents. The majority of respondents (83%) claimed to be familiar with the main treatment for pediatric diarrhea. According to the research, the majority of people (68%) claimed that loperamide and oral rehydration solution (ORS) were recommended by a doctor to treat diarrhea. Some respondents mentioned that their doctor had recommended antibiotics and bismuth salicylate to treat their diarrhea.

Contents

List of figures

Chapter 1
Introduction

1.1 Introduction

More than 99% of the 10 million children under the age of five who die each year globally are victims of infectious diseases, which are responsible for 70% of those deaths. Diarrhea is a major public health problem in developing countries, especially for young children under the age of five, and one of the top causes of death in children [1]. At the moment, rotavirus is one of the main causes of acute diarrhea throughout the globe, and the clinical illness it causes frequently leads to severe dehydration that could be fatal [2]. The main route for virus transmission is through the feces and mouth, but droplet or airborne transfer have also been suggested. Throughout the cooler months, rotavirus is common in both developed and developing environments in temperate and tropical areas. This seasonal pattern more closely mirrored common intestinal infections, which disseminate primarily through fecal-oral routes, than pediatric viruses, which transmit through the respiratory route (such as measles) [3]. Although rotavirus infections are commonly associated with winter diarrhea, bacterial diarrhea is more common during warm and wet periods [4]. The sharp drop in diarrhea-related mortality was paralleled by variations in the yearly prevalence of diarrhea, which is proof that rotavirus has replaced Escherichia coli as the primary enteric pathogen [5]. Oral rehydration treatment played a significant role in the reduction of hospitalizations and diarrhea mortality in Brazil in the 1980s. (ORT). Changes in the economy, water availability, immunization rates, length of breastfeeding, and nutritional quality are all variables that have contributed to this decline [6]. Compared to developing countries, industrialized economies have not seen a reduction in the incidence of rotavirus illness, although breastfeeding has a small protective impact in preventing the disease. Unfortunately, there is not enough proof to conclude that the primary interventions that have led to a decline in bacterial and parasitic diarrheal disease have also had an impact on the probability of rotavirus diarrhea [7]. Effective vaccination programs may reduce morbidity and death brought on by rotavirus infections. Neither individually nor in arrangement, enteric infections of any kind were present in less than half of the patients in the study. Since the opinion of others suggested a relatively low proportion of isolations for understood enteric pathogens, a particular procedure developed to offer more possibilities for the isolation of bacterial, viral, and other enteric pathogens was strictly adhered to in our investigation of infant and child diarrheal illness. [8]

1.2 Causes of diarrhea

Infection: Diarrhea is a symptom of a number of bacterial, viral, and parasitic diseases, the vast majority of which are transmitted by water that has been contaminated by human waste. Infections are more inclined to occur when there is insufficient cleanliness, hygiene, and pure water for drinking, cooking, and cleaning. Rotavirus and Escherichia coli are the two most common causes of moderate-to-severe diarrhea in low-income nations. Other diseases like cryptosporidium and Shigella species may also be important. Considering geographic etiologic patterns is also essential. [9]

Children who perish from diarrhea frequently have basic malnutrition, which increases their susceptibility to the condition. Every episode of diarrhea makes their starvation worse. Diarrhea is one of the major causes of malnutrition in children under the age of five. [10]

Drainage networks, septic tanks, and latrines are just a few places where human waste can contaminate water. Animal feces also contain germs that could potentially cause diarrhea. [11]

Other causes: Poor personal hygiene can increase the contagiousness of diarrheal illness and help it spread from one person to another. Food that has been prepared or kept improperly may also cause diarrhea. Risky domestic water handling and storage constitute another major danger element. It's possible that contaminated fish and seafood are to blame for the sickness. [12]

1.3 Pathophysiology of Diarrhea

A rise in bowel movements or repetition are symptoms of diarrhea. It is one of the most common clinical indicators of gastrointestinal illness, despite the fact that it can also signal main illnesses outside the digestive system. Of course, conditions affecting the small or large intestine can result in diarrhea. [13] Although diarrhea is occasionally regarded as a minor annoyance or apprehension at least 2 million people globally, mostly children, pass away from the consequences each year. Even though there are numerous other causes for diarrhea, it is almost always a sign of one of the four basic processes mentioned below. Furthermore, it is normal for more than one of the four processes to be involved in the pathogenesis of a case. [14]

Osmotic Diarrhea

Inadequate solute uptake inhibits the normal intestinal absorption of water. If there are too many solutes retained in the intestinal lumen, water won't be ingested and diarrhea will occur. Osmotic diarrhea typically results from one of two situations: absorption of a substrate that is not well absorbed: Typically, the problematic element is a carbohydrate or a divalent ion. Common examples include mannitol or sorbitol, Epson salt (MgSO4), and a number of antacids. (MgOH2). [15] Malabsorption: Although it can occur with nearly any type of malabsorption, the inability to digest particular carbohydrates is the most common deficit in this category of diarrhea. A common instance of malabsorption that impacts many adult people and animals is lactose intolerance, which can be brought on by a deficiency in the brush border enzyme lactase. In these circumstances, a sizable quantity of lactose is consumed (often in the form of milk), but lactase cannot be metabolized into glucose and galactose for absorption because the intestinal epithelium lacks lactase. The osmotically active lactose is retained in the intestinal lumen, where it "holds" water. Making things worse, lactose from the undigested food travels to the large intestine where colonic bacteria break it down, resulting in an excessive amount of gas being produced. Because the patient ceases eating the indigestible substance or goes on a fast, the osmotic diarrhea stops. [16]

Secretory Diarrhea

Large amounts of water are typically secreted by the small intestinal lumen, but most of this water is efficiently consumed before it reaches the large intestine. Diarrhea happens when the rate at which water is released into the intestinal lumen exceeds the rate at which it is taken. Many millions of people have died as a result of secretory diarrhea linked to cholera. The causing bacterium, Vibrio cholera, produces cholera toxin, which strongly stimulates adenylyl cyclase and causes an ongoing rise in the intracellular concentration of cyclic AMP in crypt enterocytes. The chloride channels, which are necessary for the uncontrolled release of water from the crypts, are prolonged activated as a result of this modification. [17] Cholera toxin also affects the enteric nervous system, which results in a different trigger for discharge. Being exposed to toxins from various other kinds of bacteria causes the same chain of events, including severe secretory diarrhea, which can sometimes

be fatal unless the person or animal receives aggressive therapy to maintain hydration. (for example, E. coli heat-labile toxin). [18] In along with bacterial toxins, a number of other compounds can also induce extracellular diarrhea by triggering the intestinal secretion system, including: specific laxative hormones are produced by specific tumor kinds. (e.g. vasoactive intestinal peptide) a wide range of medicines (e.g. some types of asthma medications, antidepressants, cardiac drugs) certain metals, organic toxins, and natural sources (e.g. arsenic, insecticides, mushroom toxins, caffeine) Most of the time, during a 2-3-day diet, secretory diarrheas persist. [19]

Inflammatory and Infectious Diarrhea

The gastrointestinal membrane, which is composed of numerous mechanisms that protect the digestive tube's mucosa from harm, is susceptible to disruption like many other barriers. In all species, microbial or viral infections that damage the intestine's epithelium are a common source of diarrhea. [20] Although wide permeable epithelium collapse is frequently followed by epithelium degradation, which causes serum and blood to exude into the lumen. Because water intake is so poor under these conditions, diarrhea usually results. Examples of pathogens that are frequently connected to infectious gastroenteritis contain the following: [21]

Viruses: rotaviruses, coronaviruses, and parvoviruses (canine and feline), and norovirus
Bacteria: Salmonella, E. coli, and Campylobacter Coccidian species, Cryptosporium, and Giardia are protozoa.

The immune system's reaction to inflammatory circumstances in the intestine plays a significant role in the onset of diarrhea. To provide a secretory component to an inflammatory diarrhea, highly pathogenic white blood cells produce cytokines and inflammatory mediators that can cause outflow. Reactive oxygen species produced by leukocytes can damage or kill intestinal epithelial cells, which are then replaced by immature cells that often lack the enzymes and transporters required for nutrient and water uptake at the brush border. By adding components of an osmotic (malabsorption) diarrhea, this aggravates the problem. [22]

Diarrhea Associated with Deranged Motility

For nutrients and water to be successfully absorbed, the intestinal components must be appropriately accessible to the mucosal epithelium and held in position for sufficient time to enable absorption. Although the absorbent process itself was functioning normally, diarrhea and reduced absorption could result from motility disorders that speed up passage time. Alterations in intestinal motility, most commonly greater propulsion, are common in many types of diarrhea. It's not always clear and very hard to prove whether significant modifications in motility are the real cause of diarrhea or just a side effect. [23]

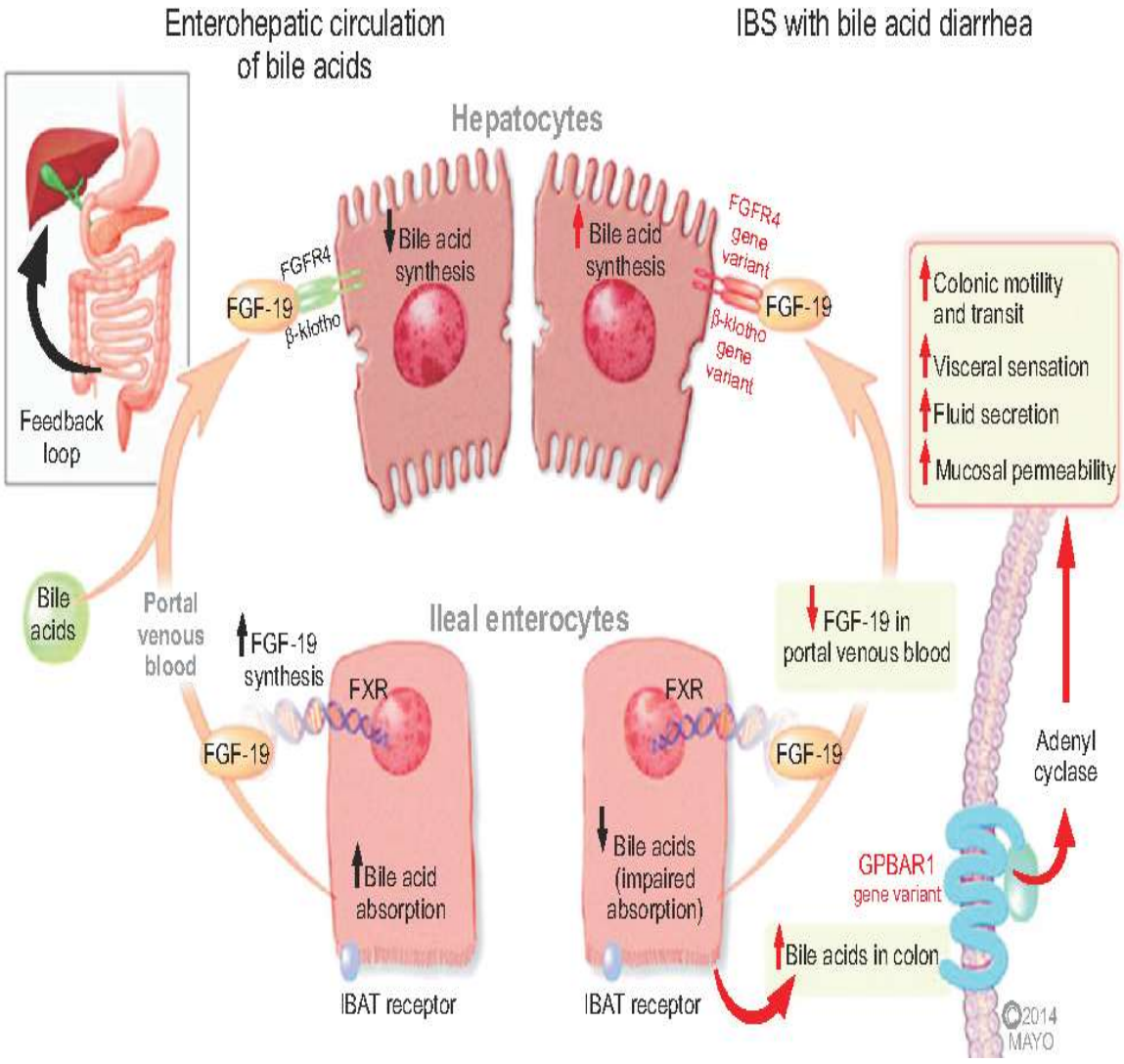

Figure 1: Mechanisms of bile acid (BA)-related bowel dysfunction in irritable bowel syndrome with diarrhea (IBS-D) or idiopathic BA diarrhea [24]

1.4 Lifestyle Risk Factors

Beyond evaluating and, potentially, altering what you eat and drink, certain behaviors and environmental factors can raise your risk for getting diarrhea: [25]

Personal Care

The bacteria, viruses, and parasites that cause traveler's diarrhea and stomach flu are spread through contact with infected food, drink, and items. In the medical world, this is known as the fecal-oral route. Before eating, after using the restroom, and before changing your child's diapers, sanitize your hands completely. In the lack of soap and water, use an alcohol-based hand gel. [26] Never drink water from a creek or other natural source that hasn't been treated. Even in developed countries, people can contract parasites like Giardia, which induce diarrhea and are passed on by animals. While traveling locations where there is a greater risk of ingesting contaminated food and water, use only bottled water and refrain from employing ice if it comes from bottled or purified water. Avoid eating raw shellfish, undercooked meat, unpeeled fruits and veggies, milk products, and raw vegetables and shellfish. [27]

Inadequate food handling

It is recommended to follow the recommendations made by the Centers for Disease Control and Prevention because improper food preparation frequently results in food contamination: [28] Keep your kitchen organized and wash your utensils and cutting surfaces in hot, soapy water. The best practice is to keep uncooked meat, fish, poultry, and eggs separate from other foods. Make use of a separate cutting board for these items. Use a food thermometer to check that the beef is cooked to an internal temperature that will destroy the germs that contaminate the food. [29] Ensure that the refrigerator's temperature never rises above 40 degrees. Thaw frozen foods in the refrigerator or microwave, not on the table.

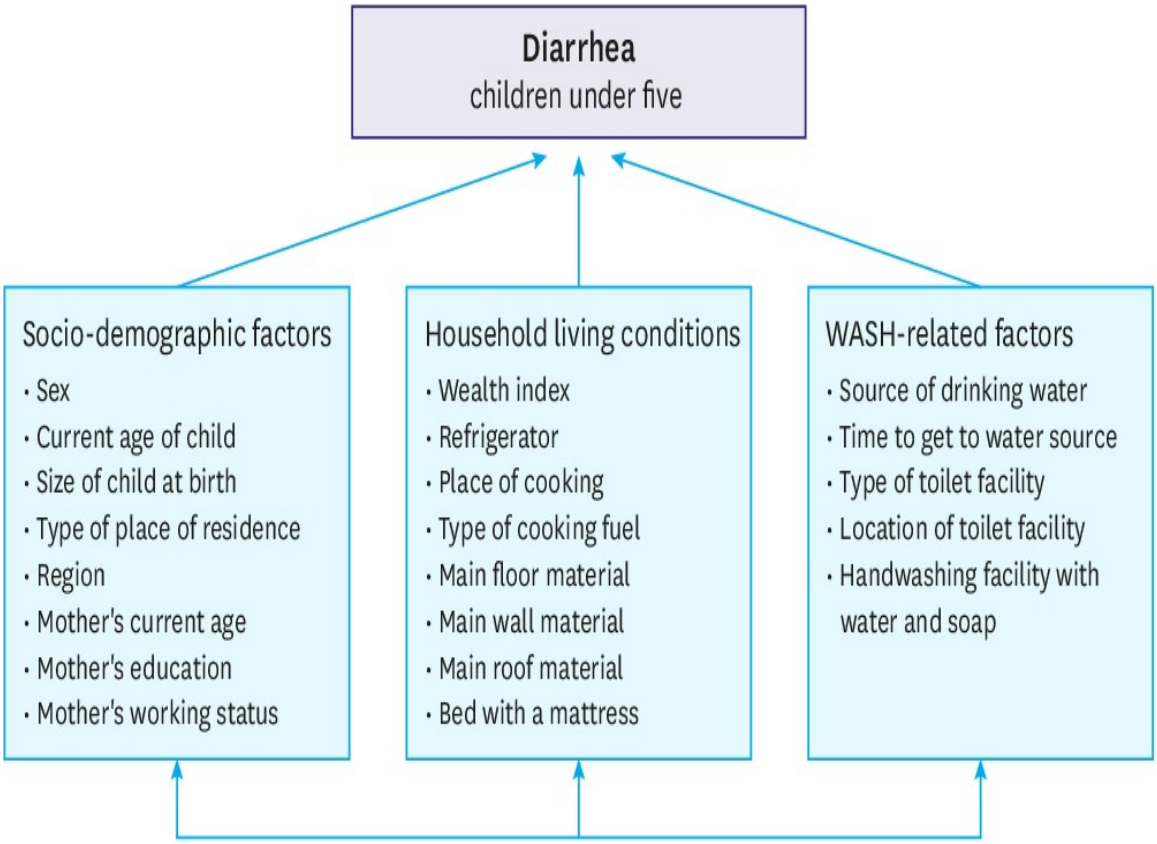

Figure 2: Lifestyle Risk Factors in diarrhea [30]

Chapter 2
Purpose of the study

2.1 Purpose of the study

- The goals of this project are to get a thorough understanding of the medical problem being researched.
- To know consciousness of general people about diarrhea.
- To find out preventive capability in general people against diarrhea.
- To know general responder's knowledge about causes of diarrhea.
- To identify their taken treatment without doctor suggestion.
- To determine which factors, contribute to the progression of diarrhea in children.
- To have a better grasp of the many diagnostic procedures used to diagnose this disease.

Chapter 3
Methodology

3.1 Methodology

A big or small proportion of project participants, consumers, and/or stakeholders may be surveyed to collect a wealth of quantitative and qualitative data.

- I have started work for this survey in January 2023
- A survey created using a questionaries' was being circulated on face to face individually.
- Some important data has been collected by reviewed number of related article paper from different website like google scholar, research gate and PubMed.

3.2 Sample size

- The test had 15 short-answer questions and took roughly four to five minutes to finish. The survey includes the following information: (1) prologue; (2) socio segment statistics (age, gender, instructional level, and occupation status); and (3) diarrhea causes and impact.
- I have tried my best to collect all data from different profession people for gathering different types of information.
- The examination is led by a questionnaires oriented survey, around **200 populations** was being responded for this assessments.

3.3 Data analysis strategy

Data analysis is the methodical application of statistical and/or logical tools for describing and illustrating, condensing and summarizing, and evaluating data. Microsoft Excel was used to analyses the data.

Chapter 4
Literature Review

4.1 Diarrhea in children: an interface between developing and developed countries

Diarrheal diseases continue to be one of the top causes of morbidity and mortality in children all over the world, despite significant advancements in the pathophysiology and treatment of these conditions. Infections are the primary source of most diseases, and microorganisms are skilled communicators. It's possible that the civilized world's postponed immunological activation of the gut and disruption of typical bacterial-epithelial cross-talk are to blame for the rise in immune-mediated gut diseases. Oral resuscitation treatment is the cornerstone of gastroenteritis management, and it is constantly being improved. The importance of nutrition in early treatment is highlighted by the reality that malnutrition is still the leading risk factor for diarrheal death. Drugs are only really effective for specific conditions, but probiotics and cutting-edge medications that target the mechanisms of secretory diarrhea are hopeful alternatives. Consequently, using global prevention strategies may ultimately be the most efficient approach to reduce the prevalence of diarrheal disease. These initiatives include immunizations as well as, more importantly, legislation to address the ongoing differences between industrialized and developing countries in having sufficient drinking water, sanitation, and nutrition. [31]

4.2 Diarrheal disease risk in Matlab, Bangladesh

This investigation study aims to identify the risk for diarrheal disease in rural Bangladesh by analyzing the complex and variable interactions of biological, economic, cultural/behavioral, and environmental variables over time and space. Based on the relative importance of each risk factor for cholera and non-cholera water diarrheal illness for a range of distinct variables, they are compared. Data on diarrheal illness were collected for patients admitted to the International Centre for Diarrhea illness Research (ICDDR) hospital between January 1, 1992, and December 31, 1994. Using laboratory and hospital records, cases were divided into one of two categories of diarrheal diseases (cholera or non-cholera watery diarrhea), which were used as dependent variables in the research's analysis phase. The community members who would act as observers were specifically chosen based on their age. For each individual variable, data were collected to test the supposed associations with watery diarrhea. Distributing questionnaires, obtaining secondary data from the Community Health Worker Record Books and the ICDDR's Demographic Surveillance System Records, and calculating variables using a geographic

information system database were used to collect this information. Sanitation and the availability and use of water are essential in the effort to halt the spread of secondary cholera and watery diarrhea. Water intake and transportation factors were more important for non-cholera watery diarrheal occurrence, in spite of being important for both cholera and non-cholera watery diarrheal risks. It is important to investigate the causes of this connection as well as whether there is a nationwide trend to it. [32]

4.3 Progress and barriers for the control of diarrheal disease

Intestinal sodium-glucose move was discovered, which opened the door to the creation of oral rehydration fluid, which was thought to be the most important medical advance of the 20th century. prior to oral rehydration products became widely used, patients with diarrhea could only receive intravenous fluid replacement; as a result, they had to travel to a hospital to obtain the necessary supplies. These facilities were usually unavailable or impractical to use in the resource-poor environments where diarrhea was most prevalent. Oral rehydration solutions are efficient, inexpensive, and widely accessible, but their use has been static. As a result, diarrhea has continued to be a major factor in pediatric fatalities, with mortality rates remaining stable over the previous five years. New methods for the avoidance, surveillance, and therapy of diarrhea, such as an improved oral rehydration manufacturing process, zinc supplements, and rotavirus vaccinations, have made it necessary to resurrect efforts to reduce diarrheal mortality on a worldwide scale. [33]

Chapter 5
Result & Discussion

5.1 Age of responders

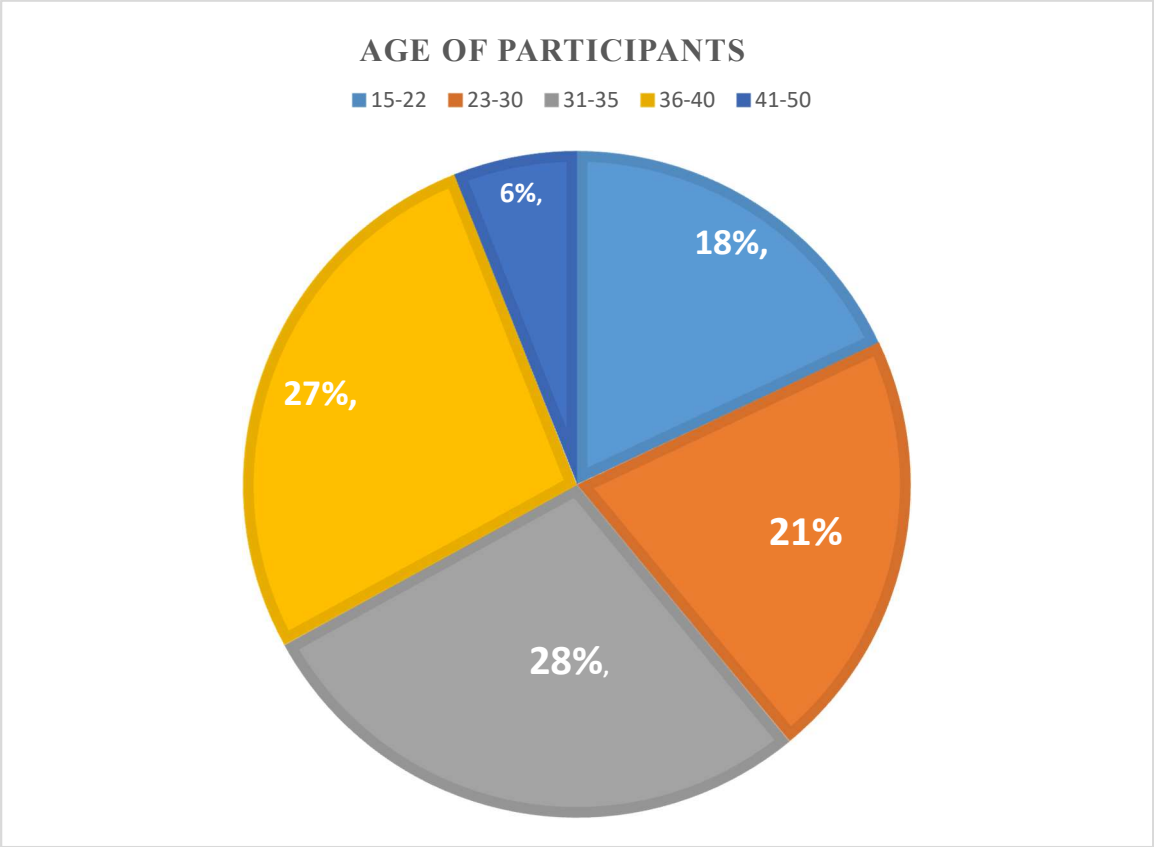

Figure 3: Age of responders

Discussion: Many different age groups of people have answered in this survey assessment. A maximum of 28% of the participants were among the ages of 31 and 35, and 27% of respondents were in the 36–40 age groups. Of the participants, 18% were between the ages of 15 and 22.

5.2 Gender of participants

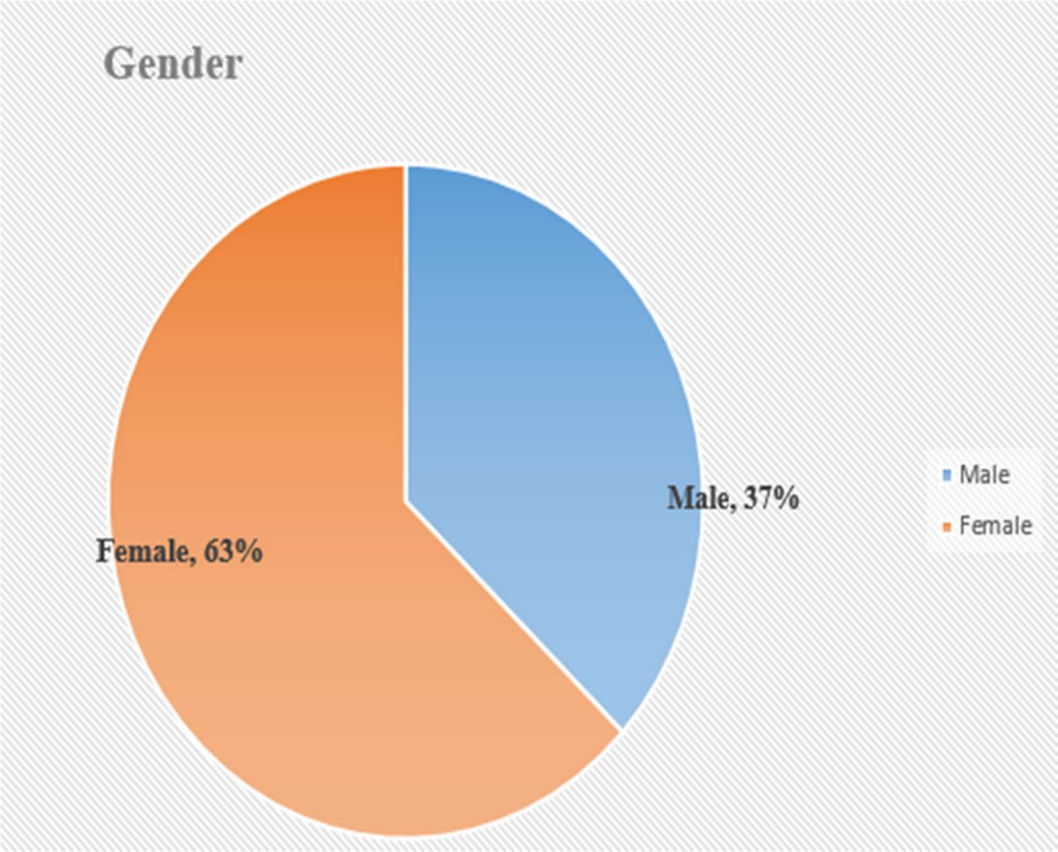

Figure 4: Gender of participants

Discussion: Figure 4 displays a summary of the demographics of the interviewees. 63% of respondents, who make up the bulk, are female, while 37% are male.

5.3 Professional status of responders

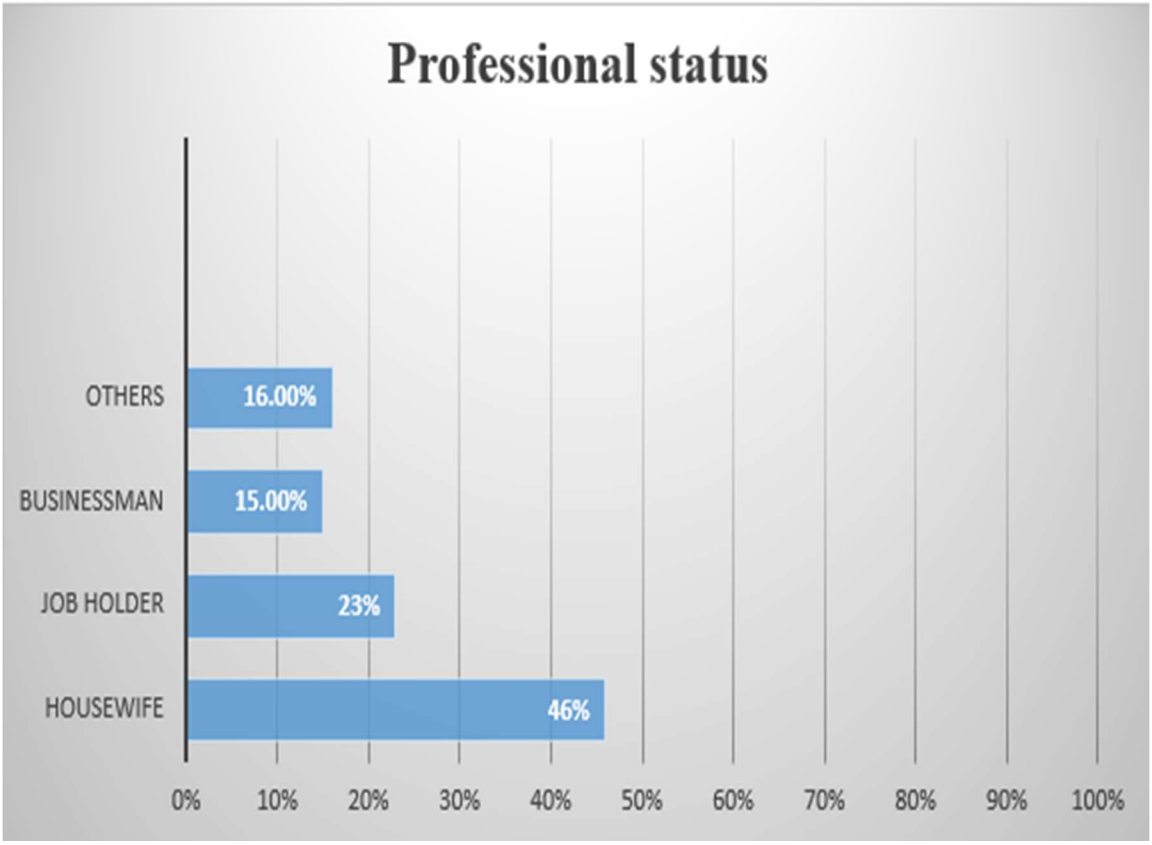

Figure 5: Professional status

Discussion: As of this time, it was discovered that 46% of the people who took part were housewives. 15% and 23% of respondents were businessmen and employment holders, correspondingly.

5.4 Do you know about waterborne disease?

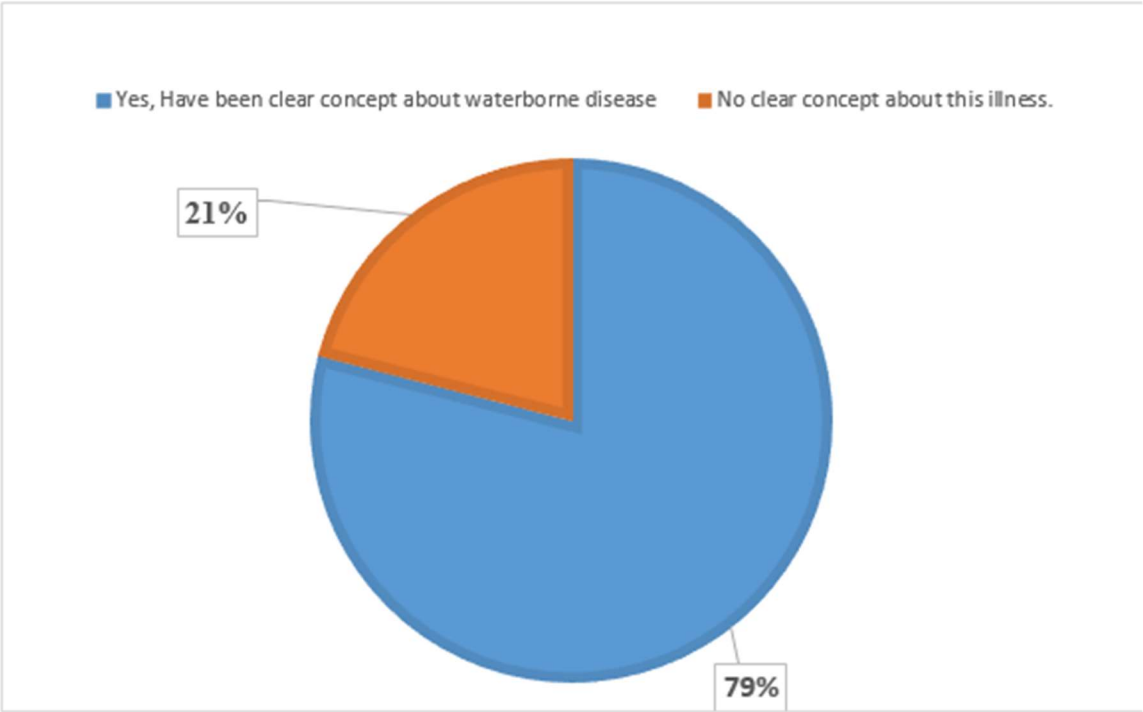

Figure 6: Knowledge about waterborne disease

Interpretation: Waterborne illness is brought on by recreational or ingesting water that has been contaminated with pathogens or illness organisms. It should be mentioned that a lot of aquatic illnesses can also be transmitted from person to person, through contact with animals or their environments, or by consuming contaminated food or drink.

5.5 Do you know what the primary causes of Diarrhea is?

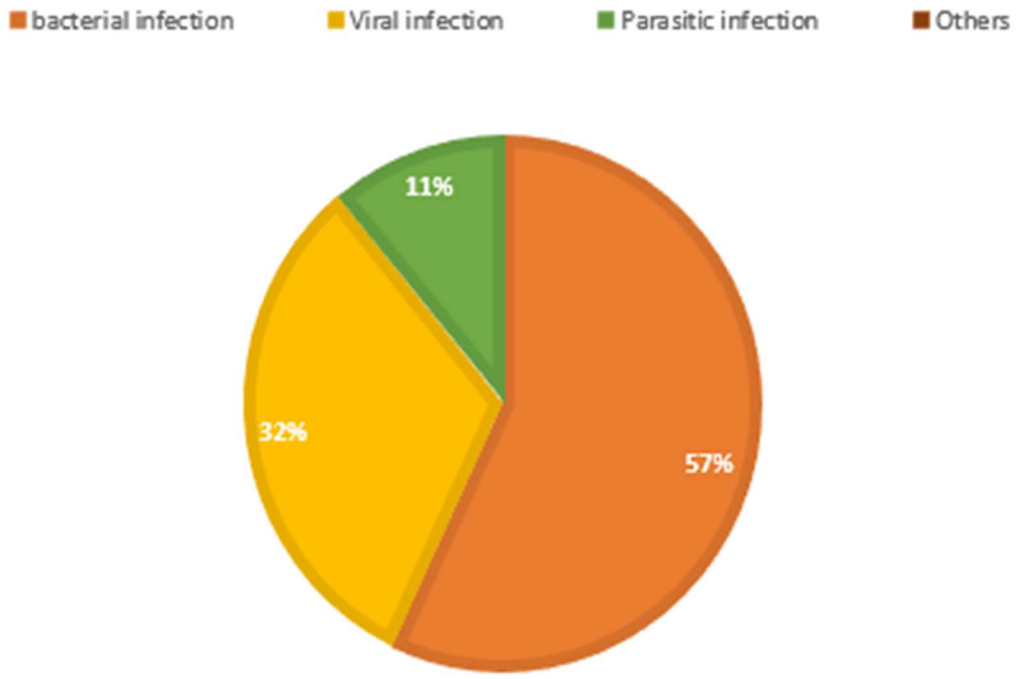

Figure 7: Primary causes of Diarrhea

Interpretation: The producer of an impact, result, or consequence is referred to as the cause. According to survey results, a bacterial infection is the primary reason of diarrhea in 57% of respondents. A few respondents (11%), compared too many respondents (32%), claimed that parasitic illness is the primary cause of diarrhea.

5.6 Has your child had diarrhea before?

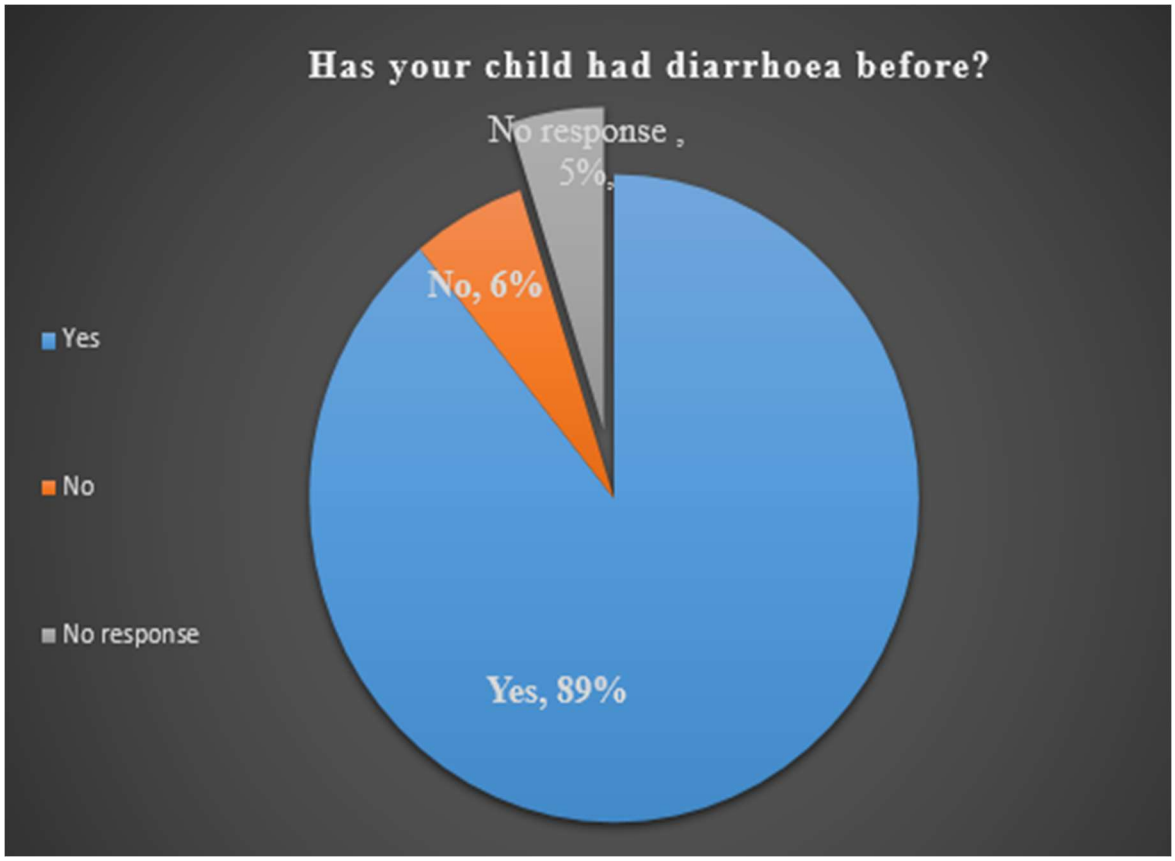

Figure 8: diarrhea of children

Interpretation: Diarrhea is a common illness symptom in young babies. In the US, gastroenteritis may strike children under the age of four at least twice a year. Acute (temporary) and persistent diarrhea are the two kinds of the condition. (lasting more than 2 weeks). In accordance with the study, **89% of respondents said that they had experienced diarrhea in their child, but only 6% of respondents said that their children had never experienced diarrhea.**

5.7 What do you mean by poor personal hygiene?

- Not washing the hands after using toilet
- Not washing the hands before eating any food
- Not washing the fruits or vegetables before eating

Majority of the responders has been agreed with the above mentioned points against the subject of poor personal hygiene. For the prevention of diarrhea personal hygiene should be maintained.

5.8 Do you know that lack of good toilet facilities can trigger the transmission of diarrhea?

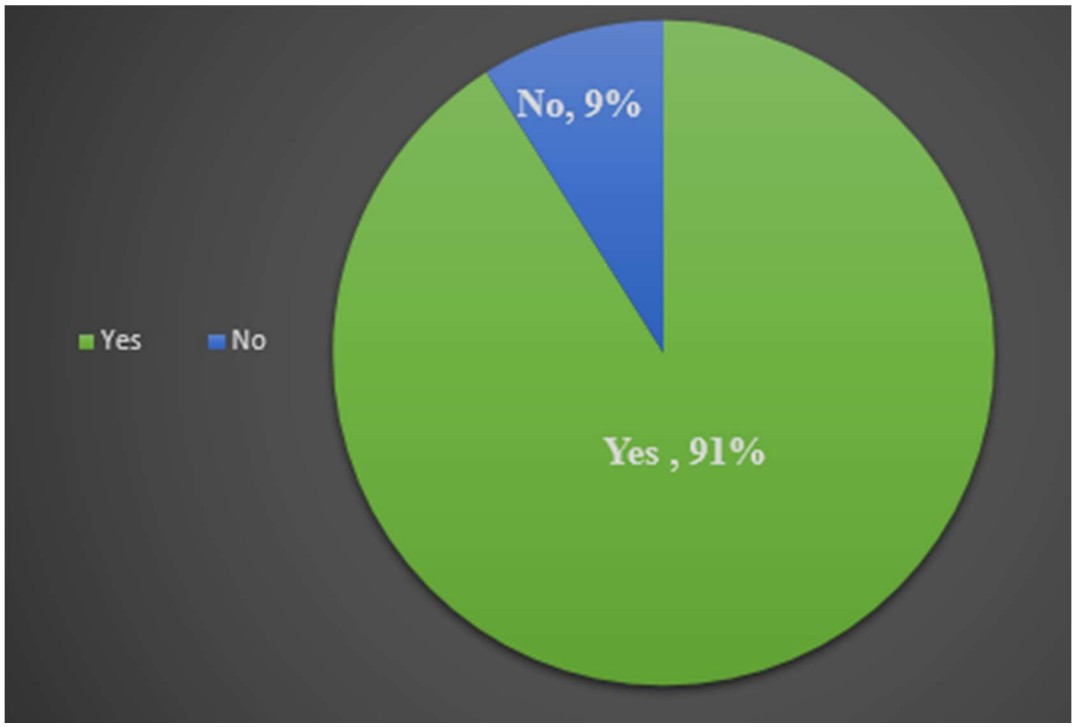

Figure 9: Transmission causes of diarrhea

Interpretation: When there is human waste current, a lack of fundamental hygiene measures can lead to an unhealthy environment. Without adequate sanitation facilities, waste from infected people can affect the soil and water of a town, increasing the likelihood that other people will become ill. **The majority of respondents (91%) agreed that poor restroom conditions can lead to the spread of diarrhea.**

5.9 Do you know that lack of good drinking water facilities can trigger the transmission of diarrhea?

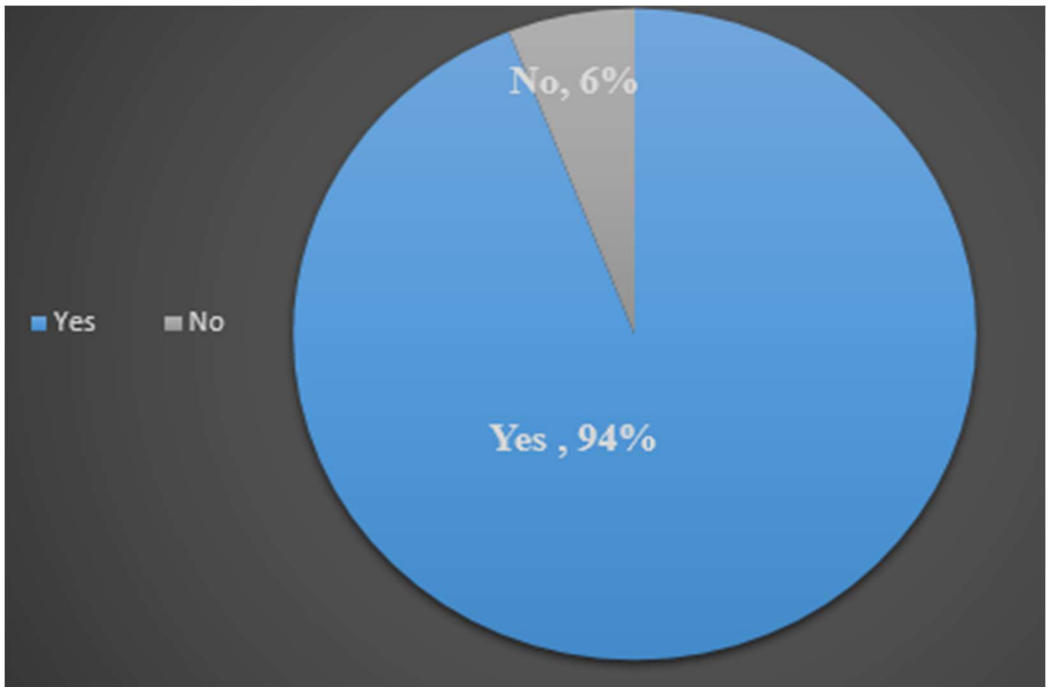

Figure 10: Transmission triggering agent of diarrhea

Interpretation: When there is a lack of pure water, the risk of tropical water-borne illnesses like cholera, typhoid fever, and dysentery increases. Lack of water can lead to the spread of diseases such as typhus, cholera, and trachoma, an eye condition that can be blinding. **The majority of respondents (94%) agreed that poor access to clean drinking water facilities can contribute to the transmission of diarrhea.**

5.10 Have you taken any medicine without doctor's suggestion when your child had diarrhea?

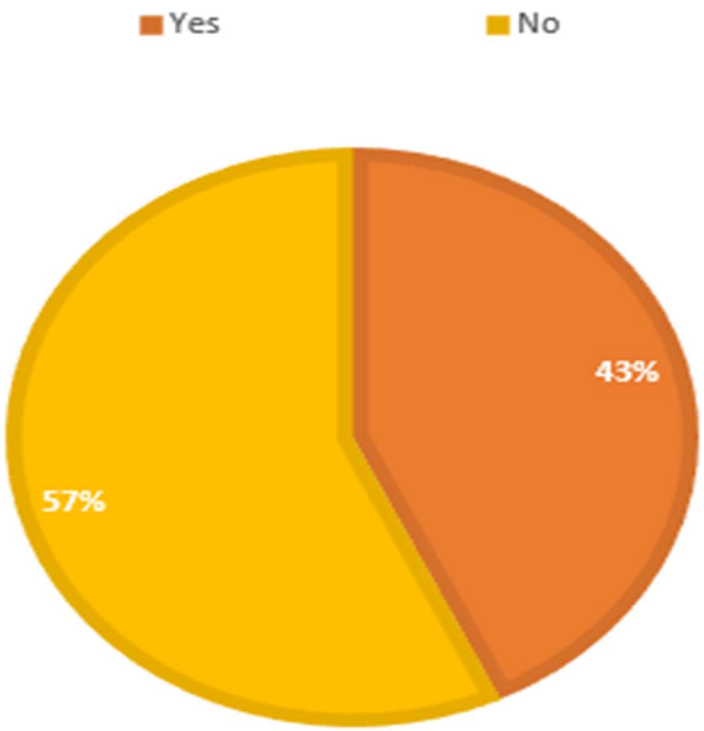

Figure 11: Taken medicine

Interpretation: According to the survey majority of the people (57%) has been taken medicine without consultation of doctor.

5.10 If yes, which type of medicine taken?

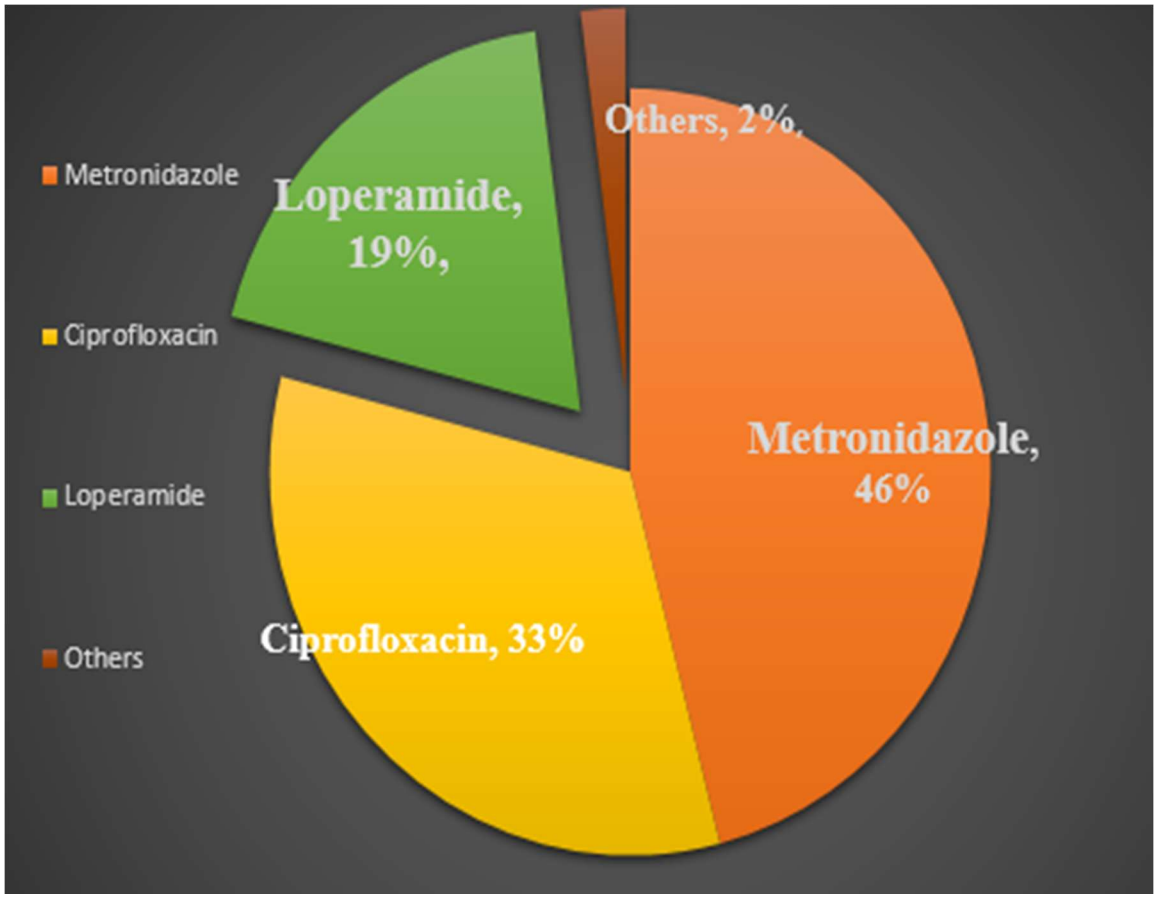

Figure 12: Taken medicine without doctor suggestion

Interpretation: Most illnesses in the general population are treated haphazardly with any medication without a prescription from a doctor. **Based to the poll, 46% of respondents reported using metronidazole, 33% reported using ciprofloxacin, and 19% reported using loperamide.**

5.11 Do you know primary remedy of child diarrhea?

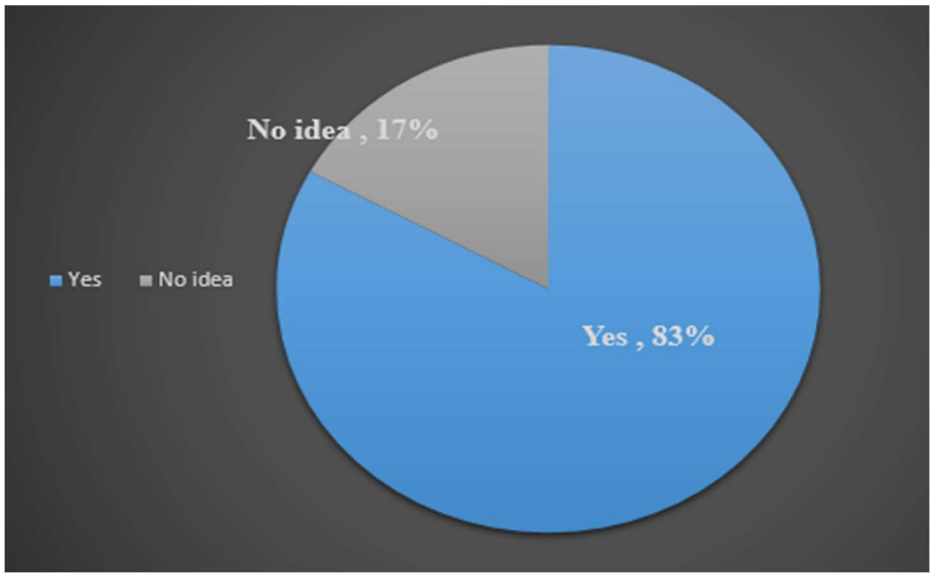

Figure 13: Primary remedy of child diarrhea

Interpretation: Drinking plenty of liquids, including juices, broths, and water, is the primary treatment for diarrhea in toddlers. Avoid coffee and alcohol. Introduce semisolid and low-fiber foods gradually as your bowel motions start to return to normal. **The vast majority of respondents (83%) claimed to be familiar with the main treatment for pediatric diarrhea.**

5.12 What kind of medicine did the doctor give for diarrhea?

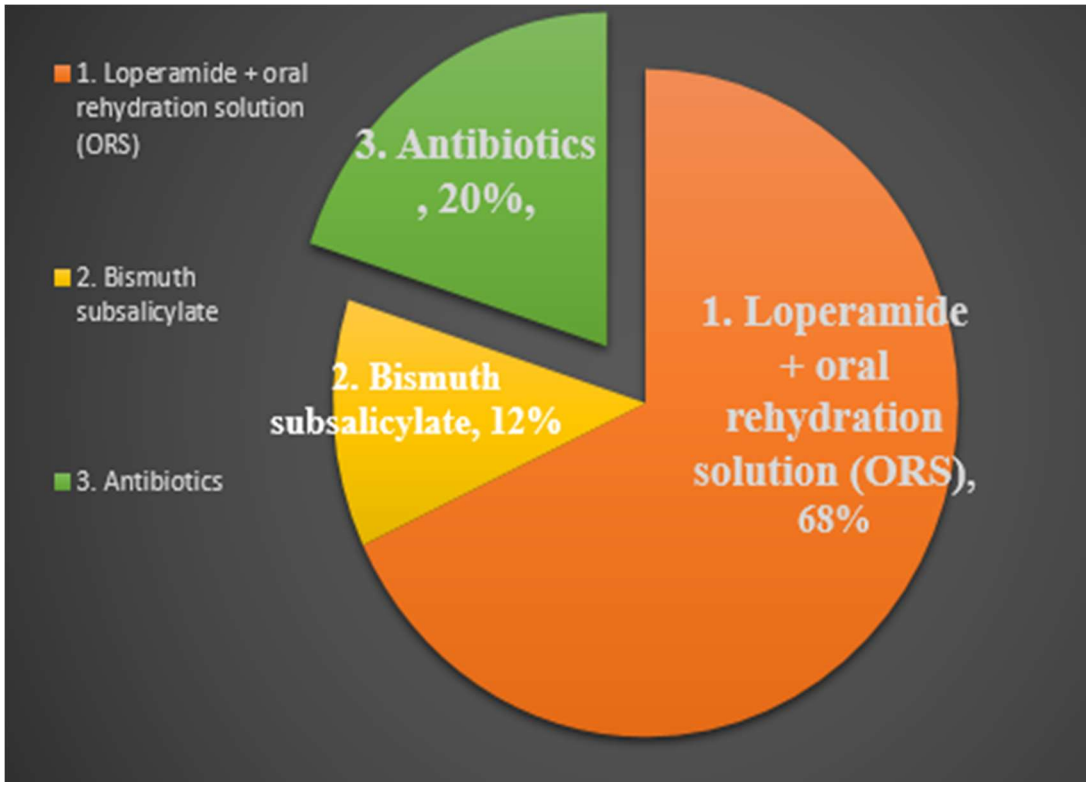

Figure 14: Given medicine by doctor

Interpretation: In accordance to the research, the majority of people (68%) claimed that loperamide and oral rehydration solution (ORS) were recommended by a doctor to treat diarrhea. Some respondents mentioned that their doctor had recommended antibiotics and bismuth salicylate to treat their diarrhea.

5.13 What kind of prevention should be taken for diarrhea?

I have been reached many people for their response. Different categorized person responded different types comment. Most of people answered almost similar types of response. Most of the responders exert preventive measure for diarrhea following points:

- Only drink bottled water, even when cleaning your teeth.
- Eat nothing from food sellers on the street.
- Do not consume ice produced from tap water.
- Eat only fruits and veggies that can be peeled or that have been cooked.
- Make certain that everything you consume is fully prepared and served hot.
- Most pre-packaged foods are healthy to eat (check expiration date)
- Never consume meat or seafood that is raw or undercooked.

Chapter 6
Conclusion

6.1 Conclusion

It is clear that efforts to reduce the spread of secondary cholera and non-cholera, watery diarrhea rely largely on access to and use of sanitation and water. The necessary threshold for tube well entry in rural Bangladesh has not yet been reached, despite the fact that to many outsiders this may seem obvious. This is a point on which Bangladeshi health policy makers and international assistance organizations continue to disagree. The main therapy for diarrhea in toddlers is to drink lots of liquids, including liquids, broths, and water. Do not drink booze or coffee. As your bowel movements start to return to normal, progressively introduce semisolid and low-fiber foods. The majority of respondents (83%) indicated that they were acquainted with the primary pediatric diarrhea remedy.

Chapter 7

Reference

Reference

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