Life Style, Health Behavior and Health Status of different FDMN community people in Rohingya Refugee Settlement, Cox's Bazar, Bangladesh.

The Thesis is submitted in the fulfillment of the requirement for the degree of Doctor of Philosophy from the Department of Pathology and Parasitology

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Authorization

I do hereby declare that the research work presented in this Thesis entitled **"Life Style, Health Behavior and Health Status of different FDMN community people in Rohingya Refugee Settlement, Cox's Bazar, Bangladesh."** is completely my own work and very carefully done by me. No part of this Thesis has been submitted to anywhere in any form for any purpose. All information and data are real, authentic and honestly presented.

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October, 2023

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Dedicated to my departed Father

Sheikh Kamal Uddin

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Part 1

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List of abbreviations and symbols

Abbreviations and symbols	Elaboration
%	Percentage
WASH	Water, Sanitation and Hygiene
RRRC	Refugee Relief and Repatriation Commissioner
UNICEF	United Nations Children's Fund
WHO	World Health Organization
FDMN	Forcibly Displaced Myanmar Nationals
HIV	human immunodeficiency virus
TB	Tuberculosis
ARI	Acute Respiratory Infection
NGO	Nongovernmental Organization
KAP	Knowledge, Attitude and Practice
CD	Communicable Diseases
C&NCD	Communicable & Non-communicable Diseases
PEM	Protein Energy Malnutrition
DM	Diabetes Mellitus
CHD	Coronary Heart Disease
COPD	Chronic Obstructive Pulmonary Disease
UTI	Urinary Tract Infection
RTI	Respiratory Tract Infection
WBD	Water Borne Disease
MBD	Mosquito Borne Disease
NCD	Non Communicable Disease
MI	Myocardial Infarction
AIDS	Acquired Immune Deficiency Syndrome
IBS	Irritable Bowel syndrome
UN	United Nations
SPSS	Statistical Package for the Social Sciences
ORS	Oral Rehydration Solution

Summary

Globally, 79.5 million people live outside their country. They are mostly migrants, people who leave their homelands in search of better opportunities. However, over one-third of them are refugees, escaping political violence and other threats in their own country. Currently, the Rohingya refugee issue has become a big humanitarian crisis in Bangladesh. This community has been compelled to leave their home place due to violence. According to the data of the United Nations High Commissioner for Refugees (UNHCR), as of March 2023, 960,539 Rohingya refugees have been registered and issued to be migrated from Myanmar to Bangladesh. This densely populated community is facing many health-related difficulties due to their living conditions, limitation of resources, restricted healthcare access, lack of sanitation etc. In many places, Rohingya camps are mostly overcrowded, with few supplies and major management issues. Because of the crowded living conditions in the camps and the absence of appropriate water, sanitation, and hygiene (WASH) protocols, the refugees are placed in a situation where they pose a significant threat to the health of the general population, particularly at the Kutupalong extension sites. Rohingya people are also exposed to traumatic events related to the war, such as the destruction of property, the loss of family members, witnessing extreme violence, and injuries or losses of property at home earlier etc. These traumatic experiences may result in severe mental health problems among them.

Based on these circumstances, we aimed to study the epidemiology and socio-demographic factors associated with different diseases (both communicable and non-communicable) and the impact of health education in improving health behavior, lifestyle and health status of different FDMN communities in the Rohingya Refugee Settlement, Cox's Bazar, Bangladesh. The other associating objectives were to determine the knowledge, attitude and practices regarding different diseases among the FDMN community, and to estimate the disease burden/occurrence among the community people.

To satisfy the requirement of the study objectives a cross-sectional survey was conducted on 3060 Rohingya people living in the refugee camps at Cox's Bazar in Bangladesh. After receiving voluntary consent, information was gathered through in-person interviews utilizing a language-validated, pretested questionnaire. The questionnaire was developed on socio-demography, knowledge, awareness, attitude and behavioral practices, disease burden and impact of health education-based variables. The questions were designed on that particular variable/s with suitable options rationally. A non-probability purposive sampling method has been used in this study.

In chapter one based on the first objective, we observed that the knowledge, attitude and practice variables had significant association with different diseases when the respondents were asked about

their knowledge, attitude and practices on different diseases and related issues. Here 64% of respondents believed that eating regular meals in time is important for health. Around 53% thought that sanitary latrine is important to prevent different water-borne diseases. Also, 62% of respondents mentioned that consulting doctor immediately is important in case of any clinical conditions. However, still 36% respondents believed that TB, Cancer and HIV are the result of great sin. About 58% of respondents were used to wash hands before meals and after toilet properly with soap. About 54% of respondents used to treat or boil water to drink. About 41% of respondents used to cut nails regularly and 69% of respondents used anti-mosquito nets/coils/spray at home. About 36% respondents used to clean bushes and water containing pots regularly to prevent mosquito breeding.

In chapter two based on objective two, we evaluated the knowledge level of the study participants on different communicable and non-communicable diseases. We revealed that 84% of the respondents knew about water-borne diseases, 81% knew about transmission of water borne diseases and 78% of respondents knew about the signs and symptoms of water-borne diseases. About 68% of respondents could identify A, B complex, C, D, E and K as examples of vitamins, where 24% identified K, Fe, Zn, Cu and 8% identified Na, I, Ca and electrolyte as vitamins. Around 72% respondents identified Cholera, Typhoid, Diarrhea, Dysentery and Giardiasis as examples of water-borne diseases and 69% identified Malaria, Dengue and Chikunguniya as mosquito-borne diseases correctly. Moreover, 39% of respondents correctly identified sexually transmitted diseases like Gonorrhoea, Syphilis, HIV and Viral Hepatitis. Pneumonia, Influenza, COVID-19 and TB were identified correctly as respiratory diseases by 49% of respondents. Again when the respondents were asked about examples of non-communicable diseases, 48% replied about Diabetes, Hypertension, MI, Dyslipidemia, Stroke and Osteoporosis.

In chapter three based on objective three, we assessed the impact of health education on the knowledge, attitude and practice of health-related behavior of the respondents. We observed that, 71% of respondents are currently using anti-mosquito nets/coils/spray compared to 57% in 6 months back. Around 68% of respondents found practising hand washing properly before meal and after toilet with soap compared to 51% during 6 months back. It was seen that 61% of the respondents knew about essential nutrients whereas it was 47% during 6 months back. Again 73% of respondents thought that fruits and vegetables are good sources of vitamins and minerals which was recorded as 68% in 6 months back. 78% of respondents used to wash fruits, vegetables and other raw foods before consumption which was 61% before 6 months. Also seen that 66% of respondents believed that a healthy lifestyle and healthy food habits can prevent diseases whereas 52% thought similar in 6 months earlier.

In chapter four based on objective four it was observed that socio-demographic variables had a significant association with different diseases knowledge and practice part. Age groups were significantly associated with the practice part when the respondents were asked about washing hands after defecation with soap ($p<0.05$). Gender was significantly associated with the practice part when the respondents were asked about cooking foods properly ($p<0.001$). Age groups had a significant association with knowledge of TB ($p<0.05$). Age groups were significantly associated with knowledge of mosquito-borne diseases ($p<0.001$) and on the causes of Mosquito-borne diseases ($p<0.001$). Monthly family income had a significant association with taking sufficient fruits and vegetables regularly ($p<0.05$) and having regular meals ($p<0.05$).

According to this study, we found that socio-demographic characteristics and health education had a significant effect on the health behavior and knowledge, attitude and practice towards different communicable and non-communicable diseases in the respondents. The findings showed that age and education shape health knowledge and attitudes. Health education's impact on Rohingya refugees is consistent with other refugee studies, indicating its value in improving health outcomes. Besides these, there was a noticeable impact of health education in improving the knowledge, attitude and practices regarding different health issues. Nevertheless, it is imperative to acknowledge the limitations of the study and take them into account when interpreting the results. Additional research is required in various refugee settings to corroborate and build upon the existing discoveries, thereby augmenting the efficacy of healthcare interventions for marginalized populations on a global scale.

Chapter 1: Introduction

Chapter 1: General Introduction

1.1. Background:

It is estimated that there are 79.5 million people around the world who are residing in a country other than the one in which they were born [1]. The vast majority of these people are considered migrants, which are defined as people who leave their home countries in search of better opportunities. On the other hand, more than one-third of them are refugees who are attempting to flee their own country due to political violence or other dangers [1]. The vast majority of refugees make their way to countries that are nearby. They live their life with a hope that one day they will be able to return to their hometown when the situation improves. Overcrowding, a lack of proper public utilities, and either nonexistent or inadequate core services and social infrastructure are common features of the living conditions that refugees are often compelled to suffer because they have no other choice [2].

As a consequence of this, refugees face a wide variety of health problems that are brought on by a number of factors that are associated with the conditions of their living arrangements. More than sixty percent of refugees who have their cases recorded with the United Nations dwell in countries that have less than half the amount of freshwater accessible per ca-pita as the average for the entire world [3]. This statistic is based on the number of refugees whose countries have had their cases recorded with the United Nations. These kinds of enormous influxes of refugees might exacerbate the depletion of the water resources of the country that is taking in the refugees, especially if there is already a shortage of water in the country. There have been a number of studies that have shown how the influx of refugees has put pressure on the water supply in the nations that are hosting them [4, 5, 6, 7]. This research has revealed that the water supply in these nations is becoming increasingly stressed. For example, groundwater extraction in numerous locations in Jordan was already above maximum sustainable levels prior to the migration of Syrian refugees that began in 2011 [8].

This was the case before Jordan began receiving refugees from Syria. A general decrease in groundwater levels throughout the country was caused by the quick extraction of groundwater required to meet the needs of one of the densely inhabited refugee camps [7, 9, 10]. As a direct consequence of this, the total number of refugees currently residing in camps across the country of Jordan has reached approximately 2 million. The majority of these refugees are originally from Syria. As a stopgap measure to meet the requirements of the refugees, Jordan's government had to have water trucked in from outside the country as a temporary solution because it did not anticipate the long-term repercussions that the crisis would have on water resources. In the Dadaab camp in northeastern Kenya, which is home to around half a million refugees, the vast majority of whom are Somalian, you can find a situation that is pretty similar to the one that you are currently experiencing

[11]. The quick increase in the demand for water and housing by refugees can lead to localized water insecurity, which needs to be examined so that solutions that are both effective and resilient can be adopted for both the refugees and the people who live in the area. In addition, it is essential to bring to your attention the fact that this rapid surge in demand may result in a lack of accessible water in certain areas. The concept of "water security" refers to a scenario in which water that is both sufficient in quantity and of acceptable quality is readily available at rates that are affordable for the purpose of supporting human health, social and economic growth, as well as ecosystems [12].

Therefore, the amount of drinking water security in a community can be determined in large part by the quality and availability of an enhanced drinking water source, in addition to access to that source. Recent research conducted by the Household Water Insecurity Experience Consortium (HWISE) has shown that it is not just a matter of top-down planning or investment; rather, it is a matter of experience. Recent studies have shown that experienced water insecurity can coexist with active water and sanitation programs emanating from the government or the humanitarian sector [13].

The Rohingya refugees are facing a wide variety of challenges, some of which are tied to problems with water and sanitation. Because of the crowded living conditions in the camps and the absence of appropriate water, sanitation, and hygiene (WASH) protocols, the refugees are placed in a situation where they pose a significant threat to the health of the general population, particularly at the Kutupalong extension sites. It has been challenging for local groups and the government to meet the requirements of such a huge number of refugees in terms of providing basic services such as food, water, access to healthcare, shelter, and sanitation. These services are required to meet the needs of refugees. These services are necessary for their continued existence. The United Nations Children's Fund (UNICEF), the United Nations High Commissioner for Refugees (UNHCR), Action Against Hunger, and other international non-governmental organizations (NGOs) have significantly helped in the effort to stabilize the situation by rapidly scaling up their efforts and responding jointly [14, 15, 16, 17, 18].

However, despite these gains, the refugees are still living in highly dangerous circumstances. The average population density in the refugee camps is less than 15 m2/person, which is much lower than the norm set by the United Nations for refugee camps, which is between 30 and 45 m2/person; this suggests that the refugee camps have already reached or are very close to reaching their capacity [19]. Studies have demonstrated that even allocating 20 square meters per person for fundamental infrastructure, such as water and sewage treatment facilities, is insufficient [19]. There are problems with the water's quality as well as an extremely uneven distribution of it throughout the area. As a consequence of this, a large number of individuals are compelled to travel significant distances on

foot while navigating their way through densely populated camps in order to access the water sources. All of this information was described in a report on the challenges that Rohingya refugees encounter as a result of insufficient sanitary facilities and the absence of a clean and appropriate water supply [20].

The report was about the difficulties that the Rohingya refugees face as a result of the absence of a safe and appropriate water supply. During the monsoon season, the number of tube wells did not meet the estimated requirements for the size of the population, which led to a decline in the quality of sanitation. This is because the number of tube wells that were constructed did not match the expected requirements for the area. In addition, many of the private tanks that were supplied by humanitarian organizations are constructed in areas that are not open to the general population. The lengthy lines and erratic hours of availability regularly presented a threat to the women's physical safety and left them open to the possibility of sexual assault. The pits in the latrines are extremely shallow, and the fact that they are located so close to water sites contributes to the contamination of additional groundwater sources [20]. In addition to this, there is an insufficient supply of water, which results in the toilets rarely being cleaned after they have been used. In order to get around the lack of safe and secure sanitation facilities as well as appropriate illumination throughout the night, a lot of refugees, especially young children, choose to defecate in the open air [21].

This is especially common among the younger generation of refugees. This practice has the potential to cause a wide range of further health complications. There is a lack of available water, which has led to filthy conditions. These conditions are the source of several waterborne diseases, such as cholera, typhoid fever, and diarrhea, in particular acute watery diarrhea (AWD), which is particularly frequent among the refugees. The lack of available water has also led to a rise in the number of people affected by these diseases. Over 64,000 cases of AWD were reported in only the month of April 2019, and more than forty percent of those cases included children younger than five [19, 22]. This was just one month out of the entire year 2019. It was found that the water in refugee camps for Rohingya people included high levels of contamination both at the source of the contamination and in storage, and this was the case both before and after treatment. One study that looked at 12,650 drinking water samples from the camps came concluded that there was fecal contamination in 28% of the source samples and 73.96% of the storage samples. The investigation was carried out by the Environmental Protection Agency (EPA) [23].

This demonstrates that the high population density within the camps, in conjunction with inadequate hygienic practices, is probably the cause of the secondary contamination of drinking water during the entire process of collecting, transporting, and storing the water [23]. Regarding the existence of fecal

contamination in the Rohingya refugee camps, the findings of the inquiry [18] conducted by the government were consistent with these findings. In view of the findings of a number of studies indicating that water can become contaminated between the location where it is produced and the location where it is used, policies need to take into account the risks that are caused by such contamination. If there is a lack of information and grasp regarding hygiene, it is probable that there will be secondary contamination. For example, research carried out in Rohingya refugee camps indicated that a sizeable portion of the population did not wash their hands after using the restroom [22]. After defecating, a person who then handles water sources or storage containers may introduce fecal coliform infections into the water supply. This can happen if the individual touches the water after they have been sick. In addition, many of the homes did not cover the containers while they were being carried or kept [22], which may have made it simpler for viruses to penetrate the water supply and put the health of the refugees in jeopardy.

This may have resulted in a general decline in the quality of the water that was used for drinking. The fact that potable water was stored in households for extended periods of time was another factor that was frequently cited as a possible contributor to contamination. These are crucial variables to take into account when modeling the dynamics of transmission to discover the vectors of pathogen flow and execute the proper preventative measures. Modeling the dynamics of transmission is necessary to stop the spread of disease. In order to improve the Rohingya refugees' behaviors about management of water and cleanliness, a number of humanitarian organizations as well as government-led awareness campaigns have been carried out in recent years [16, 18]. When human waste contaminates the water supply, it produces a considerable drop in the quality of the water, which in turn leads to an increased incidence of diseases that are transmitted by water. These diseases include cholera, dysentery, and hepatitis A. The majority of the time, there is no physical barrier, such as concrete, that is positioned between the feces that are deposited in pit latrines and the soil and groundwater that are located in the surrounding area [23].

The feces that are removed from pit latrines have the potential to harbor enteric pathogens like *Salmonella spp., Shigella spp*., *Vibrio cholerae*, and *E. coli*, in addition to viruses like Adenoviridae, Rotavirus, and Rhinovirus. These diseases have the potential to pollute the groundwater source if the pit latrines overflow, if there are no sewage treatment facilities available, or if they leach into the ground. In all of these scenarios, the groundwater could become contaminated. It is absolutely necessary for there to be a sufficient amount of distance between the points of water supply and the locations of sanitation facilities. The total coliform count in tube well water was found to have an inverse association with the distance from pit latrines where the water was placed, according to the findings of Rahman and colleagues (2009) [19]. There have been several other studies that have

proven how pit latrines affect the microbiological and chemical quality of groundwater [17]. These studies have shown that pit latrines are responsible for these effects. Even though adequate sewage systems are responsible for a 69% reduction in the prevalence of diarrheal infections, it is difficult to implement effective means of managing human waste in the Rohingya refugee camps because there is a lack of space. This makes it difficult to implement effective methods of managing human waste. Too frequently, the latrines consist of little more than shallow pits and are situated far too close to the sources of water, which may result in the contamination of the water points [23].

Additionally, the latrines are located in inappropriate locations. In many instances, human waste has been a contributing factor in the pollution of water sources, which has also damaged 86% of wells that provide drinking water. This pollution of water sources has led to the contamination of drinking water. The circumstances surrounding the Balukhali Kutupalong mega-camp are extremely problematic due to the existence of fecal contamination in surface sources as well as groundwater aquifers. In January 2018, it was found that more than thirty percent of restrooms were situated within ten meters or less of tube wells. This was an alarmingly close proximity. The leaking, running off, and overflowing of the latrines have each been responsible for separate instances of groundwater contamination. The problem becomes even more severe when the toxins from excrement are transported by the flow of rainwater, which leads to the spread of water-borne diseases such as cholera, bloody diarrhea, and hepatitis E among both the native people and the refugees [23].

This massive influx caused Rohingya refugees to be forced to reside in settlements where the majority of them did not have access to proper housing, safe drinking water, or good sanitation systems, which in turn increased their exposure to a wide range of infectious diseases [24, 25]. In addition, the Rohingya were not allowed to move freely between settlements, which further worsened the problem. In addition, Rohingya people are exposed to traumatic events related to the war, such as the destruction of property, the loss of family members, the witnessing of extreme violence, and injuries or losses of property. These experiences are compounded by the fact that Rohingya people are targeted by the military. As a result of the events that took place, it is probable that the Rohingya refugees may probably experience a range of psychological distress [26].

In light of this, it is of the utmost importance to provide the Rohingya community with access to medical care. Accurate information describing the present health status of the population is required to achieve this objective, which is why it is vital to have this information. This is due to the fact that without this information, it is impossible to deliver equal and equitable health services and to distribute resources in a suitable manner. In addition, if Rohingya refugees are not given

enough medical care and are not kept in good health, this could have a severe influence not just on their own health but also on the overall health of the population of Bangladesh. The purpose of the study is to evaluate the epidemiology and socio-demographic factors associated with different diseases (both communicable and non-communicable), as well as the impact of health education on improving the health behavior, lifestyle, and overall health status of different FDMN communities in the Rohingya refugee settlement in Cox's Bazar, Bangladesh. The location of the study is in the Rohingya refugee settlement in Cox's Bazar, Bangladesh.

1.2. Justification of the study:

Access to water, sanitation and hygiene known collectively as WASH includes the provision of safe water for drinking, washing and domestic activities; the safe removal of waste (toilets and waste disposal); and the promotion of healthy behavioral practices. The Rohingyas who have been denied refugee status in Bangladesh lack access to WASH facilities. The unregistered camps are overcrowded, with few supplies and major management issues. For instance, the condition of Tal makeshift camp became so appalling that in 2008, the GoB agreed to move the Rohingya to a better location. While unregistered settlers are worse off, for both registered and unregistered camps dwellers, access to clean drinking water, sanitation and hygiene remains a critical concern.

A significant WASH indicator is the reliability of tube-wells to supply an adequate quantity of safe drinking water. Reports indicate that the shallow tube-wells in the Rohingya camps supply unclean water, which the refugees have no choice but to use for drinking and other uses. Drinking water in the camps is contaminated, with the quality deteriorating during the monsoon season. Moreover, the number of tube wells currently available is unable to meet the increasing demands. In many camps, relief foundations supply private water tankers with taps. However, these tanks are often positioned at a highly inaccessible distance.

The long queues and odd hours of availability also create security hazards for women, exposing them to harassment. Many of the settlers resort to consuming water from contaminated water bodies, such as rivers and ponds, leading to water-borne diseases in the camp areas. As pressure increases on the aquifers in the Ukhia area, safe surface water solutions will be required to sustain the population. Land shortage in the camp areas hampers effective sludge management. The latrines have shallow pits and are located close to water points, resulting in further contamination of the tube wells. As of January 2018, more than 30 percent of latrines were located less than 10 m away from water sources. Seventeen percent of emergency latrines were either full or not functioning.

Moreover, the latrines frequently remain unkempt after being used due to a shortage of water. Many of the toilet facilities are without doors or bolts, and in some places, security lights do not function.

The consequent safety risk leads community members, especially women and children, to resort to open defecation which, in turn, causes its own health and safety hazards. To avoid open bathing and defecation, some women create makeshift bathing spaces and toilets using pieces of tarp, increasing the risk of infections. They also jeopardize their health by reducing their and their children's food intake to avoid frequent defecation, especially at night. Several reports mention the unavailability of water and soap in/outside latrines, preventing proper hand washing. Since soaps are expensive, personal purchase is also unlikely. Hand washing is thus a gap area and needs immediate and urgent prioritization in hygiene control.

There are no primary collection centers for solid wastes. Waste is dumped in narrow spaces between shelters and sometimes makes its way to streams. These streams are used as drinking water sources, leading to major health risks. During the monsoon season, heavy rains, landslides and flooding further disrupts WASH arrangements and endangers the overall health and well-being of the refugees. Inadequacies in WASH are responsible for a huge number of health problems among the Rohingyas living in camps, including diarrhea, hepatitis, cholera and typhoid. Cholera and diarrhea are endemic in Bangladesh and can prove fatal among the Rohingya populations, given their high malnutrition rates. Diarrhea l diseases are the second biggest cause of death among children under five. In 2018, approximately 224,145 cases of acute watery diarrhea (AWD) were reported.

Other frequently occurring fatal diseases include acute respiratory infection (ARI), unexplained fever, bloody diarrhea, cholera, dehydration, *E-Coli* and chicken pox. Different non-communicable diseases have also been a big deal in recent eras. Different deficiency disorders might also be common among the Rohingyas. Iron deficiency anemia, different vitamin deficiencies, mineral deficiencies, PEM and SAM might be common among them. Health behaviors, life-style, food habits, and KAP on nutrition are not avoidable in Rohingya issues. Though a huge number of local and global NGOs besides the Bangladesh Govt.'s cordial and responsible efforts in Health Education and BCC, Food Supply, Potable Drinking Water Supply, Medical Camp, Hospital and Medicine Supports, still different C&NCD are upstanding among Rohingyas of different ages of both genders. Major three impacts are discussed below,

Health impacts:

People affected with different diseases – lose physical fitness; lose potentiality; become vulnerable to other diseases; face organ damages; lose strength of the immune system and sometimes die unusual death.

Social impacts:

People affected with different diseases – can't be productive; and become a kind of burden for the society; increasing possibility of the other people being affected by themselves; are a part of the community but the diseased community cannot be a part of the development of a nation and reduce the rate of prosperity of a country.

Economic impacts:

The patient's family fall in economic crisis due to the cost of diagnosis and treatment. The whole family may become very poor because of the death of the earning member. The patient's family needs to a take loan from relatives or a bank. The government also needs to face a financial load to manage the diseased people.

1.3. Aim of the study:

To study the epidemiology and socio-demographic factors associated with Life Style, Health Behavior and Health Status of different FDMN Community people in Rohingya Refugee Settlement, Cox's Bazar, Bangladesh.

Specific Objectives:

a) To determine the knowledge, attitude and practices regarding different diseases (both communicable and non-communicable) among the respondents.

b) To estimate the disease burden/occurrence among the community people.

c) To determine the impact of health education about different health issues including their health behavior, life style and health status of the respondents.

d) To reveal the socio-demographic factors associated with different diseases (both communicable and non-communicable) of the respondents.

Chapter 2. Review of Literature

Chapter 2. Literature Review

There are around 836 000 Rohingya individuals currently asking for sanctuary in Bangladesh [27], where they require aid from the international community of humanitarian workers. As a result of the fact that these refugees were almost completely denied citizenship in their home country, they were exposed to a variety of forms of discrimination in the form of restrictions that were imposed on them. These limitations were a direct result of the fact that they were forced to flee their homeland. Because of this, a number of people's human rights were violated, including the right to receive medical treatment [28], which was one of the consequences of this situation. It is becoming increasingly difficult to meet all of their medical requirements as a direct result of the fact that they are currently being put in situations that pose significant threats to their health. There has been an amazing increase in the amount of health concerns that Rohingya refugees are forced to struggle with as a result of the ever-increasing number of Rohingya refugees and the increasingly cramped living conditions that individuals are forced to endure in camps [29].

Even though the afflicted community and refugees require 9 million liters of clean water each day, just 30 percent of the Rohingya population that is in need of water, sanitation, and hygiene services is now receiving these vital supports. This is despite the fact that the affected community and refugees require 9 million liters of clean water each and every day. In spite of the fact that the impacted community and refugees are in need of these aids, this result occurred. They had no choice but to consume the murky water that they had gathered from murky streams in order to survive [30, 51]. This was the only resource that they had access to 85 percent of the refugees still do not have access to sanitation facilities that are appropriate even at this late point [31]. As a result of all of these elements [30], the likelihood of an epidemic caused by a communicable disease is raised. There have been reports of an outbreak of measles among people who have recently moved to a new area, and a total of 419 cases have been documented [32].

There have been reports of an outbreak among persons who have recently relocated. Despite the fact that the refugee camps hosted the largest oral cholera vaccination event, and despite the fact that the event was successful in reaching 100% of the targeted population, the risks of waterborne and other infectious diseases are still extremely high as a result of the unclean living arrangements [33]. As of the month of February 2018, there have been approximately 5800 patients who have been identified as having symptoms that are compatible with diphtheria [34], and the number of patients continues to climb. The latest outbreak of diphtheria has been linked to the deaths of 38 people, according to reports. Since the 25th of August, there have been a total of 10,846 reports of respiratory issues and 3,422 reports of skin disorders among the new migrants who have arrived [35, 51]. In addition, there

have been instances of migrants suffering from a variety of skin disorders and ailments that affect the skin. As of right now, there are 720 000 children and adolescents residing in refugee camps [30]. It was discovered on the 20th of September in 2017 that the settlements of Ukhia and Teknaf are home to a combined total of 14,740 Rohingya children who are without a parent [36].

It is projected that 240 000 children under the age of five require assistance for the prevention and treatment of malnutrition through the consumption of supplemental meals that are high in nutrients. This assistance can be provided by providing the children with food. In addition, it is predicted that 250,000 children under the age of eight need interventions that can save their lives through community-based activities like vaccination programs. There are 16, 965 children who have been given the diagnosis of severe acute malnutrition (SAM), and as a consequence, they require medical treatment both in and out of hospital settings. There is a requirement for nutritional support for 204 000 teenage girls, and there is a demand for the measles-rubella (MR) vaccine for 237 500 children ranging in age from 6 months to 15 years [37, 51]. About 54% of the Rohingya people who are presently staying in refugee camps are children younger than 18 years old; 52% of the Rohingya people who are currently residing in refugee camps are women, with 23% of those women being between the ages of 18 and 59 years old [38].

The majority of the Rohingya people who are currently residing in refugee camps are Muslims. [30] There are 91 556 adolescent girls and women, and of those, 54 633 are either breastfeeding their young children or are pregnant with further children. The total number of teenage girls and women in the world is 91 556. When taking into consideration the size of the Rohingya Refugee population as a whole, mothers who are breastfeeding make up 9.2% of the entire population [39]. This places them in the position of being the most vulnerable category. Around 4.9% of the Rohingya population is comprised of pregnant women. This percentage applies to women only. It is anticipated that as of the 22nd of October, 240 000 children under the age of five, 42 000 pregnant women, and 72 000 nursing mothers will require assistance with their health [37]. About 86% of all births take place in the homes of the women, despite the fact that only 22% of births take place in medical facilities [40].

This accounts for the majority of births, which take place in the homes of women accounting for 86% of all births. It has been reported that a total of 2592 nursing mothers and 1145 pregnant women have been admitted to hospitals as patients suffering from malnutrition [31]. They are also among the first to face additional hurdles in gaining access to the limited and overstretched resources that are available for humanitarian help. This makes them among the most vulnerable people in the world. This occurs as a result of the fact that there are not enough of these services available to meet demand. Furthermore, not only are they among the most affected groups, but they are also frequently the last

to be addressed (if at all) about their requirements, and they are given the least information possible on where and how to claim relief help [36].

This is despite the fact that they are among the categories that are among the most likely to be affected by the disaster. Despite the fact that they belong to one of the groups that has a significantly increased risk of being impacted by the catastrophe, this is not the case. The fact that they belong to one of the categories that has a bigger than average likelihood of being impacted by the calamity does not change the reality that this is the circumstance in which we find ourselves [37]. It has been estimated that there are 120 000 pregnant women and mothers who are breastfeeding who have a need for extra foods that are high in nutrients in order to treat and prevent malnutrition. These women fall into two categories: those who are at risk of malnutrition and those who are already suffering from it. Despite the fact that both Myanmar and Bangladesh had a low HIV prevalence in contrast to other countries in South Asia, the state of Rakhine in Myanmar had the highest HIV prevalence of any other state in South Asia in the year 2015. Bangladesh had the lowest HIV prevalence of any nation in South Asia. In spite of the fact that the HIV prevalence rate in Myanmar is relatively low overall, this was nevertheless the case. In addition to this, the current condition of affairs renders individuals who have been the targets of sexual assault to be more susceptible to the possibilities of HIV transmission [41].

In addition, as of the eighth of October in the year 2017, it has been documented that there are 21 people living among the refugees who are afflicted with HIV [42, 51]. In addition to the resources that are designated for the care of mothers, children, and newborns, insufficient resources are being allotted to important reproductive health care. In addition, there is a deficiency in the provision of appropriate clinical management for rape survivors, services for family planning and health care that are welcoming to adolescents, in particular with regard to the delivery of these services in places that are difficult to access. This is especially true with regard to the provision of these services in areas that are challenging to access. In addition, there is a shortage of comprehensive HIV and TB services, despite the fact that there have been confirmed instances of HIV among the refugees [43]. This is the case despite the fact that there are not enough of any of these services. This is the true in spite of the lack of comprehensive HIV and TB services in the area. There is inconsistency in both the amount of medical care and the types of medical treatments that are provided at the settlement [34].

In addition, residents in this region have a difficult time gaining access to secondary medical care as well as inpatient medical treatment. In addition to that, this provides a mechanism for the management of referrals. Because of the large number of new arrivals and the already high population levels in the areas where people already live, it is difficult for service providers to find

women's services that are both private and secure. There is a continual influx of new refugees, which results in an overburdening of the facilities that are already in place, such as WASH or health facilities. This is due to the fact that there is a continuous influx of new migrants. Many of the refugees either do not have access to the services that are being provided or are unable to make use of them as a direct result of the fact that these services are already being overburdened. Temporary communities that are housing refugees continue to be a significant barrier in the way of the establishment of communal infrastructures that are necessary for the coordination of services at the site level [43, 51].

The sheer size, density, and lack of planning in the temporary communities all contribute to the formation of this barrier. The incident caused substantial damage to the mental health of the refugees who were transported without their choice. As a result of the ordeal, the refugees' mental health suffered [44, 51]. Allegations have been made that as a direct result of the atrocity, refugees are experiencing aftereffects such as nightmares, flashbacks to the murder, anxiety, acute stress, chronic stress, loss of sleep, food disorders, and even difficulty expressing themselves verbally. The mental health situation of individuals who have survived this physical violence has dramatically deteriorated due to the systematic raping of women and girls, in addition to the violent deaths of members of their families, which has made the situation significantly worse. Those individuals who have survived this physical assault have likely seen a decline in their mental health as a direct result of this [45]. It was stated that women, children, and even pregnant women had been victims of sexual assault, including gang rapes, which had resulted in vaginal rips, infections, and posttraumatic problems. Additionally, it was alleged that gang rapes had taken place.

In Bangladesh, post-rape treatment facilities are difficult to access, and the quality of care that is provided is of a lower-than-acceptable degree. Both of these factors have contributed to an increase in the number of sexual assaults committed by refugees in Bangladesh [46]. This increase has made the situation even worse than it already was. Between the end of August 2017 and the end of February 2018, the Sexual and Reproductive Health Units of MSF provided medical attention to a total of 226 survivors of sexual violence, 162 of whom were rape survivors. Of these 226 patients, 162 were able to move on with their lives. 162 of these 226 survivors had been the target of sexual assault at some point in their lives [47]. The majority of individuals who escaped unharmed were children and teenagers who had not yet reached the age of 18 [48]. If nothing is done to remedy the situation, there is a good chance that the children will have to go through psychological and social anguish for a protracted period of time. This is a source of stress for the majority of refugees as well owing to the fact that they are dependent on humanitarian aid for their existence and must fight every day for food assistance [49, 51].

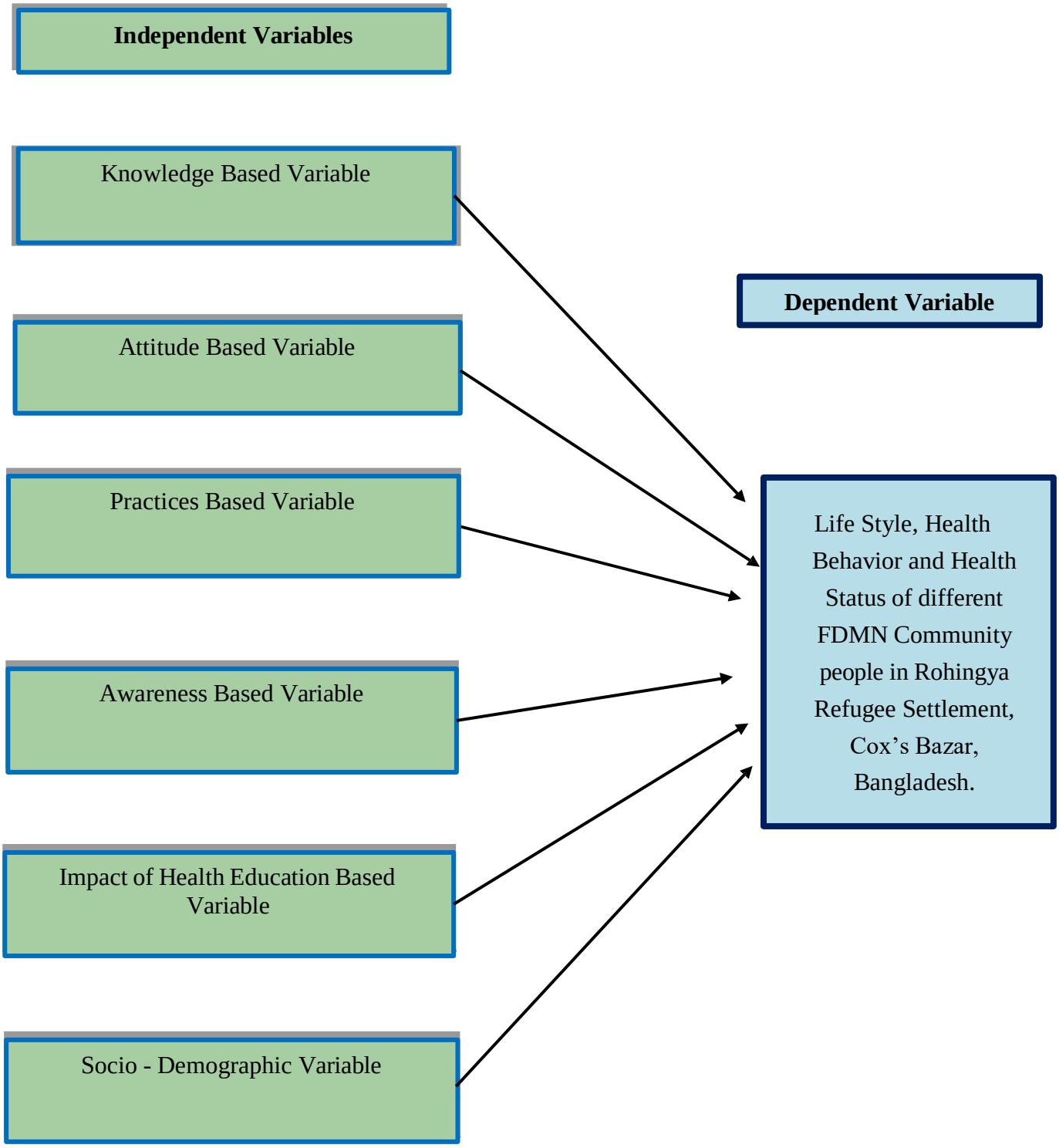
This causes them to feel as though they have no control over their situation. The vast majority of refugees also find that this is a cause of stress in their lives. Inundation will have a substantial impact on the medical facilities that have been constructed in the camps in preparation for the monsoon season [50]. This covers the use of tube wells and toilets. In addition, when the monsoon season starts, both the existing issue as a whole and the potential health hazards will become even more severe. It is imperative that the international community as well as the government of Bangladesh provide financial support and humanitarian aid to these refugees in order to improve the precarious conditions in which they are currently living. In particular for Rohingya people who live in locations that are difficult to get to, there is an immediate need to increase health care services and broaden access to fundamental reproductive health as well as child and newborn care. This is a demand that applies to all Rohingya people. This is an urgent requirement that needs to be dealt with right away. Community health professionals are responsible for making sure that adequate health promotion, the promotion of hygiene, and home visits to pregnant women are carried out. Acquiring the appropriate education is the one and only path to achieving this objective in a fruitful manner [51].

The refugees have a right to get information that is accurate and complete [51], and it is essential to significantly improve the availability of mental health therapies in settings where primary health care is provided. In the event that an epidemic breaks out, there is a pressing need for a prompt response, and it is of the utmost importance to maintain accurate health data. Because of this, businesses and other types of organizations will need to focus a bigger percentage of their effort on the process of data collecting and distribution. As a result of little financial aid and overcrowded, substandard living conditions that are present in the settlements and camps where they are currently located, their predicament as refugees has become more dire. This is the outcome of both factors. The reason for this is due to the fact that they are now situated in this area. They will have a more difficult time receiving health care services as a direct result of all of these variables, which will put them at a greater risk for a wider range of health problems and will raise the likelihood of a disease outbreak occurring. As a consequence of this, in addition to the government, the business sector and communities all around the world need to work together to aid refugees in their dangerous conditions so that they could experience an improvement in their overall level of health [51].

Chapter 3: General Methodology

Chapter 3: Research Methodology

3.1. Conceptual framework:



3.2. Study design:

A descriptive type of cross-sectional survey-based study on the Rohingya Refugee population in the Rohingya refugee camps at Cox's Bazar, Bangladesh was carried out consisting of data collection and presentation of data with statistical analysis.

3.3. Study population and area:

Different peoples of both genders and different age groups of Rohingya refugee settlement were the population and area of the study. The survey was administered to the Rohingya Refugee people of different ages (excluding children <18 years) and genders who were residing in refugee camps (Camp-1, Camp-2 and Kutupalang Camp). Data collection was done from March, 2020 till June, 2023. The participants in the study who declined the opportunity to participate in the survey were disqualified.

3.4. Study period:

This study started from February, 2020 and continued till October, 2023.

3.5. Data collection tool (Questionnaire):

In order to achieve the goals of the study, a total of 8 questionnaires were first developed, then validated, then translated, and last personalized. For the purpose of linguistic validation, the questionnaire was translated into English and Rohingya using forwarding and backward translation respectively. The respondents were intended to depict the status of refugees in Bangladesh.

3.6. Variable:

The questionnaire was developed on socio-demography, knowledge, awareness, attitude, practice, impact of health education, disease burden and occurrence or incidence of different diseases-based variables targeting the study population. The questions were designed on that particular variable/s with suitable options rationally.

3.7. Sample size calculation:

Sample size of the study was calculated using the following formula to be enrolled in the study:

$$n = z^2pq/d^2$$

Where,

z= Normal Distribution (1.96)
n= Sample size
d= acceptable Error (.05)
p= Expected prevalence = 50% = 0.5
q= 1-p = 1-0.5 = 0.5
q= 0.5
$n = (1.96)^2 \times (0.5) \times (0.5) / (.05)^2$
=386.16

However, we took more than 500 (510/515/520) samples from each camp for each questionnaire according to the guide's decision. Consent form from each participant has been issued.

3.8. Sampling method:

The non-probability and purposive sampling methods have been used in this study to recruit the study population.

3.9. Data collection technique:

By following face-to-face interviews with the participants.

3.10. Data Management Plan (Statistical analysis):

The collected data was primarily analyzed by using Microsoft Excel. The demography of the participants were presented in frequencies, percentages, graphs and tables. Chi-square tests were used in socio-demographic data to determine the degree of association between continuous and categorical data sets. Descriptive statistics are also used in these analyses. The Chi-square test was carried out to ascertain the nature of the connection that exists between category variables. The Statistical Package for the Social Sciences (SPSS) version 20.0 was utilized in order to carry out the data analysis. $P<0.05$ and $P<0.001$ were chosen as the cutoffs for the alpha level of significance, respectively.

3.11. Inclusion criteria:

People with given consent and willingly joined the study were included in this study. Both males and females of different age groups (excluding children <18 years) were selected as participants.

3.12. Exclusion criteria:

People who were unwilling to participate and were not able to provide information due to physical or mental illness or handicaps.

3.13. Quality control and quality assurance:

Regular assistance and guidance from the supervisor were taken for conducting interview. Data collection and analysis were performed by the researcher. Report was made with the respondents before data collection. Data was checked and rechecked for reliability. Semi-structured questionnaires were used. Questionnaires were explained in local languages for better understanding.

Figure: 1 - Camp 1: Some of the shelters at Rohingya Refugee camp in Cox's Bazar.

Figure: 2 - Camp 2: Overcrowded shelters at Rohingya Refugee camp in Cox's Bazar.

Figure: 3 - Camp 2: Situation of Rohingya Refugee camp in Cox's Bazar during rainy season.

Figure: 4 - Camp 2: Unhygienic condition of Rohingya Refugee camp in Cox's Bazar.

Figure: 5 –Kutupalang Camp:–Health Education camp at Rohingya Refugee camp in Cox's Bazar.

Figure: 6 - Camp1: – Health Education camp at Rohingya Refugee camp in Cox's Bazar.

Figure:7 - Kutupalang Camp: – Health Education camp at Rohingya Refugee camp in Cox's Bazar.

Figure: 8 - Kutupalang Camp: – Health Education camp at Rohingya Refugee camp in Cox's Bazar.

Figure: 9 - Kutupalang Camp: – Health Education camp at Rohingya Refugee camp in Cox's Bazar.

Figure:10 - Kutupalang Camp: – Health Education camp at Rohingya Refugee camp in Cox's Bazar.

Figure:11 – (Kutupalang Camp) During Data Collection.

Figure:12 - (Kutupalang Camp) During Data Collection.

Figure:13 - (Kutupalang Camp) During Data Collection.

Figure:14 - (Camp-1) During Data Collection.

Figure:15 - (Camp-2) During Data Collection.

Figure:16 - (Camp-1) During Data Collection.

Figure:17 - (Camp-2) During Data Collection.

Chapter 4: Results

Part - 1

Objective 1: To determine the knowledge, attitude and practices regarding different diseases (both communicable and non-communicable) among the respondents.

Participants (Duration and Sample size) and Data Collection Tool (Questionnaire):

The survey was administered to the Rohingya refugee people of different ages (excluding children <18 years) and genders who were residing in refugee camps. Data collection was done from December, 2020 till June, 2023. The participants in the study who declined the opportunity to participate in the survey were disqualified. We received responses from a total of 3060 different individual participants of different camps. The sample size was calculated by using this formula ($n = z^2pq/d^2$). In order to achieve the goals of the study, 6 different questionnaires on water-borne diseases, tuberculosis, mosquito-borne diseases, hypertension, diabetes mellitus and iron deficiency anemia were first developed, then validated, then translated, and last personalized. The 6 different questionnaires were applied to 6 different camps separately to avoid repeatedness of respondents and answers. However the data presented in Figure 1 to Figure 3 were obtained from a separate common questionnaire applied to all the respondents of this study. The socio-demographic questions that were asked were tailored to the group of refugees. There were categorical responses to questions on knowledge, attitude and practices around communicable diseases and non-communicable diseases. For linguistic validation, the questionnaires were translated into English and Rohingya using forwarding and backward translation, respectively. The respondents were intended to depict the status of refugees in Bangladesh.

Results:

Societal and demographic data refers to information pertaining to the characteristics and composition of a given society or population. Table 1 presents the Socio-Demographic data of the respondents. A total of 3060 individual refugee people from different refugee camps where water-borne diseases, tuberculosis, mosquito-borne diseases, hypertension, diabetes mellitus and iron deficiency anaemia had 504, 523, 511, 504, 517 and 501 respondents, respectively. The details are provided in Table 1. This work examines the association between knowledge, attitude and behaviors pertaining to water-borne diseases, as well as the socio-demographic characteristics of a sample size of 504 individuals. The variables of the practice part, specifically the act of washing hands with soap after defecation, exhibited a significant correlation with different age groups ($p<0.05$) (Table 2).

The measure of the practice component, specifically if they cook their food properly or not; exhibited a significant correlation with gender ($p < 0.001$). The variables whether they are knowledgeable about diarrhea or not and whether they knowledgeable about the causative agents of diarrhea exhibited statistically significant associations with educational status ($p < 0.05$ and $p < 0.001$, respectively). Additionally, educational status demonstrated significant associations with the variables if they utilize a sanitary latrine or not and if they are adhere to proper cooking practices or not, the variables whether they always maintain cleanliness of your food and water or not and whether they are aware of the causative agents of diarrhea or not both exhibited significant associations with occupational position ($p <0.001$).

The type of family demonstrated a statistically significant association with the variables whether they know about diarrhea ($p <0.05$), whether they know the causative agents of diarrhea ($p <0.001$), and whether they use sanitary latrine ($p < 0.001$). There was a significant correlation ($p< 0.05$) observed between marital status and the variable "knowledge of the causative agents of diarrhea." There were notable associations observed between monthly family income and the variables whether they know about diarrhea ($p < 0.001$), whether they use sanitary latrine ($p<0.001$), whether they cook their foods properly ($p<0.05$), and whether they always keep your food & water clean ($p<0.05$), respectively. (Table 2) The study examines the association between knowledge and practices related to tuberculosis and socio-demographic factors. The sample sizefor this analysis is 523 participants.

There was a significant correlation ($p < 0.05$) observed between age groups and the variable whether they know what TB is or not. There was a significant correlation between the variables of whether they smoke cigarettes or not and whether cough in public places without care or not and the distribution of gender ($p < 0.001$). Education level has been found to be associated with various factors, such as familiarity with tuberculosis (TB) ($p<0.001$) and knowledge of the causative agent of TB. According to the study conducted by the author ($p<0.001$), an inquiry is made regarding the potential impact of personal hygiene on the reduction of tuberculosis (TB) risk. Additionally, the author ($p<0.001$) raises the question of whether sharing personal items could potentially elevate the risk of contracting TB (Table 3).

According to the findings ($p<0.05$), the question posed is whether tuberculosis (TB) can be attributed to significant moral transgressions. According to the study conducted ($p<0.001$), the researchers inquired about the participants' smoking habits by asking, "Do you smoke cigarettes?" ($p<0.001$). Additional information regarding this question can be found in Table 3.

Age groups found a significant association with whether they know about Mosquito-borne disease ($p<0.001$) and variables on whether they know the causes of mosquito-borne disease ($p<0.001$); with whether they consult from nearest health post first after being sick ($p<0.05$), with whether any family member / neighbor get infected by Mosquito-borne disease ($p<0.001$). Gender distribution had found significant association with whether they gave blood sample to lab ($p<0.05$) (Table 4).

Age group and educational status both traits had found significant association with whether they know about Hypertension ($p<0.001$), with whether they know about causes of Hypertension ($p<0.001$), and also with whether they know the signs and symptoms of Hypertension variable ($p<0.05$). Occupational status had significantly associated with whether they know about Hypertension ($p<0.05$) and with whether they check their BP regularly ($p<0.001$). (Table 5). Age groups and gender distribution both had significantly associated with whether they take sufficient fruits and vegetables regularly ($p<0.05$) and with whether they practice exercise regularly ($p<0.05$). Educational status had found significant association with if they are suffering by Diabetes Mellitus ($p<0.05$) and with if they have regular meals daily ($p<0.05$) (Table 5).

Monthly family income had found significant association with if they think DM is curable and preventable ($p<0.05$), and with if they exercise regularly ($p<0.05$). (Table 6). Age group and educational status both traits had found significant association with if they know about Iron-deficiency Anaemia ($p<0.001$), with whether they know about causes of Iron- deficiency Anaemia ($p<0.001$), and also with whether they think proper diet & taking essential nutrients can prevent Anaemia ($p<0.05$). Occupational status had significantly associated with whether they think Anaemia can be cured by drugs & are preventable ($p<0.05$) and with whether they take Iron rich foods ($p<0.001$). (Table 7).

According to Figure 1, we can observe that 84% of respondents knew about water -borne diseases, 81% of the respondents knew about how water borne diseases transmit and 78% of respondents knew about different signs and symptoms of water borne diseases. 76% of respondents knew about mosquito borne diseases, 69% of respondents knew about how mosquito borne diseases transmit and 82% of respondents knew about different signs and symptoms of mosquito borne diseases. It was found that 74% of respondents knew about how to prepare ORS at home. 73% of respondents knew about TB and 72% respondents knew how TB transmits. 73% of respondents knew about HIV-AIDS and how HIV transmits. 70% of respondents knew about different non-communicable diseases and 81% of respondents gave examples of a few non

communicable diseases. Here 83% of respondents knew about different communicable diseases and 69% of respondents gave examples of a few communicable diseases.

It was also seen that 89% of respondents knew about different vitamin and mineral rich foods and 65% of respondents knew about malnutrition (Figure 1). In Figure 2, we can see that 81% of respondents thought that fruits and vegetables are good sources of vitamins and minerals. Here 74% of respondents believed that taking regular meals in time is important for health. 53% of respondents thought that sanitary latrines are important to prevent different water borne diseases. 93% of respondents told that sufficient water is necessary for our normal body function. We found that 92% of respondents mentioned that consulting doctor immediately is important in case of any clinical condition. But still 36% of respondents believed that TB, Cancer and HIV are result of great sin. 78% of respondents thought that using anti mosquito coils, nets and spray are important to prevent mosquito borne diseases. Here 82% of respondents said that milk and dairy products are essential for health. Still 69% of respondents thought that healthy foods are expensive. Regarding health education more than 80% of but less than 90% of respondents believed that health education can help in adopting healthy food habit, it can increase knowledge and awareness about different health issues, help in preventing different communicable and non-communicable diseases and help in changing attitude regarding sanitation, hygiene and other health issues (Figure 2).

When we observe Figure 3, we can see that 88% of respondents used to wash their hands before meal and after toilet properly with soap. 84% of respondents used to treat or boil water to drink. 81% of respondents used to cut nails regularly. 79% of respondents used anti -mosquito nets/coils/spray at home. 76% of respondents used to clean bushes and water containing pots regularly to prevent mosquito breeding. About 78% of respondents used to consult doctors immediately after being sick. Only 10% of respondents used to practice exercise, only 9% respondents used to take milk and dairy products regularly and only 23% of respondents used to take protein-rich foods regularly. Here 79% of respondents used to take regular meals on time. 68% of respondents used to take sufficient fruits and vegetables daily (Figure 3).

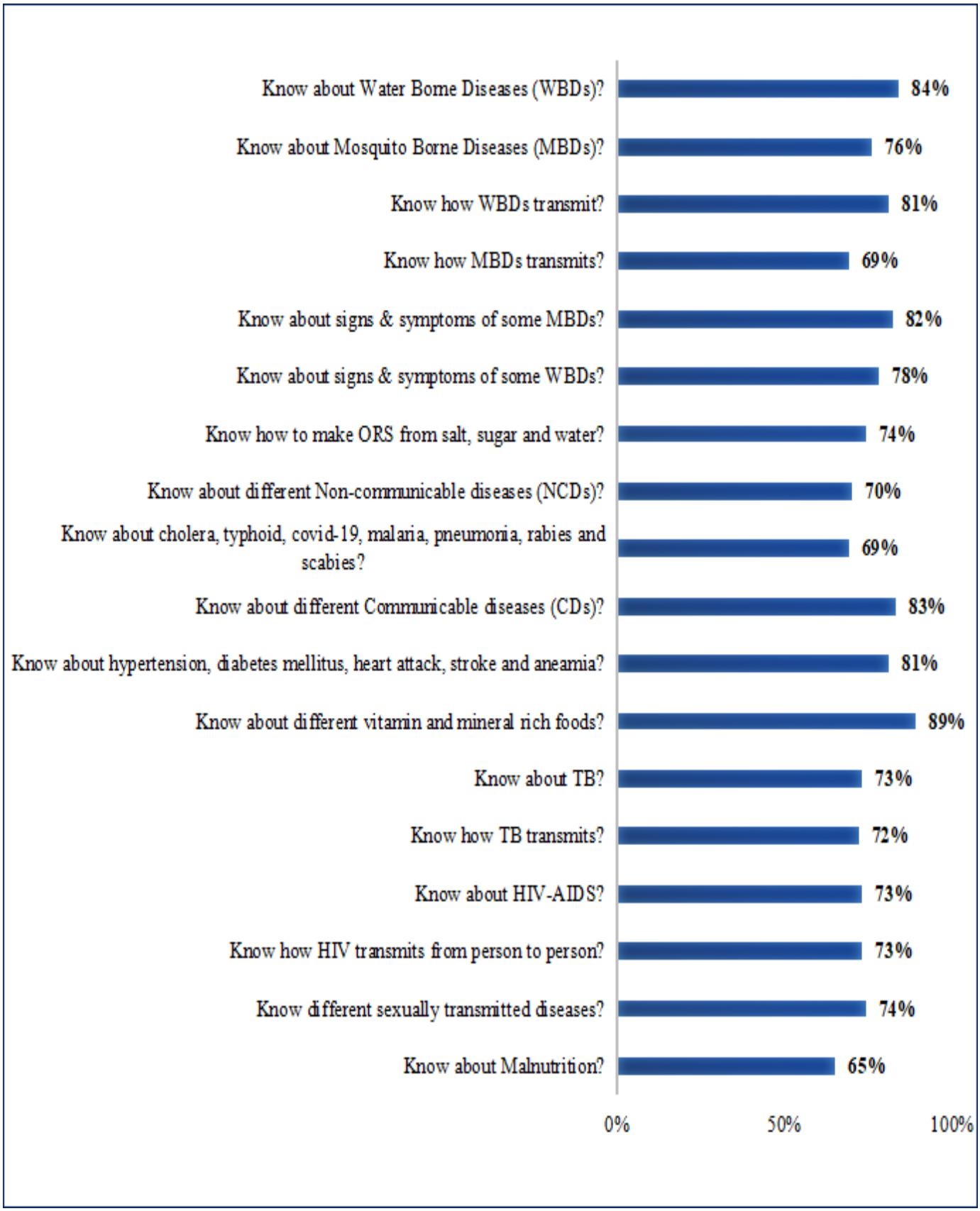


Figure 1: Percentage of positive responses about knowledge on different health issues.

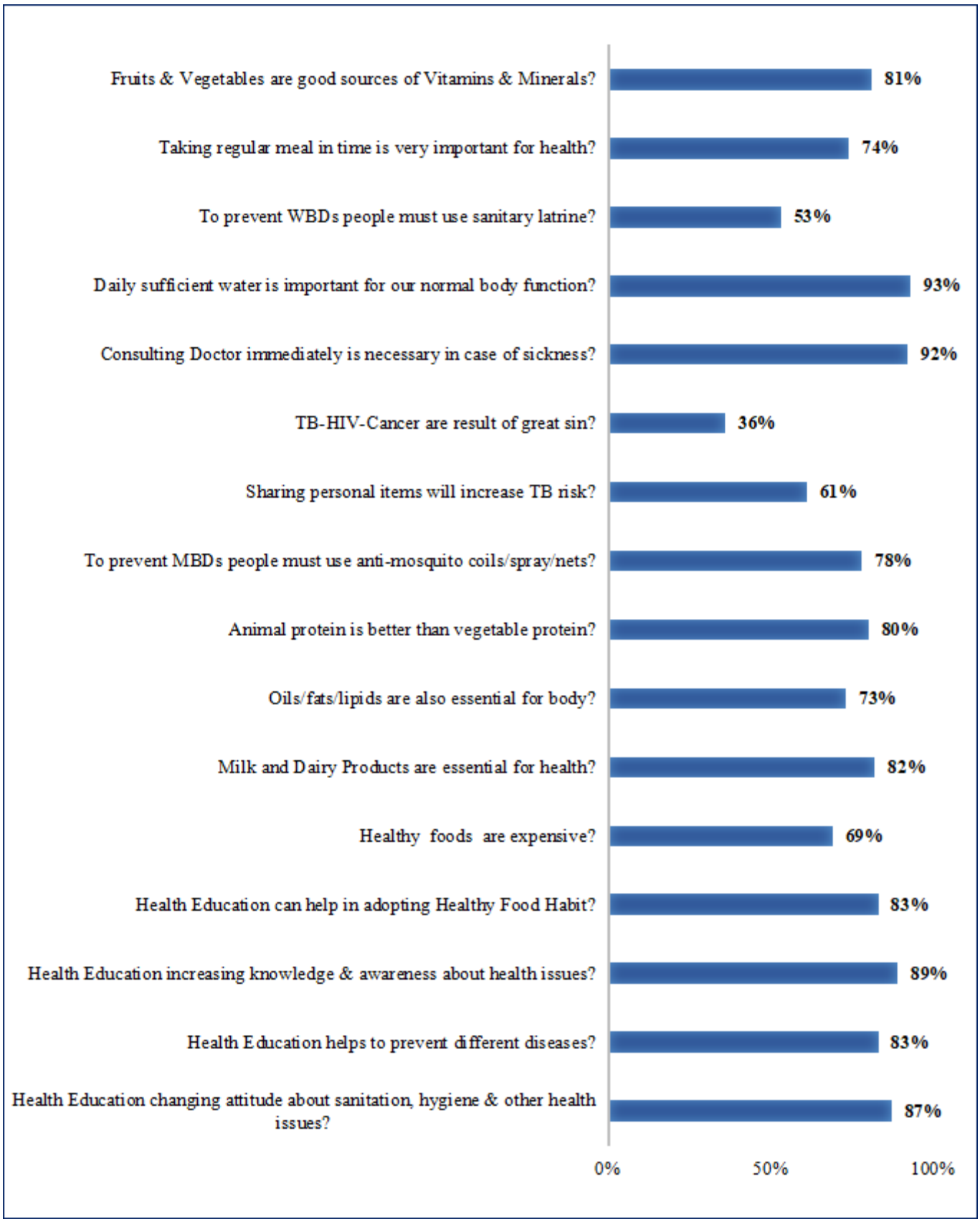


Figure 2: Percentage of positive responses regarding attitudes on different health issues.

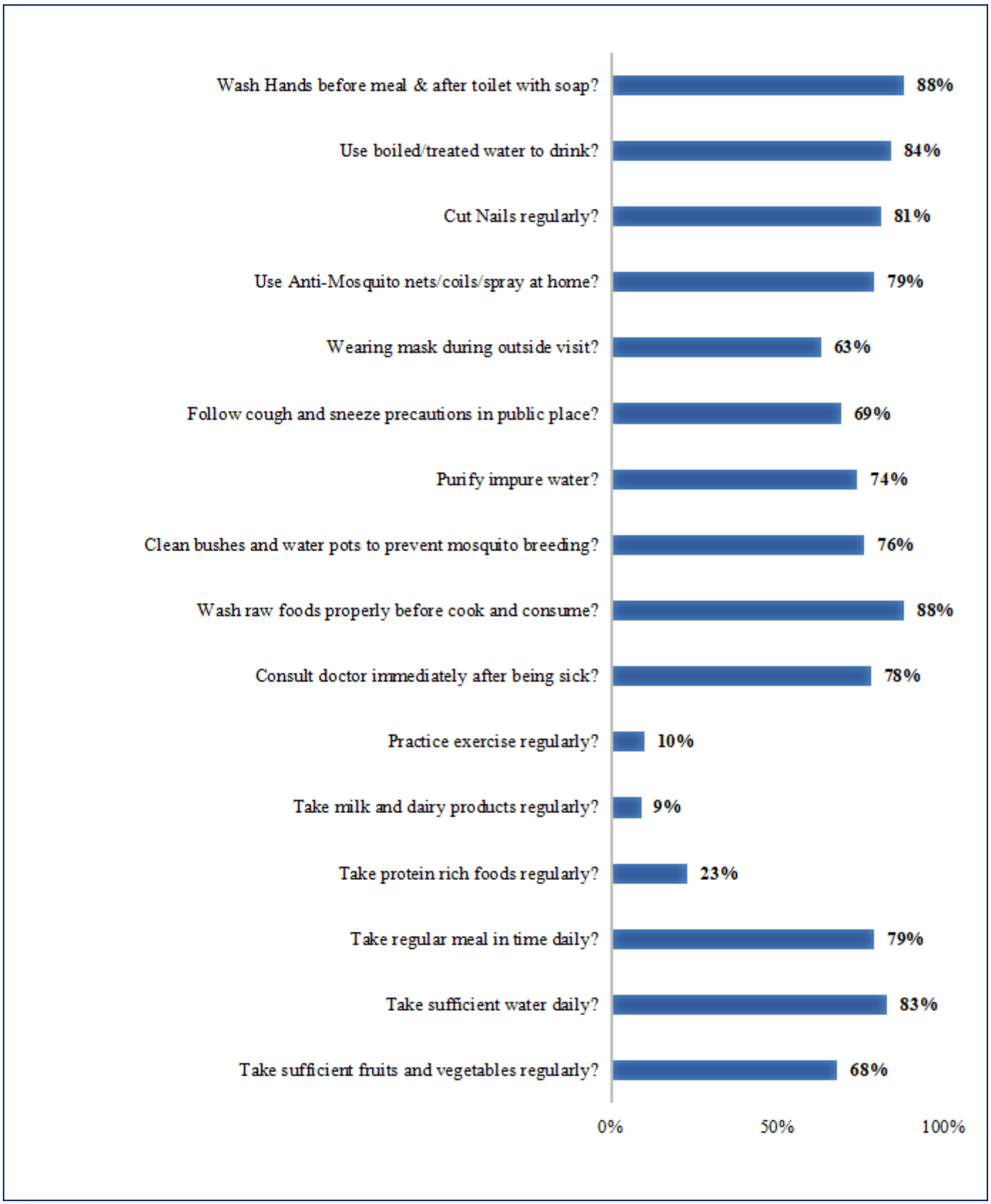


Figure 3: Percentage of responses about some regular health behaviors related to different diseases.

Table 1: Socio-demographic information of the respondents

Variables	Communicable Diseases						Non-Communicable Diseases					
	Water borne diseases (N=504)		Tuberculosis (N=523)		Mosquito borne diseases (N=511)		Hypertension (N=504)		Diabetes mellitus (N=517)		Iron deficiency anaemia(N=501)	
	n	n%	n	n%	n	n%	n	n%	n	n%	n	n%
Age												
< 20 Year	176	34.9	64	12.2	80	15.7	57	11.3	174	33.7	185	37%
21-30 Years	187	37.1	241	46.1	198	38.8	245	48.6	126	24.4	170	34%
31-40 Years	79	15.7	162	31.0	132	25.9	130	25.8	81	15.7	91	18%
41-50 Years	32	6.3	40	7.6	62	12.2	51	10.1	51	9.9	28	6%
51- 60 Years	18	3.6	14	2.7	30	5.9	16	3.2	24	4.6	11	2%
>60+ Years	12	2.4	2	.4	8	1.6	5	1.0	61	11.8	16	3%
Gender												
Male	253	50.2	321	61.4	269	52.7	267	53.0	281	54.4	0	0%
Female	251	49.8	202	38.6	241	47.3	237	47.0	236	45.6	501	100%
Education												
Illiterate	197	39.1	276	52.8	374	73.3	255	50.6	386	74.7	288	57%
Primary Level	261	51.8	238	45.5	122	23.9	240	47.6	118	22.8	213	43%
Middle Level	44	8.7	9	1.7	13	2.5	8	1.6	9	1.7	0	0%
Graduate	2	.4	0	0	1	.2	1	.2	4	.8	0	0%
Occupation												
Housewife	166	32.9	204	39.0	220	43.1	230	45.6	223	43.1	396	79%
Daily Worker	149	29.6	232	44.4	168	32.9	169	33.5	215	41.6	46	9%
Unemployed	36	7.1	25	4.8	43	8.4	21	4.2	34	6.6	7	2%
Shopkeeper	38	7.5	36	6.9	36	7.1	42	8.3	28	5.4	10	2%
Student	96	19.0	18	3.4	33	6.5	26	5.2	14	2.7	27	5%
Job	19	3.8	8	1.5	10	2.0	16	3.2	3	.6	15	3%
Type of family												
Nuclear	293	58.1	349	66.7	297	58.2	310	61.5	135	26.1	358	71%
Joint	211	41.9	174	33.3	213	41.8	194	38.5	382	73.9	143	29%
Marital status												
Married	210	41.7	443	84.7	393	77.1	429	85.1	422	81.6	407	81%
Single	279	55.4	67	12.8	102	20.0	64	12.7	91	17.6	91	18%
Widow/widower /divorced	15	3.0	13	2.5	15	2.9	11	2.2	4	.8	3	1%

Monthly family income (BDT)												
< 3.5K	117	23.2	95	18.2	125	24.5	120	23.8	107	20.7	107	21%
3.5K to 7K	317	62.9	387	74.0	308	60.4	290	57.5	328	63.4	319	64%
>7K	70	13.9	41	7.8	77	15.1	94	18.7	82	15.9	75	15%
Number of family members (persons)												
1 to 4	106	21.0	195	37.3	222	43.5	186	36.9	200	38.7	144	29%
5 to 8	332	65.9	303	57.9	242	47.5	257	51.0	247	47.8	333	66%
> 8	66	13.1	25	4.8	46	9.0	61	12.1	70	13.5	24	5%

Table 2: Association between socio-demographic variables with knowledge, attitude and practices on water borne diseases:

Variables	**Knowledge part**				**Practice part**								**Attitude part**			
	Do you know about diarrhea?		Do you know the causative agents of diarrhea?		Do you wash your hands before eating with soap?		Do you wash your hands after defecation with soap?		Do you use sanitary latrine?		Do you use clean water & follow safe sanitation?		Is Diarrhea cured by drugs and proper management?		Is Diarrhea preventable?	
	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Age																
< 20 Year	172	4	107	69	174	2	166	10	145	31	173	3	161	15	173	3
21-30 Years	180	7	133	54	185	2	183	4	153	34	183	4	175	12	184	3
31-40 Years	73	6	51	28	78	1	72	7	56	23	78	1	75	4	78	1
41-50 Years	29	3	22	10	32	0	27	5	27	5	31	1	30	2	31	1
51- 60 Years	17	1	14	4	18	0	15	3	16	2	17	1	18	0	17	1
>60+ Years	10	2	8	4	12	0	12	0	11	1	12	0	11	1	11	1
P value	*0.079*		*0.347*		*0.981*		***0.021****		*0.193*		*0.857*		*0.756*		*0.507*	
Gender																
Male	240	13	159	94	251	2	243	10	207	46	249	4	225	28	245	8
Female	241	10	176	75	248	3	232	8	201	50	245	6	245	6	249	2
P value	*0.535*		*0.084*		*0.647*		*0.218*		*0.619*		*0.515*		***0.001****		*0.507*	
Education																
Illiterate	194	3	151	46	197	0	185	12	194	3	195	2	195	2	195	2
Primary Level	242	19	151	110	256	5	249	12	194	67	255	6	239	22	254	7
Middle Level	43	1	31	13	44	0	39	5	19	25	42	2	35	9	43	1
Graduate	2	0	2	0	2	0	2	0	1	1	2	0	1	1	2	0
P value	***0.026****		***0.000****		*0.195*		*0.066*		***0.000****		*0.456*		***0.000****		*0.645*	
Occupation																
Housewife	158	8	119	47	164	2	153	13	132	34	162	4	164	2	164	2

Daily Worker	143	6	100	49	146	3	144	5	119	30	149	0	138	11	148	1
Unemployed	30	6	18	18	36	0	34	2	29	7	34	2	32	4	32	4
Shopkeeper	38	0	17	21	38	0	35	3	31	7	36	2	33	5	35	3
Student	93	3	63	33	96	0	90	1	80	16	94	2	85	11	96	0
Job	19	0	18	1	19	0	19	0	17	2	19	0	18	1	19	0
P value	*0.009*		***0.001****		*0.615*		*0.690*		*0.902*		*0.155*		*0.009*		***0.001****	
Type of family																
Nuclear	275	18	214	79	288	5	280	13	207	86	286	7	266	27	288	5
Joint	206	5	121	90	211	0	195	16	201	10	208	3	204	7	206	5
P value	***0.045****		*0.**001****		*0.057*		*0.062*		***0.001****		*0.442*		*0.009*		*0.598*	
Marital status																
Married	205	5	135	75	208	2	200	10	176	34	207	3	194	16	207	3
Single	261	18	194	85	277	2	262	17	221	58	273	6	261	18	272	7
Widow/widower/ divorced	15	0	6	9	14	1	13	2	11	4	14	1	15	0	15	0
P value	*0.071*		***0.042****		*0.077*		*0.317*		*0.329*		*0.356*		*0.502*		*0.597*	
Monthly family income (BDT)																
< 3.5K	101	16	65	52	114	3	111	6	71	46	112	5	102	15	111	6
3.5K to 7K	310	7	215	102	315	2	296	21	274	43	312	5	301	16	314	3
>7K	70	0	55	15	70	0	68	2	63	7	70	0	67	3	69	1
P value	***0.001****		*0.004*		*0.131*		*0.752*		***0.001****		*0.089*		***0.011****		***0.020****	
Number of family members (persons)																
1 to 4	98	8	70	36	104	2	96	10	84	22	104	2	97	9	100	6
5 to 8	320	12	220	112	331	1	317	15	278	54	324	8	312	20	329	3
> 8	63	3	45	21	64	2	62	4	46	20	66	0	61	5	65	1
P value	*0.240*		*0.950*		*0.072*		***0.031****		***0.026****		*0.438*		*0.650*		*0.009*	

Table 3: Association between socio-demographic variables with knowledge, attitude and practices on Tuberculosis:

Variables	**Knowledge Part**				**Attitude part**						**Practice Part**					
	Do you know what TB is?		Do you know what the causative agent of TB?		Do you think personal hygiene decrease TB risk?		Do you think sharing personal items will increase TB risk?		Do you think TB is a result of great sin?		Do you smoke cigarettes?		Do you cough in public place without carefulness?		After being diagnosed, do you keep you away not to spread TB?	
	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)

Age																
< 20 Year	48	16	28	36	50	14	42	22	22	42	28	36	20	44	43	21
21-30 Years	180	61	107	134	172	69	155	86	78	163	121	120	65	176	173	68
31-40 Years	98	64	83	79	100	62	85	77	55	107	95	67	67	95	107	55
41-50 Years	25	15	24	16	29	11	24	16	18	22	28	12	20	20	30	10
51- 60 Years	9	5	14	0	12	2	10	4	11	3	12	2	1	13	12	2
>60+ Years	1	1	1	1	2	0	1	1	0	2	2	0	1	1	2	0
P value	***0.043****		*0.008*		*0.073*		*0.196*		*0.009*		*0.005*		*0.002*		*0.441*	
Gender																
Male	224	97	149	172	215	106	190	131	120	201	209	112	130	191	219	102
Female	137	65	108	94	150	52	127	75	64	138	77	125	44	158	148	54
P value	*0.637*		*0.362*		*0.078*		*0.402*		*0.184*		***0.001****		***0.001****		*0.220*	
Education																
Illiterate	208	68	185	91	222	54	181	95	133	143	170	106	94	182	207	69
Primary Level	151	87	69	169	140	98	131	107	48	190	116	122	78	160	154	84
Middle Level	2	7	3	6	3	6	5	4	3	6	0	9	2	7	6	3
Graduate	-	-	-	-	-	-			-	-	-	-	-	-	-	-
P value	***0.001****		***0.001****		***0.001****		***0.049****		***0.001****		***0.001****		*0.741*		***0.038****	
Occupation																
Housewife	141	63	111	93	151	53	132	72	67	137	86	118	54	150	149	55
Daily Worker	168	64	104	142	159	73	147	85	93	139	156	76	82	150	161	71
Unemployed	10	15	17	8	14	11	11	14	9	16	15	10	12	13	15	10
Shopkeeper	21	15	12	24	18	18	14	22	11	25	23	13	19	17	24	12
Student	14	4	7	11	16	2	11	7	3	15	6	12	7	11	10	8
Job	7	1	6	2	7	1	2	6	1	7	0	8	0	8	8	0
P value	***0.011****		*0.111*		***0.010****		*0.006*		*0.168*		***0.001****		*0.004*		*0.183*	
Type of family																
Nuclear	212	137	144	205	234	115	188	161	85	264	170	179	131	218	234	115
Joint	149	25	113	61	131	43	129	45	99	75	116	58	43	131	133	41
P value	***0.001****		***0.001****		*0.053*		***0.001****		***0.001****		***0.001****		*0.003*		***0.027****	
Marital status																
Married	310	133	223	220	310	133	278	165	162	281	248	195	152	291	315	128
Single	46	21	23	16	44	23	34	33	19	48	34	33	21	46	42	25
Widow/widower/divorced	5	8	11	2	11	2	5	8	3	10	4	9	1	12	10	3
P value	*0.053*		***0.029****		*0.386*		***0.044****		*0.276*		*0.156*		*0.125*		*0.323*	
Monthly family income																
< 3.5K	61	34	49	46	53	42	50	45	36	59	58	37	46	49	44	51

3.5K to 7K	272	115	189	198	286	101	245	142	136	251	204	183	111	276	298	89
>7K	28	13	19	22	26	15	22	19	12	29	24	17	17	24	25	16
P value	*0.220*		*0.693*		*0.002*		*0.103*		*0.626*		*0.300*		*0.002*		***0.001******	
Number of family members																
1 to 4	12	29	81	114	138	57	125	70	60	135	102	93	57	138	134	61
5 to 8	97	97	167	136	208	95	174	129	116	187	175	128	109	194	215	88
> 8	17	8	9	16	19	6	18	7	8	17	9	16	8	17	18	7
P value	*0.802*		*0.003*		*0.693*		*0.162*		*0.217*		*0.077*		*0.294*		*0.850*	

Table 4: Association between socio-demographic variables with knowledge, attitude and practices on Mosquito Borne Diseases

Variables	**Knowledge part**				**Practice Part**				**Attitude part**			
	Do you know about mosquito-borne disease?		Do you know the causes of mosquito-borne disease?		Do you give blood sample to lab? (if suspected)		Do you use mosquito nets in home during sleeping?		Do you think cleaning bushes & water deposited pots can prevent MBDs mostly?		Do you think consult from nearest health post first after being sick is important?	
	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Age												
< 20 Year	60	20	66	14	61	19	74	6	79	1	79	1
21-30 Years	183	15	184	14	129	69	173	25	193	5	197	1
31-40 Years	107	24	106	26	107	25	117	15	126	6	131	1
41-50 Years	41	21	45	17	42	20	54	8	58	4	60	2
51- 60 Years	25	5	26	4	12	18	21	9	30	0	29	1
>60+ Years	1	7	2	6	5	3	8	0	5	3	8	0
P value	***0.001******		***0.001******		***0.001******		***0.040****		***0.001******		*0.479*	
Gender												
Male	224	44	230	39	198	71	237	32	262	7	266	3
Female	193	48	199	42	158	83	210	31	229	12	238	3
P value	*0.306*		*0.366*		***0.048****		*0.740*		*0.157*		*0.892*	
Education												
Illiterate	310	64	316	58	310	64	320	54	359	15	369	5
Primary Level	98	23	104	18	98	23	117	5	118	4	121	1
Middle Level	8	5	8	5	8	5	10	3	13	0	13	0
Graduate	1	0	1	0	1	0	0	1	1	0	1	0
P value	*0.243*		*0.366*		*0.243*		***0.001******		*0.875*		*0.944*	
Occupation												
Housewife	179	41	183	37	144	76	194	26	210	10	217	3
Daily Worker	148	20	147	21	128	40	145	23	165	3	168	0

Unemployed	30	12	35	8	21	22	36	7	42	1	40	3
Shopkeeper	30	6	30	6	29	7	33	3	31	5	36	0
Student	21	12	24	9	27	6	31	2	33	0	33	0
Job	9	1	10	0	7	3	8	2	10	0	10	0
P value	*0.009*		*0.226*		*0.002*		*0.664*		***0.013****		*0.009*	
Type of family												
Nuclear	224	72	231	66	222	75	261	36	280	17	294	3
Joint	193	20	198	15	134	79	186	27	211	2	210	3
P value	***0.001****		***0.001****		*0.004*		*0.851*		*0.005*		*0.681*	
Marital status												
Married	333	59	336	57	265	128	337	56	380	13	388	5
Single	78	24	87	15	81	21	97	5	100	2	101	1
Widow/widower/divorced	6	9	6	9	10	5	13	2	11	4	15	0
P value	***0.001****		***0.001****		*0.061*		***0.038****		***0.001****		*0.885*	
Monthly family income												
< 3.5K	113	12	109	16	100	25	116	9	212	10	125	0
3.5K to 7K	258	49	265	43	280	28	299	9	233	9	304	4
>7K	46	31	55	22	67	10	76	1	46	0	75	2
P value	*0.001***		*0.004*		*0.007*		***0.049****		*0.340*		*0.239*	
Number of family members												
1 to 4	197	25	194	28	155	67	196	26	210	12	221	1
5 to 8	190	51	201	41	172	70	214	28	230	12	240	2
> 8	30	16	34	12	29	17	37	9	40	6	43	3
P value	***0.001****		*0.062*		*0.554*		*0.297*		*0.743*		*0.002*	

Table 5: Association between socio-demographic variables with knowledge, attitude and practices on hypertension

Variables	**Knowledge Part**				**Attitude part**				**Practice Part**			
	Do you know about hypertension?		Do you know the causes of hypertension?		Do you think Hypertension can bh cured by drugs & are preventable?		Do you think regular exercise can reduce the chance of hypertension?		Do you check your BP regularly?		Do you avoid oily orfat rich foods?	
	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Age												
< 20 Year	53	4	53	4	49	8	54	3	32	25	44	13
21-30 Years	210	35	204	41	225	20	224	21	110	135	228	17
31-40 Years	96	34	96	34	117	13	106	24	55	75	120	10
41-50 Years	31	20	30	21	45	6	43	8	23	28	43	8

51- 60 Years	13	3	11	5	14	2	16	0	8	8	15	1
>60+ Years	4	1	4	1	4	1	4	1	3	2	5	0
P value	***0.001****		***0.001****		*0.729*		***0.016****		*0.593*		*0.005*	
Gender												
Male	223	44	215	52	241	26	239	28	132	135	243	24
Female	184	53	183	54	213	24	208	29	99	138	212	25
P value	*0.094*		*0.363*		*0.884*		*0.536*		*0.085*		*0.555*	
Education												
Illiterate	183	72	178	77	221	34	222	33	131	124	234	21
Primary Level	215	25	213	27	224	16	219	21	97	143	214	26
Middle Level	8	0	6	2	8	0	5	3	3	5	6	2
Graduate	1	0	1	0	1	0	1	0	0	1	1	0
P value	***0.001****		***0.001****		*0.067*		***0.049****		*0.070*		*0.360*	
Occupation												
Housewife	173	57	173	57	209	21	197	33	93	137	208	22
Daily Worker	138	31	134	35	151	18	153	16	89	80	159	10
Unemployed	16	5	15	6	14	7	21	0	10	11	17	4
Shopkeeper	40	2	38	4	41	1	39	3	17	25	39	3
Student	26	0	26	0	24	2	24	2	19	7	16	10
Job	14	2	12	4	15	1	13	3	3	13	16	0
P value	*0.004*		***0.022****		*0.006*		*0.198*		*0.002*		***0.001****	
Type of family												
Nuclear	223	87	212	98	277	33	267	43	132	178	279	31
Joint	184	10	186	8	177	17	180	14	99	95	176	18
P value	***0.001****		***0.001****		*0.492*		***0.022****		*0.064*		*0.790*	
Marital status												
Married	342	87	333	96	385	44	377	52	184	245	400	29
Single	60	4	62	2	60	4	60	4	42	22	45	19
Widow/widower/divorced	5	6	3	8	9	2	10	1	5	6	10	1
P value	***0.001****		***0.001****		*0.395*		*0.374*		*0.003*		*0.363*	
Monthly family income												
< 3.5K	102	18	96	24	106	14	108	12	42	78	111	9
3.5K to 7K	250	40	246	44	260	30	263	27	159	131	255	35
>7K	55	39	56	38	88	6	76	18	30	64	89	5
P value	***0.001****		***0.001****		*0.410*		***0.028****		***0.001****		*0.102*	
Number of family members												

1 to 4	163	23	154	32	168	18	170	16	73	113	173	13
5 to 8	188	69	187	70	229	28	221	36	113	144	231	26
> 8	56	5	57	4	57	4	56	5	45	16	51	10
P value	***0.001****		***0.001****		*0.589*		*0.149*		***0.001****		*0.094*	

Table 6: Association between socio-demographic variables with knowledge, attitude and practices on diabetes mellitus

Variables	**Knowledge Part**				**Attitude part**				**Practice Part**					
	Do you know about diabetes mellitus?		Are you suffering by diabetes mellitus?		Do you think DM is curable & preventable?		Do you think diet therapy and enough physical activity can control DM?		Do you check blood sugar regularly?		Do you practice exercise regularly?		Do you follow prescribed medicines and advise of doctor regularly?	
	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Age														
< 20 Year	171	3	48	126	48	126	169	5	166	8	21	153	169	5
21-30 Years	120	6	44	82	38	88	125	1	122	4	16	110	124	2
31-40 Years	78	3	22	59	30	51	79	2	81	0	6	75	81	0
41-50 Years	50	1	18	33	17	34	48	3	48	3	7	34	51	0
51- 60 Years	21	3	10	14	4	20	23	1	22	2	1	23	23	1
>60+ Years	59	2	32	29	20	41	57	4	58	3	3	58	59	2
P value	*0.291*		*0.004*		***0.041****		*0.286*		*0.337*		***0.030****		*0.453*	
Gender														
Male	271	10	99	182	92	189	274	7	272	9	34	247	275	6
Female	228	8	75	161	65	171	227	9	225	11	30	216	232	4
P value	*0.865*		*0.461*		***0.043****		*0.450*		*0.392*		***0.013****		*0.717*	
Education														
Illiterate	373	13	146	240	114	272	373	13	371	15	32	354	379	7
Primary level	114	4	25	93	37	81	117	1	115	3	20	98	116	2
Middle level	8	1	2	7	5	4	7	2	7	2	1	8	8	1
Graduate	4	0	1	3	1	3	4	0	4	0	1	3	4	0
P value	*0.388*		***0.013****		*0.371*		*0.004*		***0.031****		*0.002*		*0.247*	
Occupation														
Housewife	213	10	76	147	61	162	215	8	214	9	20	203	218	5
Daily worker	208	7	85	130	74	141	211	4	209	6	24	191	212	3
Unemployed	34	0	7	27	7	27	31	3	29	5	2	32	32	2
Shopkeeper	28	0	4	24	10	18	27	1	28	0	3	25	28	0
Student	13	1	1	13	4	10	14	0	14	0	4	10	14	0

Job	3	0	1	2	1	2	3	0	3	0	1	2	3	0
P value	*0.862*		***0.029****		*0.283*		*0.352*		***0.021****		***0.001*****		*0.532*	
Type of family														
Nuclear	125	10	34	101	32	103	126	9	126	9	20	115	131	4
Joint	374	8	140	242	125	257	375	7	371	11	34	348	376	6
P value	***0.013****		***0.001*****		*0.087*		*0.005*		***0.050****		*0.149*		*0.313*	
Marital status														
Married	407	13	149	273	130	292	410	12	409	13	44	378	414	8
Single	89	2	23	68	26	65	87	4	85	6	10	81	89	2
Widow/widower/divorced	3	1	2	2	1	3	4	0	3	1	0	2	4	0
P value	***0.019****		*0.199*		*0.645*		*0.694*		***0.026****		*0.926*		*0.944*	
Monthly family income														
< 3.5K	100	7	37	70	25	82	100	7	96	11	9	98	101	6
3.5K to 7K	319	9	115	213	110	218	320	8	320	8	38	290	324	4
>7K	80	2	22	60	22	58	81	1	81	1	7	75	82	0
P value	*0.286*		*0.093*		***0.011****		*0.059*		***0.001*****		***0.044****		*0.006*	
Number of family members														
1 to 4	196	2	71	129	67	133	194	6	192	8	19	181	197	3
5 to 8	234	13	85	162	75	172	237	10	238	9	32	215	241	6
> 8	69	1	18	52	15	55	70	0	67	3	3	67	69	1
P value	*0.298*		*0.063*		*0.184*		*0.224*		*0.963*		*0.055*		*0.736*	

Table 7: Association between socio-demographic variables with knowledge, attitude and practices on Iron deficiency anemia:

Variables	**Knowledge Part**				**Attitude part**				**Practice Part**			
	Do you know about Iron-deficiency anaemia?		Do you know the causes of Iron-deficiency anaemia?		Do you think proper diet & taking essential nutrients can prevent anaemia?		Do you think anaemia can be cured by drugs & are preventable?		Do you take Iron -rich foods?		Do you take sufficient meals daily?	
	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Age												
< 20 Year	51	4	54	1	48	8	53	3	31	25	43	13
21-30 Years	210	35	204	41	223	20	223	21	109	135	225	17
31-40 Years	96	34	95	34	117	13	105	23	55	75	123	9
41-50 Years	31	20	30	21	45	6	43	8	23	27	43	7
51- 60 Years	13	3	11	5	14	2	17	0	8	7	15	1

>60+ Years	3	1	4	1	4	1	4	1	4	2	5	0
P value	***0.001****		***0.001****		*0.729*		***0.016****		*0.593*		*0.005*	
Education												
Illiterate	182	71	176	76	221	31	220	32	131	121	231	21
Primary level	215	25	213	27	224	16	219	21	97	143	214	26
Middle level	8	0	6	2	8	0	5	3	3	5	6	2
Graduate	1	0	1	0	1	0	1	0	0	1	1	0
P value	***0.001****		***0.001****		*0.067*		***0.049****		*0.070*		*0.360*	
Occupation												
Housewife	170	57	171	55	207	20	195	32	91	136	205	22
Daily worker	138	31	134	35	151	18	153	16	89	80	159	10
Unemployed	16	5	15	6	14	7	21	0	10	11	17	4
Shopkeeper	40	2	38	4	41	1	39	3	17	25	39	3
Student	26	0	26	0	24	2	24	2	19	7	16	10
Job	14	2	12	4	15	1	13	3	3	13	16	0
P value	*0.004*		***0.022****		*0.006*		*0.198*		*0.002*		***0.001****	
Type of family												
Nuclear	220	87	212	95	274	33	264	43	132	175	276	31
Joint	184	10	186	8	177	17	180	14	99	95	176	18
P value	***0.001****		***0.001****		*0.492*		***0.022****		*0.064*		*0.790*	
Marital status												
Married	342	84	330	96	382	44	374	52	184	242	400	26
Single	60	4	62	2	60	4	60	4	42	22	45	19
Widow/widower/divorced	5	6	3	8	9	2	10	1	5	6	10	1
P value	***0.001****		***0.001****		*0.395*		*0.374*		*0.003*		*0.363*	
Monthly family income												
< 3.5K	102	15	96	21	103	14	105	12	42	75	111	6
3.5K to 7K	250	40	246	44	260	30	263	27	159	131	255	35
>7K	55	39	56	38	88	6	76	18	30	64	89	5
P value	***0.001****		***0.001****		*0.410*		***0.028****		***0.001****		*0.102*	
Number of family members												
1 to 4	160	23	151	32	165	18	170	13	70	113	170	13
5 to 8	188	69	187	70	229	28	221	36	113	144	231	26
> 8	56	5	57	4	57	4	56	5	45	16	51	10
P value	***0.001****		***0.001****		*0.589*		*0.149*		***0.001****		*0.094*	

Chapter - 2

Objective 2: To estimate the disease burden/occurrence among the community people.

Participants (Duration & Sample size) and data collection tool (Questionnaire):

The survey was administered to the Rohingya refugee people of different ages (excluding children <18 years) and genders who were residing in refugee camps. Data collection was done from March, 2023 till August, 2023. The participants in the study who declined the opportunity to participate in the survey were disqualified. The appointed volunteers received responses from a total of 510 different individual participants from different camps. The sample size was calculated by using this formula ($n = z^2pq/d^2$). In order to achieve the goals of the study, a standard questionnaire on knowledge and awareness of occurrence/incidence of different diseases (disease burden) among the Rohingya refugee people was first developed, then validated, then translated, and last personalized. The socio-demographic questions that were asked were tailored to the group of refugees. There were categorical responses to questions on knowledge and awareness around communicable and non-communicable diseases. For the purpose of linguistic validation, the questionnaires were translated into English and Rohingya using forwarding and backward translation respectively. The respondents were intended to depict the status of refugees in Bangladesh.

Results:

Descriptive statistics of socio-demographic status:

A total of 510 refugee people were enrolled in this study where maximum participants' age group was 21-30 years (n=224, 43.9%). Male and female respondents' participation was nearly equal (male: n=264, 51.8%; female: n=246, 48.2%). About half of the respondents (n=277, 54.3%) were illiterate or did not have any institutional education. Regarding the occupational status, the majority of the respondents were housewives (n=200, 39.2%). Among all the respondents 290 (56.9%) mentioned about joint family they are living in. In this study majority (n=307, 60.2%) of the respondents were married. It was found that the majority (n=279, 54.7%) of the respondents' monthly family income was 3.5K - 7K in BDT. Majority (n=331, 64.9%) of the respondents had 5 - 8 family members (Table 1).

Descriptions of knowledge on different health issues related to diseases:

According to Figure 1, we can see the percentage of different respondents who replied positively about knowledge on different health issues that are related to different diseases. Here 84% of respondents knew about water-borne diseases, 81% of respondents knew about transmission of water borne diseases and 78% respondents knew about signs-symptoms of water-borne diseases. Again, we can see that 76% of respondents knew about mosquito borne diseases, about 69% of respondents knew about transmission of mosquito-borne diseases and 67% of respondents knew about signs-symptoms of water-borne diseases.

Here 83% of respondents knew about different communicable diseases and 70% respondents knew about different non-communicable diseases. About 71% and 73% of respondents knew about TB and its transmission respectively. Again 73% and 70% of respondents knew about HIV-AIDS and its transmission respectively. It was also seen that more than 50% of respondents knew about different malnutrition-based diseases, for example different vitamin deficiency disorders, different mineral deficiency disorders, obesity and overweight (Figure 1).

Descriptions of health behaviors on different health issues related to diseases:

From figure 2, we can see the percentage of different respondents who replied positively about different health behaviors that are related to different diseases. Here we can see that 93% of respondents were used to wash their hands before meals and after toileting properly with soap. Around 91% of the respondents used to treat or boil water to drink. About 87% of respondents used to cut nails regularly. Here around 83% of respondents used anti mosquito nets/coils/spray at home. About 79% of respondents used to clean bushes and water-containing pots regularly to prevent mosquito breeding. About 83% of respondents used to consult doctors immediately after being sick. Only 11% of respondents used to practice exercise, only 12% of respondents used to take milk and dairy products regularly and only 26% of respondents used to take protein rich foods regularly. Here 74% of respondents used to take regular meal in time. About 43% of respondents used to take sufficient fruits and 92% of respondents used to take vegetables daily (Figure 2).

Descriptions about ideas on nutrients, their sources, malnutrition and associated diseases:

In figure 3, we can see 68% of respondents replied A, B, C, and D are examples of vitamins; 24% of respondents mentioned about Fe, Zn, Calcium and I where only 8% respondents did not know about it (Figure 3). In figure 4, we can see 65% of respondents told about Fe, Zn, Calcium and I as examples of minerals; 27% of respondents replied A, B, C and D are examples of minerals where 8% of respondents did not know about it (Figure 4). In figure 5, we can see 74% of respondents replied about different fruits and vegetables; 8% of respondents told about ghee, butter and oils; 11% of respondents mentioned about fast foods and street foods where 7% of respondents told about chicken, beef and mutton are the rich sources of different vitamins and minerals (Figure 5). In figure 6, we can see 80% of respondents replied about blindness, goiter, weak bones and anaemia; 8% of respondents told about malaria, dengue, Covid-19; 8% of respondents mentioned about diarrhea, cholera, typhoid where only 4% respondents told about diabetes, heart attack and stroke are the problems occur without different vitamins and minerals in our body (Figure 6). In figure 7, we can see 14% of respondents replied about overweight, high blood pressure and stroke; 51% of respondents told about weakness, weak muscle and weak bones; 18% of respondents mentioned about diabetes, heart attack and high cholesterol where 17% of respondents told about anaemia, blindness, goiter and gout are the problems occur without carbohydrates, proteins and fats in our body (Figure 7). In Table 2, we can see 228 respondents

replied positive about any vitamin deficiency disorder and again, 230 respondents replied positive about any mineral deficiency disorder that were suspected by physicians as per clinical symptoms and physical appearance of the respondents during medical visit earlier (Table 2).

Descriptions of ideas on different communicable & non-communicable diseases:

According to table 3, 72% of respondents replied the correct option regarding water-borne diseases like Cholera and Typhoid as example; about 69% of respondents told the correct option regarding Mosquito Borne Diseases like malaria and dengue as example; around 39% of respondents mentioned the correct option regarding sexually transmitted diseases like gonorrhea and syphilis as example; 49% of respondents replied the correct option regarding Respiratory Tract Infections like Pneumonia and Covid-19 as example. Again when the respondents were asked about examples of non-communicable diseases, 48% replied about diabetes, hypertension, heart attack and stroke (Table 3).

Common communicable & non-communicable diseases, they were suffering from and prevalence:

According to Table 4, 61% of respondents replied about Diarrhea, 28% respondents mentioned about Typhoid, 4% told about Dysentery and 7% respondents mentioned about Cholera as diseases caused through unsafe drinking water common in their area. Again 77% respondents told about Dengue and 23% respondents replied about Malaria common in their area. In another reply 24% respondents mentioned about TB, 23% respondents replied about COCID-19, 21% respondents told about Pneumonia and 32% respondents told about Influenza as diseases caused in respiratory tract. Again 20% respondents mentioned about Gonorrhoea, 22% respondents told about Syphilis, 17% told about HIV, 18% respondents replied about UTI however 23% respondents were not sure as diseases caused through unsafe physical relation common in their area. But in case of Non-communicable diseases 7% respondents told about Eye problem, 8% told about Arthritis, 6% told about Asthma, 6% told about Anemia, 6% told about Hypertension, 5% told about Diabetes as common in their area including other diseases (Table 4). According to Table 5, different percentage of respondents mentioned about different non-communicable diseases where DM, CHD, Cataract, stroke, anemia, back pain, arthritis, IBS, and mental problem are remarkable. Again different percentage of respondents mentioned about different communicable diseases where skin infection, diarrheal diseases, viral cold with fever, covid-19 and helmithiasis are remarkable (Table 5). According to Table 6, we can see different prevalence values of both communicable and non-communicable diseases. In case of non-communicable diseases arthritis, COPD, anaemia, back pain, mental disorder and iron deficiency are remarkable and comparably high in prevalence where other different non-communicable diseases are present. Again in case of communicable diseases skin infection, Viral Cold and Fever, Helminthiasis, dengue, UTI and RTI are remarkable and comparably high in prevalence where other different communicable diseases are present (Table 6).

Table 1 : Socio-demographic information of the respondents		
Traits	**N= 510**	
	n	**n%**
Age		
< 20 Year	160	31.4
21-30 Years	224	43.9
31-40 Years	72	14.1
41-50 Years	34	6.7
51- 60 Years	20	3.9
Gender		
Male	264	51.8
Female	246	48.2
Educational status		
Illiterate	277	54.3
Primary level	205	40.2
Middle level	24	4.7
Graduate	4	0.8
Occupational status		
Housewife	200	39.2
Daily worker	145	28.4
Unemployed	37	7.3
Shopkeeper	31	6.1
Student	82	16.1
Temporary Job	15	2.9
Type of family		
Nuclear	220	43.1
Joint	290	56.9
Marital status		
Married	307	60.2
Single	203	39.8
Monthly family income		
Less than 3500 BDT	157	30.8
3500 to 7000 BDT	279	54.7
More than 7000 BDT	74	14.5
Number of family members		
1 to 4 persons	136	26.7
5 to 8 persons	331	64.9
More than 8 persons	43	8.4

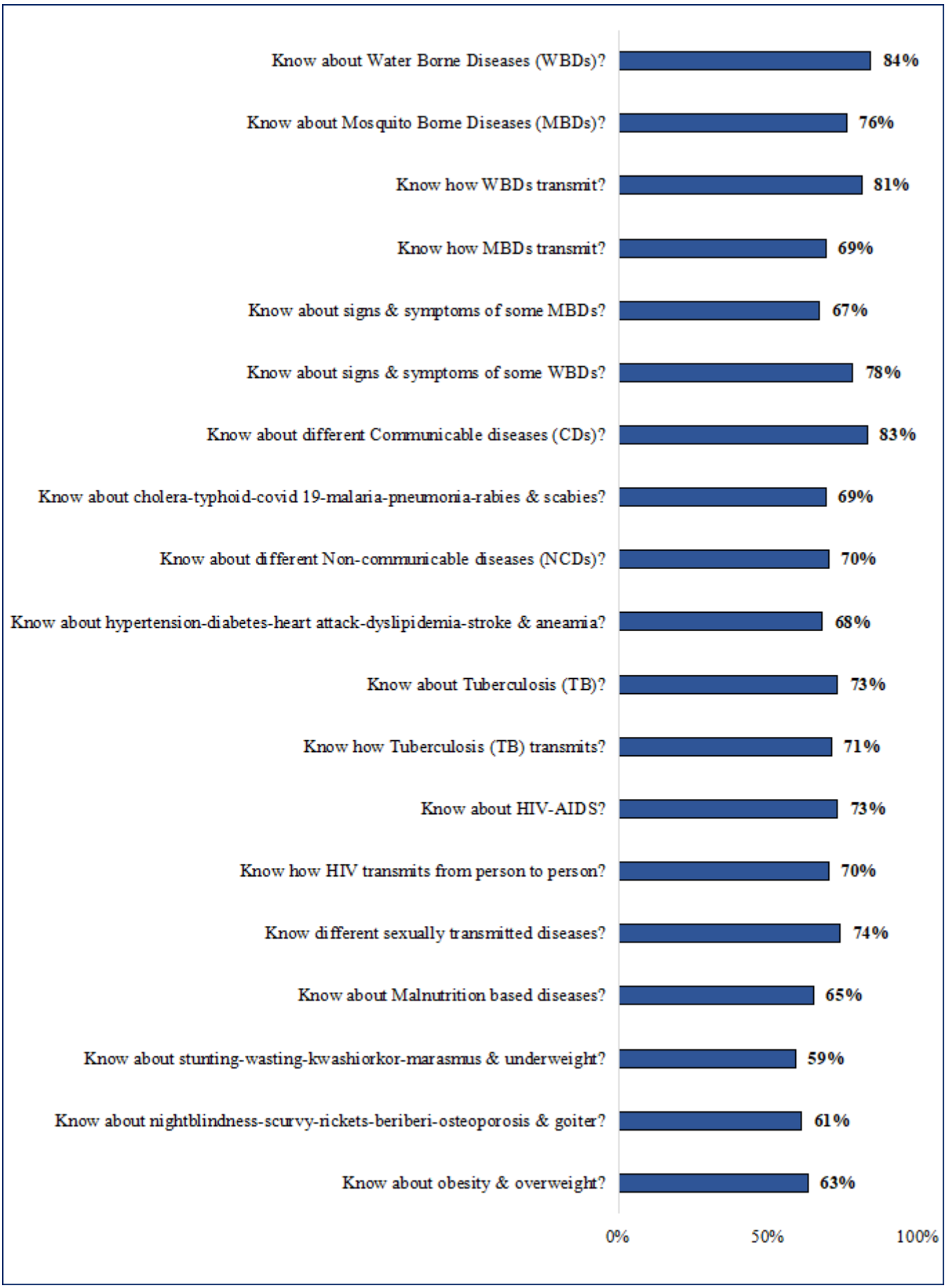


Figure 1: Percentage of positive responses about knowledge on different diseases.

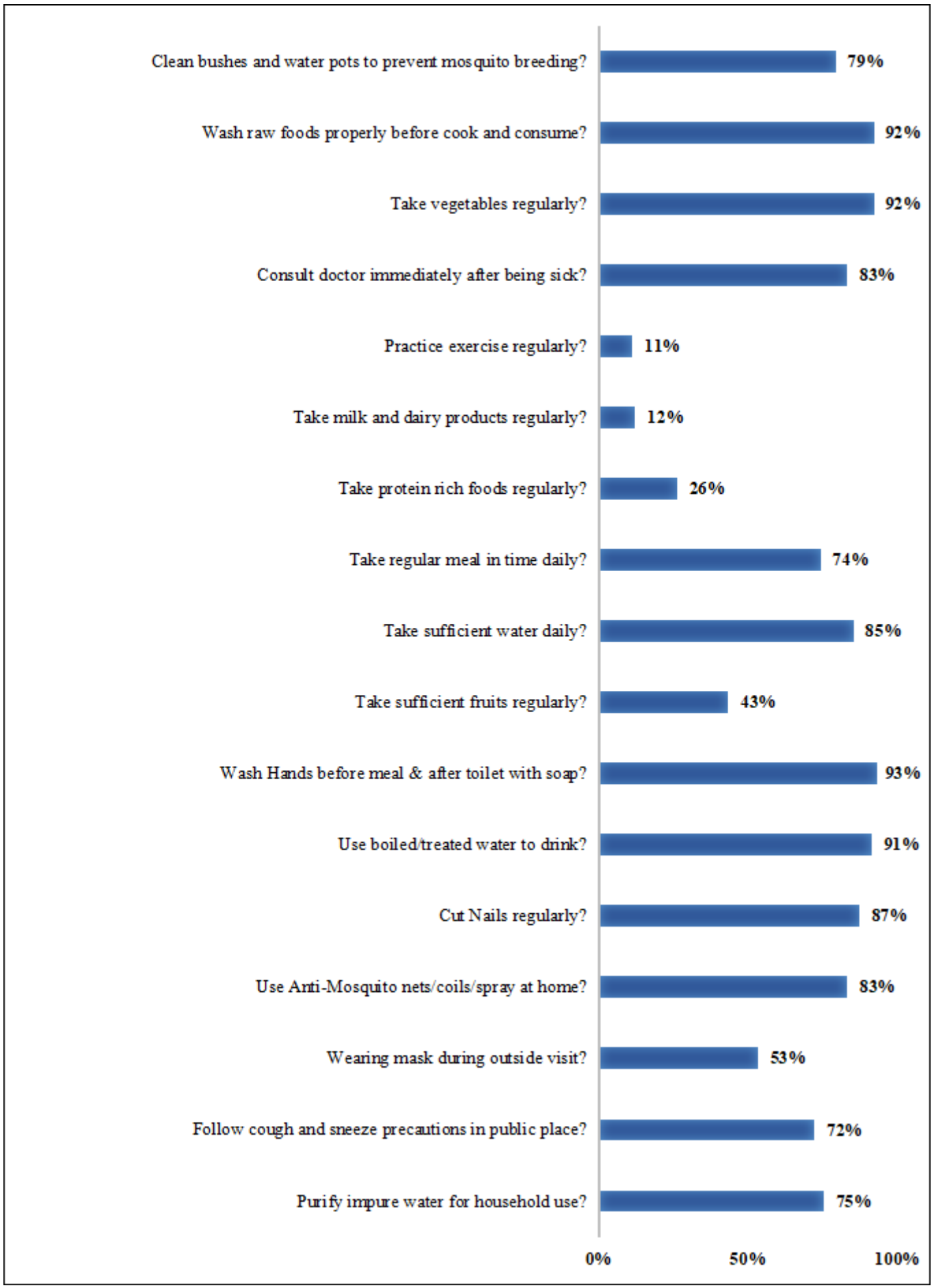


Figure 2: Percentage of positive responses about different health behaviors related to different diseases.

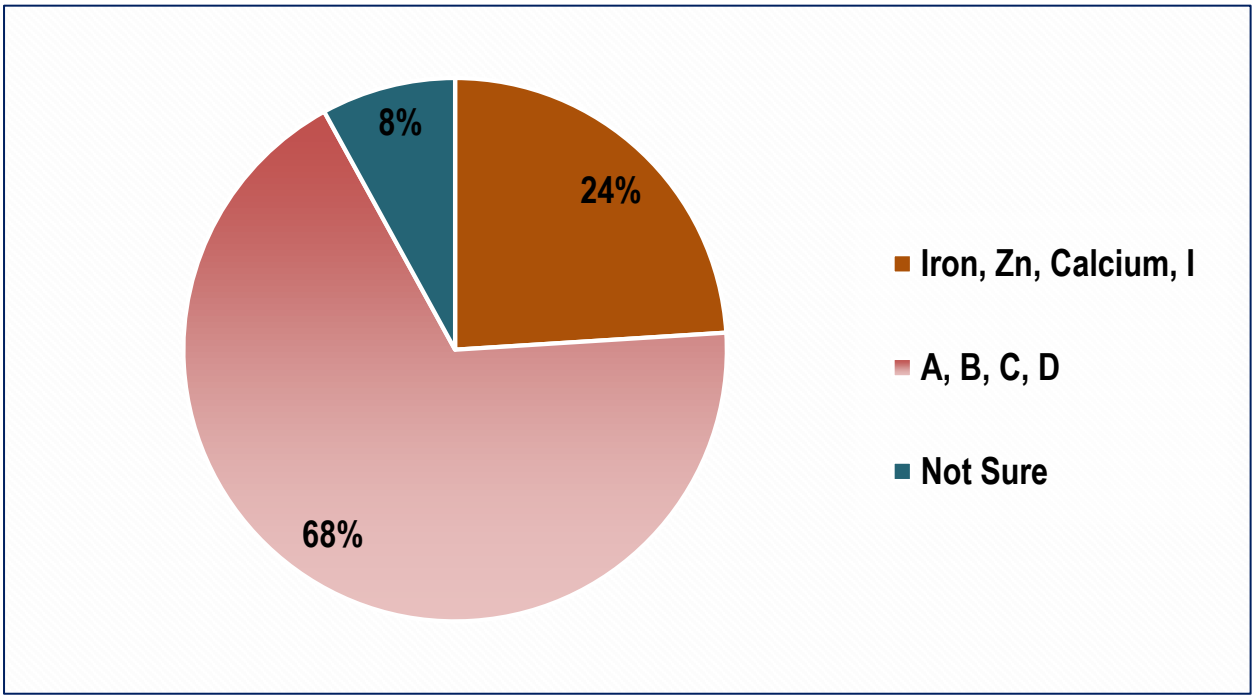


Figure 3: Idea about examples of Vitamins.

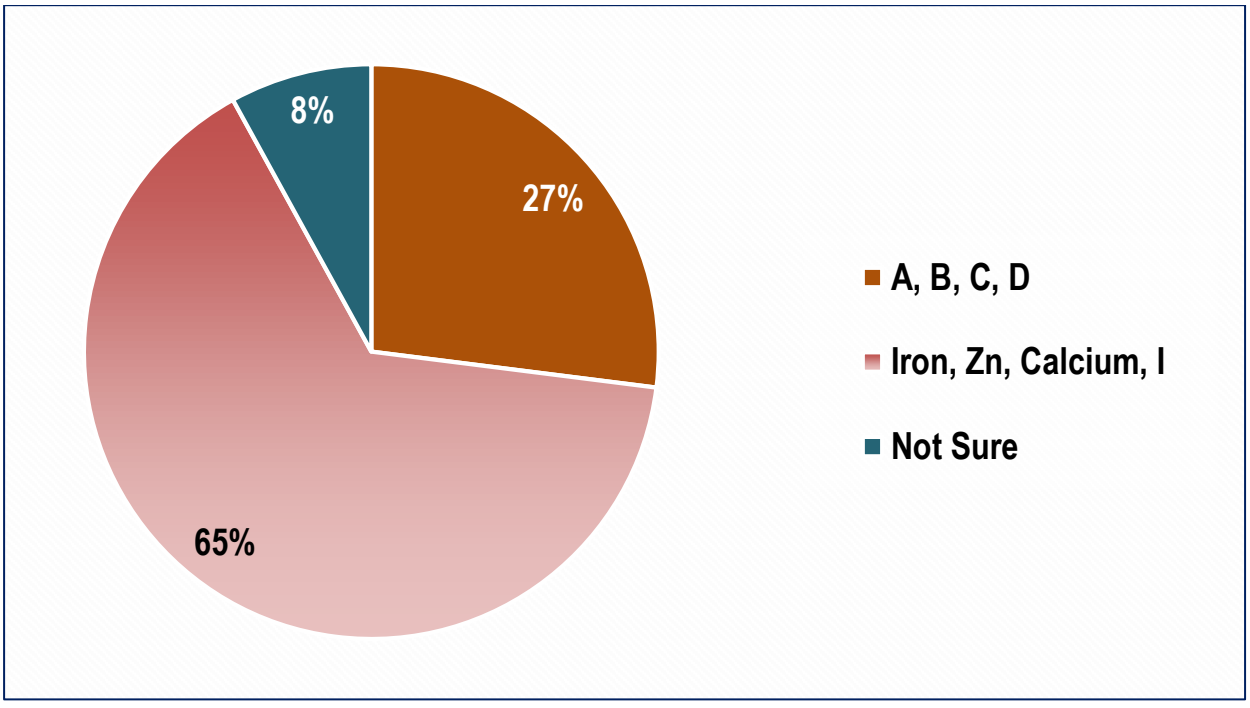


Figure 4: Idea about examples of Minerals.

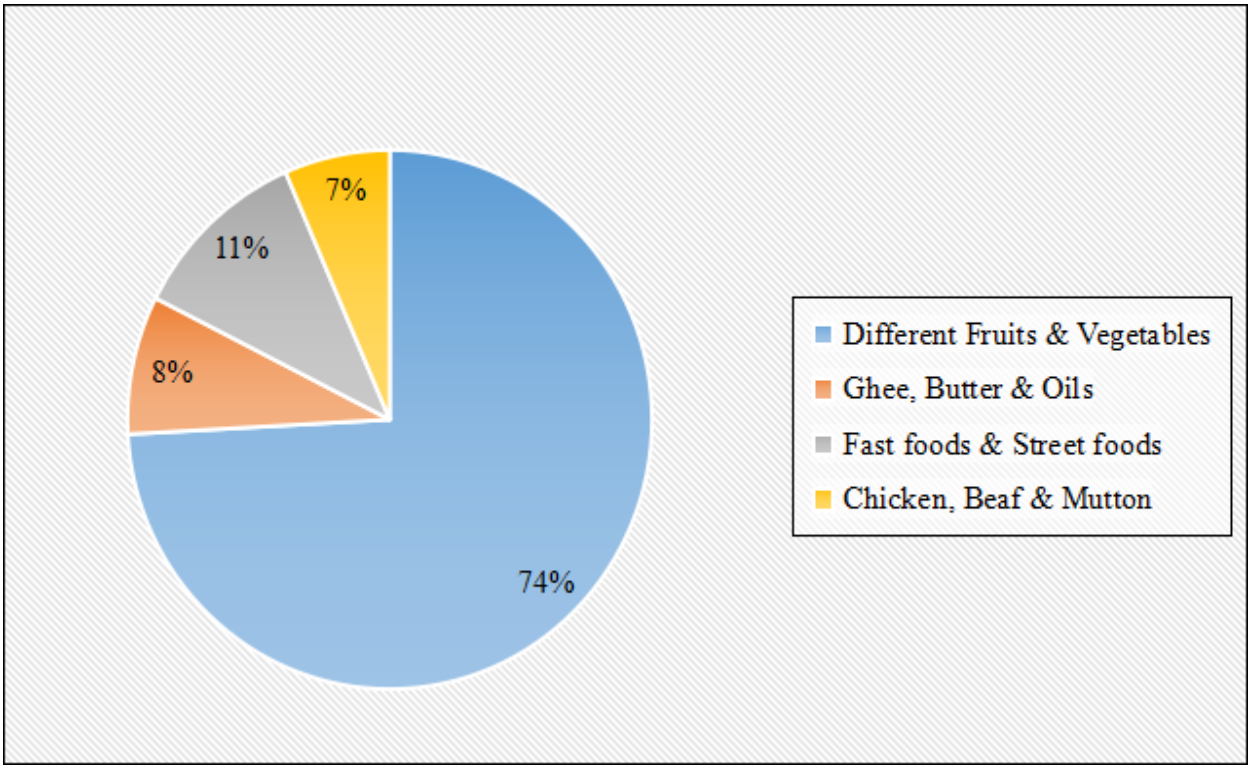


Figure 5: Idea about rich sources of Vitamins & Minerals.

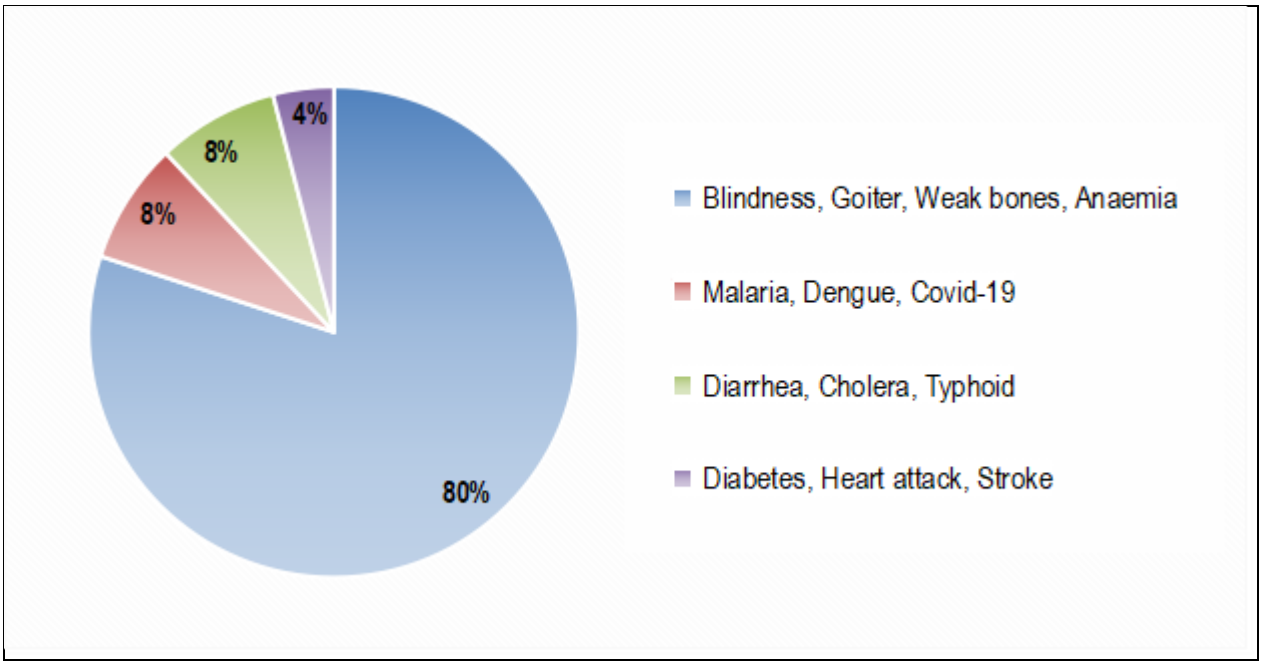


Figure 6: Idea about problems occur without Vitamins & Minerals in our body.

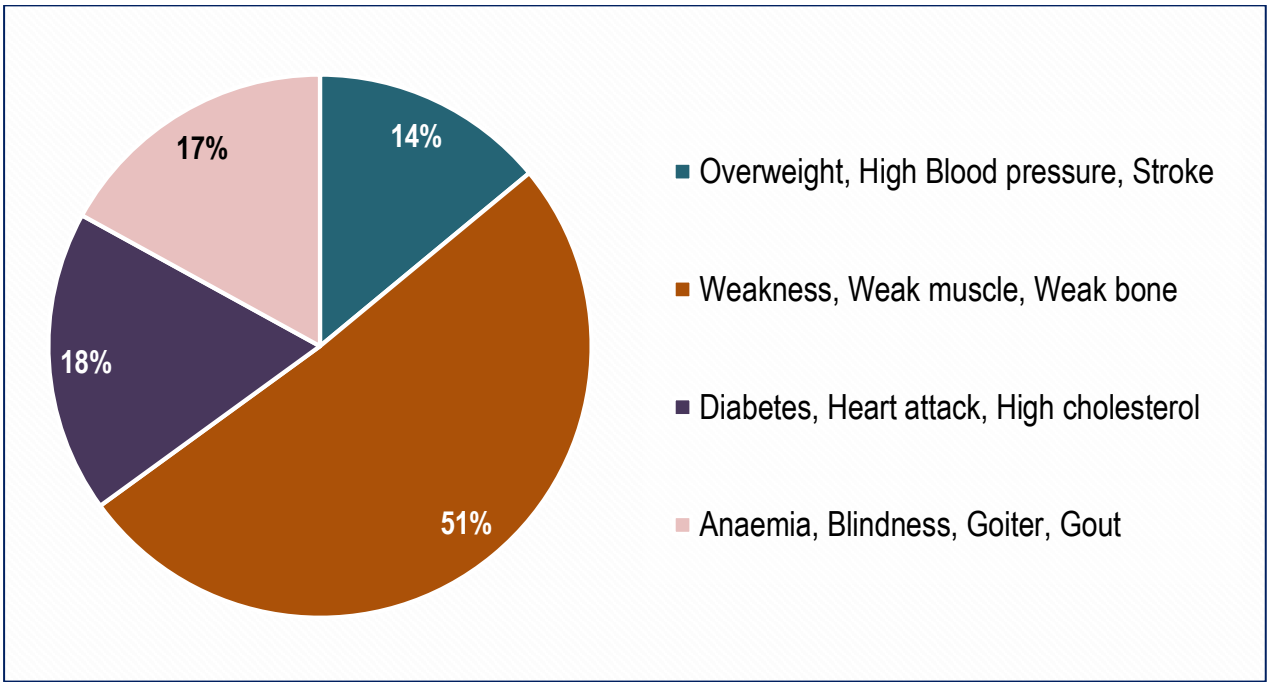


Figure 7: Idea about problems occur without carbohydrate, protein and fat in our body.

Table 2 - Awareness on suffering from any vitamin & mineral deficiency disorder (Suspected by physicians as per clinical symptoms and physical appearance)

Any vitamin deficiency disorder?	**N= 510**		**Any mineral deficiency disorder?**	**N= 510**	
Options	**n**	**n%**	**Options**	**n**	**n%**
Yes	228	45%	Yes	230	45%
No	156	30%	No	122	24%
Not sure	126	25%	Not sure	158	31%
Total	**510**	**100%**	**Total**	**510**	**100%**

Table 3 - Idea on examples of communicable and non-communicable diseases.		
Examples of Communicable Diseases	**N= 510 (In each variable)**	
Diseases caused through unsafe drinking water (Any two)	**n**	**n%**
Stroke, Diabetes	59	12%
Cholera, Typhoid	367	72%
Cancer, Gout	46	9%
Don't know	38	7%
Diseases caused through Mosquito bites (Any two)	**n**	**n%**
Covid-19, Influenza	90	18%
Malaria, Dengue	352	69%
Cholera, Dysentery	45	9%
Don’t know	23	4%
Diseases caused through unsafe physical relation (Any two)	**n**	**n%**
Anemia, Cancer	99	19%
DM, Stroke	89	18%
Gonorrhoea, Syphilis	198	39%
Don't know	124	24%
Diseases caused in Respiratory tract (Any two)	**n**	**n%**
Typhoid, Dysentery	109	22%
HIV, Hepatitis	52	10%
Pneumonia, Covid-19	251	49%
Don’t know	98	19%
Examples of non-communicable diseases (Any four)	**N= 510**	
Diseases	**n**	**n%**
Malaria, Pox, Dengue, HIV	64	12%
Diabetes, Hypertension, Heart Attack, Stroke	243	48%
Cholera, Typhoid, Diarrhea, Dysentery	72	14%
Don't know	131	26%

Table 4: Idea about common communicable & non-communicable diseases in their area					
Which communicable diseasesare common in your area?	**N= 510**		**Which non-communicable diseases are common in your area?**	**N= 510**	
				n	**n%**
Diseases caused through unsafe drinking water	**n**	**n%**	**Non-communicable diseases**		
Diarrhea	312	61%	Any injury / accident	22	4%
Typhoid	143	28%	Hypertension	31	6%
Dysentery	22	4%	Asthma	29	6%
Cholera	33	7%	Back pain	26	5%
Diseases caused by Mosquito bites	**n**	**n%**	Anemia	30	6%
Dengue	391	77%	Diabetes	27	5%
Malaria	119	23%	Cancer	22	4%
Diseases caused in Respiratory tract	**n**	**n%**	Dyslipidemia	14	3%
TB	124	24%	Arthritis	39	8%
COVID-19	116	23%	Body pain	17	3%
Pneumonia	107	21%	Mental disorder	28	5%
Influenza	163	32%	Heart problem	13	3%
Diseases caused through unsafe physical relation	**n**	**n%**	Stroke	9	2%
Gonorrhoea	103	20%	Liver problem	12	2%
Syphilis	109	22%	Gout	24	5%
			Kidney problem	8	2%
HIV	87	17%	Gastric	13	3%
UTI	93	18%	Stomach problem (IBS)	23	4%
			Eye problem	34	7%
Not sure	118	23%	Not sure	89	17%

Table 5 : Communicable & non-communicable diseases suffering from (Diagnosed by last three months)

Non-communicable diseases suffering from	N= 510		Communicable disease suffering from	N= 510	
Diseases	**n**	**n%**	**Diseases**	**n**	**n%**
Diabetes	28	6%	Skin infection	112	22%
Stroke	21	4%	Any diarrheal disease	101	20%
CHD	37	7%	Helminthiasis	27	5%
Anemia	28	5%	Dengue	13	3%
Dyslipidemia	18	4%	Hepatitis B	9	2%
Kidney problem	9	2%	Malaria	11	2%
Gout	13	3%	Pneumonia	31	6%
Eye problem	15	3%	Covid-19	26	5%
Cataract	27	5%	TB	18	4%
Liver problem	12	2%	Typhoid	10	2%
Mental Disorder	26	5%	Viral cold and fever	48	9%
IBS	27	5%	Not sure	104	20%
Arthritis	23	5%			
Back pain	25	5%			
Gastric ulcer	18	4%			
Thyroid problem	12	2%			
Rheumatic fever	19	4%			
COPD	16	3%			
Any deficiency	11	2%			
Bronchitis	2	0.50%			
Osteoporosis	21	4%			
Any Injury / accident	28	5%			
Not sure	74	15%			

Table 6: Prevalence of communicable & non-communicable diseases			
Non-Communicable Diseases	**Prevalence**	**Communicable Diseases**	**Prevalence**
MI	2.3	Covid-19	0.04
Stroke	1.1	Dengue	13
CHD	1.1	Diarrhea	4
Diabetes mellitus	3	Dysentery	1
Iron deficiency	12	Food poisoning	0.04
Dyslipidemia	0.45	Helminthiasis	11
Hypercholesterolemia	2	Cholera	0
Neuropathy	0.1	Hepatitis B	1
Retinopathy	0.1	Malaria	0
Cataract	1	Pneumonia	2
Non-viral hepatitis	3.5	Skin infection	19
Mental Disorder	11	TB	0.05
Arthritis	13	Typhoid	0.05
Osteoporosis	4	Viral cold and fever	12
Rheumatic fever	1	Hepatitis C	2
Back Pain	17	Pox	0
Gastric ulcer	7	Mums	0.07
Stomatitis	1	Measles	0.08
Asthma	6	Oral infection	2
Calcium deficiency	2	Conjunctivitis	3
Bronchitis	3	Rabies	0.05
Angina pactoris	2	Tetanus	0
Any Injury by accident	4	Scabies	15
Anaemia	8	UTI	08
COPD	11	RTI	07

Part - 3

Objective 3: To determine the impact of Health Education on different health issues including health behavior, life-style and health status of the respondents.

Participants (Duration & Sample size) and Data Collection Tool (Questionnaire):

The survey was administered to the Rohingya refugees' people of different ages (excluding children <18 years) and genders who were residing in refugee camps. Data collection was done from December, 2022 till June, 2023. The participants in the study who declined the opportunity to participate in the survey were disqualified. Data was collected two times (at 6 months interval) to compare the knowledge, attitude and practices of the respondents regarding different health issues and health behaviors. The sample size was calculated by using this formula ($n = z^2pq/d^2$). The poll received responses from a total of 510 different individuals. In order to achieve the goals of the study, the questionnaire was first developed, then validated, then translated, and last by personalized. The socio-demographic questions that were asked were tailored to the group of refugees. There were categorical responses to questions on knowledge and practices around communicable diseases and non-communicable diseases. For the purpose of linguistic validation, the questionnaire was translated into English and Rohingya using forwarding and backward translation respectively. The respondents were intended to depict the status of refugees in Bangladesh.

Results:

Descriptive statistics of socio-demographic factors

A total of 510 refugee people were enrolled in this study where the maximum participants' age group was 21-30 years (n=224, 43.9%). Male and female respondents' participation was nearly equal (male: n=264, 51.8%; female: n=246, 48.2%). About half of the respondents (n=277, 54.3%) were illiterate or did not have any institutional education. Regarding occupational status, majority of the respondents were housewives (n=200, 39.2%). Among all the respondents 290 (56.9%) mentioned about joint family they are living in. In this study majority (n=307, 60.2%) of the respondents were married. It was found that majority (n=279, 54.7%) of the respondents' monthly family income was 3.5K - 7K. Majority (n=331, 64.9%) of the respondents had 5 - 8 family members (Table 1).

Association between the socio-demographic variables with the health education system:

Age group had significant association with the response to whether the health education system teach about different health issues ($p<0.001$), whether the system guide them about practicing sanitation & hygiene ($p<0.001$), whether the system educate them about communicable diseases

($p<0.001$), whether they educated about diarrhea, cholera, typhoid & hepatitis ($p<0.001$), and also whether they provide charts, leaflets and brochure about different health issues ($p<0.001$). Educational status was found significantly associated with whether health camps are arranged near them ($p<0.05$), whether they teach them about different health Issues ($p<0.001$), whether they guide them about practicing sanitation & hygiene ($p<0.001$), whether they educate them about communicable diseases ($p<0.001$), whether they educate them about diarrhea, cholera, typhoid & hepatitis ($p<0.001$), and also whether they provide them charts, leaflets and brochure about different health issues ($p<0.001$) (Table 2a - 2f).

Association between the socio-demographic variables with attitude towards health education:

Table 3 shows the association between the socio-demographic variable with attitude towards health education. Age group and educational status both traits have been found significantly associated with the change in their attitude about sanitation and hygiene practices ($p<0.001$), think that health education helped them to prevent some communicable diseases ($p<0.001$), think that health education increased their knowledge and awareness about sanitation, hygiene, some diseases and about good health behavior ($p<0.001$), and think that health education helped them to prevent somenon-communicable diseases ($p<0.001$) [Table 3a - 3f].

Impact of health education on health-related behavior:

It was observed that 71% of respondents are currently using anti-mosquito nets/coils/spray which was 57% during 6 months back. Here 68% of respondents found practicing hand washing properly before meal and after toileting with soap compared to 51% during 6 months back. It was seen that 61% of respondents knew about essential nutrients where it was 47% during 6 months back. Again 73% of respondents thought that fruits & vegetables are good sources of vitamins and minerals which were recorded 68% in 6 months back. 78% of respondents used to wash fruits, vegetables and other raw foods before consumption which was 61% before 6 months. Also seen that 66% of respondents believed that healthy lifestyle and healthy food habit can prevent diseases (both communicable and non-communicable) whereas 52% of thought similar in 6 months earlier. Currently, 71% of respondents believed that antibiotics are important in all cases of respiratory tract infection but 57% before 6 months believed the same. We found that 75% respondents know about different communicable diseases but in 6 months back 64% knew about it. 57% of respondents knew about how some communicable diseases can be transmitted where it was 48% during 6 months back. 59% of respondents believed that healthy foods are expensive where it was 65% during 6 months back. Again 49% respondents believed that HIV-TB-Cancer are result of great sin which was 67% 6 months back. 74% of respondents told that health workers motivated them to practice sanitation and hygiene properly where it was 64% before 6 months. 63% of respondents said that health workers show them videos, posters, banners and leaflets during health education where it was 58% during 6 months back (Figures 1 – 5).

Table 1: Socio-demographic information of the respondents

Traits	N= 510	
	n	Percentage
Age		
< 20 Year	160	31.4
21-30 Years	224	43.9
31-40 Years	72	14.1
41-50 Years	34	6.7
51- 60 Years	20	3.9
Gender		
Male	264	51.8
Female	246	48.2
Educational status		
Illiterate	277	54.3
Primary level	205	40.2
Middle level	24	4.7
Graduate	4	0.8
Occupational status		
Housewife	200	39.2
Daily worker	145	28.4
Unemployed	37	7.3
Shopkeeper	31	6.1
Student	82	16.1
Temporary Job	15	2.9
Type of family		
Nuclear	220	43.1
Joint	290	56.9
Marital status		
Married	307	60.2
Single	203	39.8
Monthly family income		
Less than 3500 BDT	157	30.8
3500 to 7000 BDT	279	54.7
More than 7000 BDT	74	14.5
Number of family members		
1 to 4 persons	136	26.7
5 to 8 persons	331	64.9
More than 8 persons	43	8.4

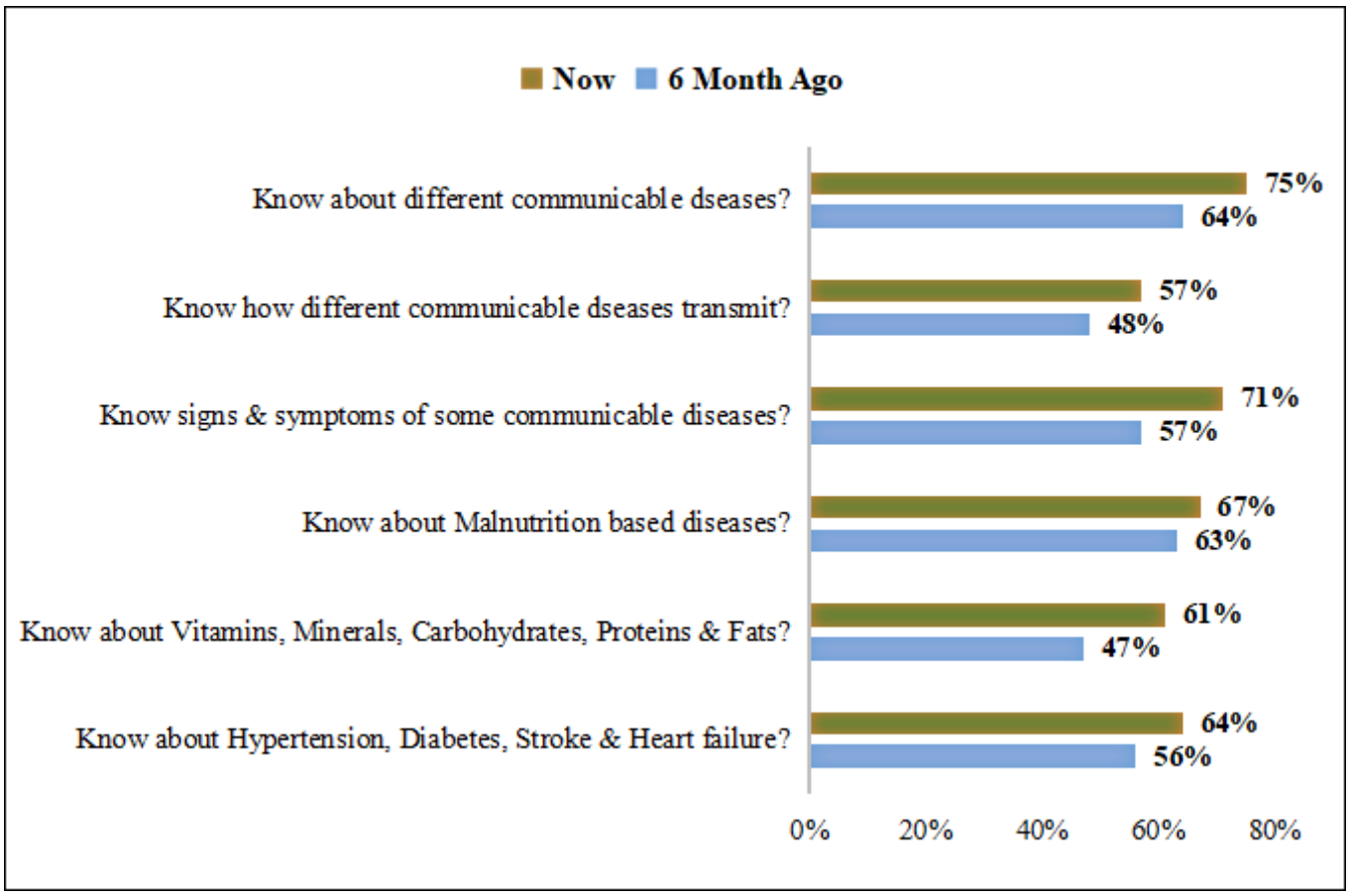


Figure 1: Impact of Health Education in improving knowledge on different Health Issues.

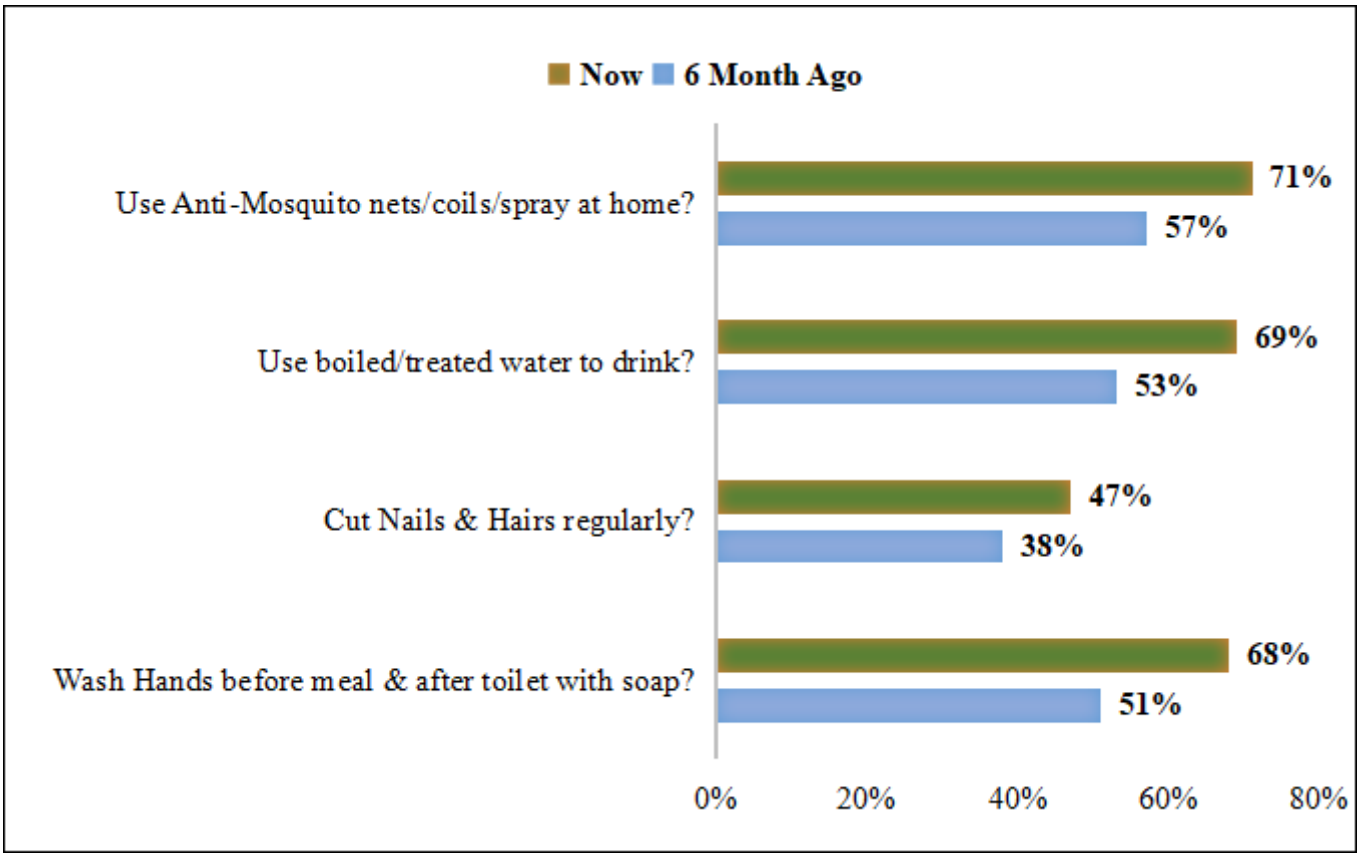


Figure 2: Impact of Health Education in changing some Health Behaviors.

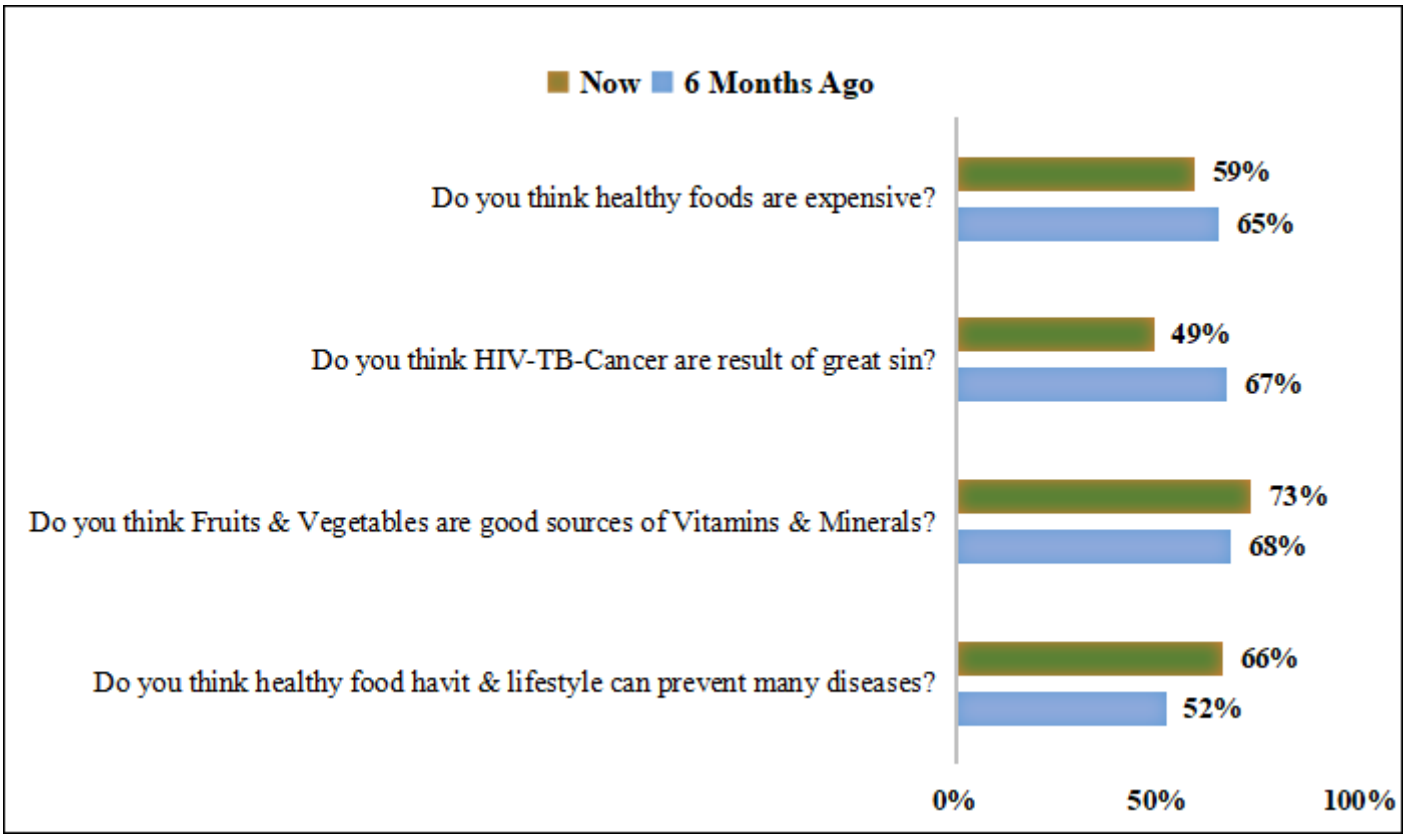


Figure 3: Impact of Health Education in changing some Health related attitude.

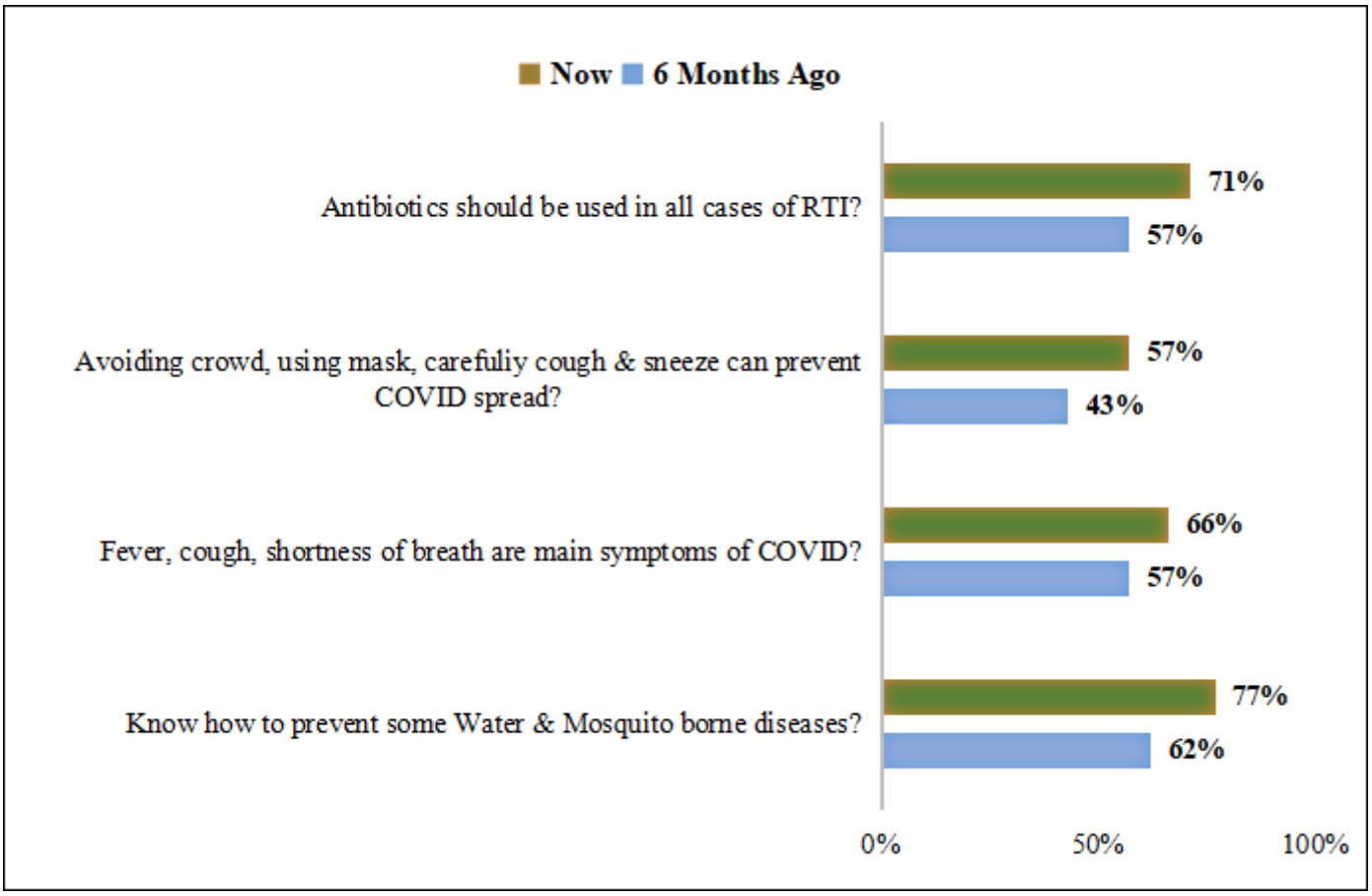


Figure 4: Impact of Health Education in improving knowledge on some Health Concerns.

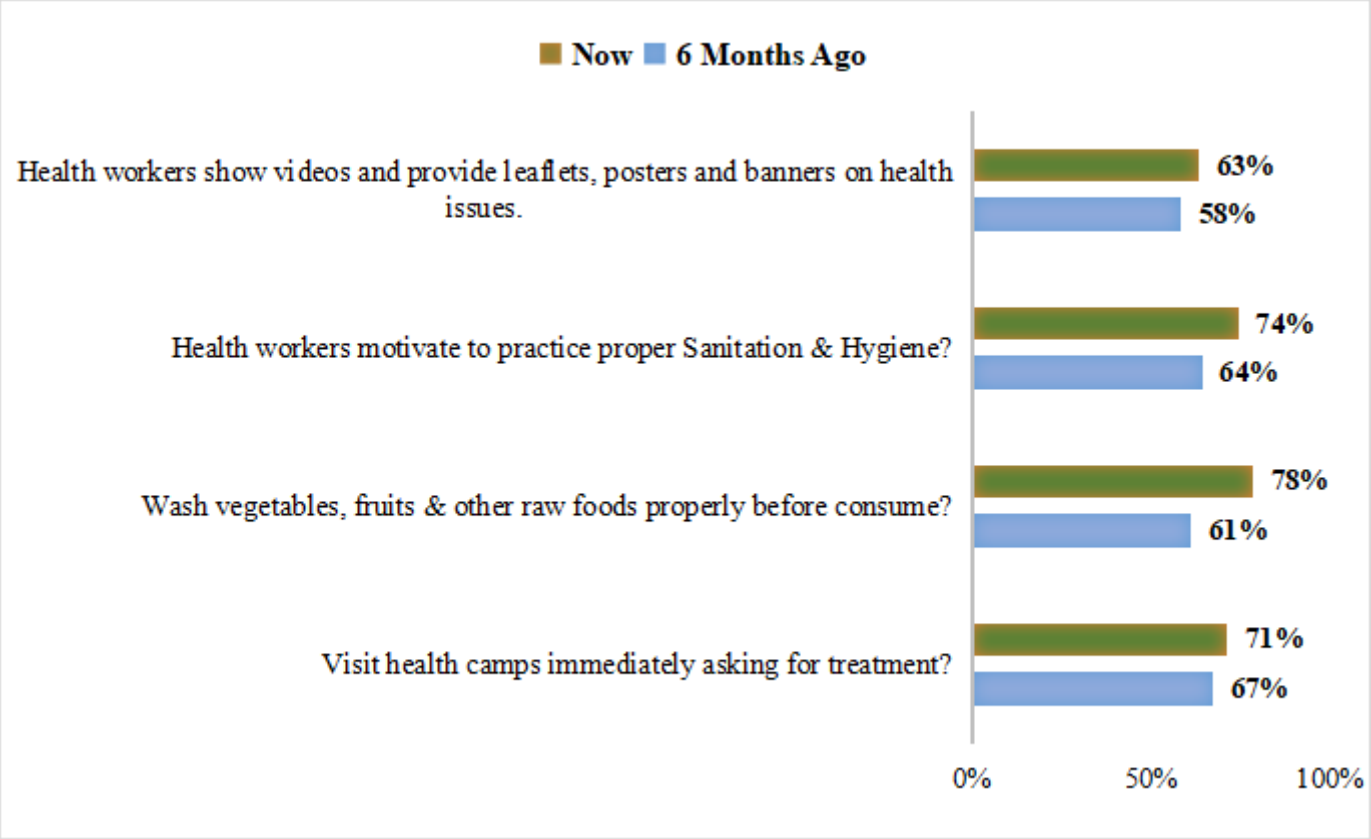


Figure 5: Impact of Health Education in improving awareness on some Health Issues.

Table 2a : Association between the socio-demographic variable (Age group) with the health education system

Questions ►	Do you know the health workers?		Do they arrange health camp near you?		Do they teach you about different health issues?		Do they guide you about practicing sanitation & hygiene?		Do they educate you about communicable diseases?		Do you know about diarrhea, cholera, typhoid & hepatitis?		Do you know about HIV & other sexually transmitted diseases?		Do they provide you with charts, leaflets and brochure about different health issues?	
Options ►	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Age																
< 20 Year	160	0	148	12	134	26	130	30	127	33	122	38	119	41	115	45
21-30 Years	224	0	219	5	209	15	210	14	210	14	190	34	192	32	202	22
31-40 Years	72	0	70	2	69	3	67	5	68	4	53	19	58	14	60	12
41-50 Years	34	0	33	1	33	1	32	2	33	1	16	18	26	8	31	3
51- 60 Years	20	0	20	0	20	0	20	0	19	1	12	8	15	5	18	2
P value	-		*0.082*		***0.001****		***0.001****		***0.001****		***0.001****		*0.078*		***0.001****	

Table 2b: Association between the socio-demographic variable (Gender) with the health education system

Questions ►	Do you know the health workers?		Do they arrange health camp near you?		Do they teach you about different health issues?		Do they guide you about practicing sanitation & hygiene?		Do they educate you about communicable diseases?		Do you know about diarrhea, cholera, typhoid and hepatitis?		Do you know about HIV & other sexually transmitted diseases?		Do they provide you with charts, leaflets and brochure about different health issues?	
Options ►	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Gender																
Male	264	0	254	10	242	22	238	26	239	25	207	57	215	49	227	37
Female	246	0	236	10	223	23	221	25	218	28	186	60	195	51	199	47
P value	-		*0.872*		*0.686*		*0.906*		*0.479*		*0.452*		***0.537***		*0.121*	

Table 2c: Association between the socio-demographic variable (Academic status) with the health education system

Questions ►	Do you know the health workers?		Do they arrange health camp near you?		Do they teach you about different health issues?		Do they guide you about practicing sanitation & hygiene?		Do they educate you about communicable diseases?		Do you know about diarrhea, cholera, typhoid and hepatitis?		Do you know about HIV & other sexually transmitted diseases?		Do they provide you with charts, leaflets and brochure about different health issues?	
Options ►	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Education																
Illiterate	277	0	273	4	277	0	276	1	274	3	237	40	254	23	270	7
Primary Level	205	0	190	15	167	38	163	42	162	43	142	63	140	65	142	63
Middle Level	24	0	23	1	18	6	17	7	18	6	11	13	13	11	11	13
Graduate	4	0	4	0	3	1	3	1	3	1	3	1	3	1	3	1
P value	-		***0.012****		***0.001****		***0.001****		***0.001****		***0.001****		*0.872*		***0.001****	

Table 2d - Association between the socio-demographic variable (Type of family) with the health education system:

Questions ►	Do you know the health workers?		Do they arrange health camp near you?		Do they teach you about different health issues?		Do they guide you about practicing sanitation & hygiene?		Do they educate you about communicable diseases?		Do you know about diarrhea, cholera, typhoid and hepatitis?		Do you know about HIV & other sexually transmitted diseases?		Do they provide you with charts, leaflets and brochure about different health issues?	
Options ►	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Type of family																
Nuclear	220	0	213	7	217	3	216	4	215	5	172	48	191	29	209	11
Joint	290	0	277	13	248	42	243	47	242	48	221	69	219	71	217	73
P value	-		*0.453*		***0.001****		***0.001****		***0.001****		*0.599*		***0.001****		***0.036****	

Table 2e: Association between the socio-demographic variable (Occupation) with the health education system

Questions ►	Do you know the health workers?		Do they arrange health camp near you?		Do they teach you about different health issues?		Do they guide you about practicing sanitation & hygiene?		Do they educate you about communicable diseases?		Do you know about diarrhea, cholera, typhoid and hepatitis?		Do you know about HIV & other sexually transmitted diseases?		Do they provide you with charts, leaflets and brochure about different health issues?	
Options ►	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Occupation																
Housewife	200	0	193	7	186	14	185	15	183	17	161	39	166	34	170	30
Daily worker	145	0	137	8	133	12	132	13	132	13	122	23	125	20	130	15
Unemployed	37	0	37	0	35	2	34	3	35	2	23	14	28	9	30	7
Shopkeeper	31	0	30	1	29	2	27	4	28	3	24	7	26	5	28	3
Student	82	0	79	3	67	15	66	16	64	18	55	27	56	26	55	27
Job	15	0	14	1	15	0	15	0	15	0	8	7	9	6	13	2
P value	-		*0.709*		***0.032****		*0.872*		*0.008*		*0.002*		*0.006*		***0.001*****	

Table 2f : Association between the socio-demographic variable (Marital status) with the health education system

Questions ►	Do you know the health workers?		Do they arrange health camp near you?		Do they teach you about different health issues?		Do they guide you about practicing sanitation & hygiene?		Do they educate you about communicable diseases?		Do you know about diarrhea, cholera, typhoid and hepatitis?		Do you know about HIV & other sexually transmitted diseases?		Do they provide you with charts, leaflets and brochure about different health issues?	
Options ►	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Marital status																
Married	307	0	293	14	283	24	280	27	279	28	229	78	244	63	262	45
Single	203	0	197	6	182	21	179	24	178	25	164	39	166	37	164	39
P value	-		*.361*		*.325*		*.265*		*.247*		*.103*		*.523*		*.175*	

Table 3a: Association between the socio-demographic variable (Age group) with attitudes towards health education system

Questions ►	Do you think Health Education made change your attitude about Sanitation & Hygiene practices?		Do you think Health Education helped you to prevent some communicable diseases?		Do you think Health Education increased your knowledge and awareness about Sanitation, Hygiene, some diseases and about good health behavior?		Do you think Health Education helped you to prevent some non-communicable diseases?	
Options ►	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Age								
< 20 Year	123	33	127	32	131	28	129	26
21-30 Years	206	17	209	13	212	12	185	39
31-40 Years	67	5	66	6	68	4	51	21
41-50 Years	33	1	33	1	31	3	15	19
51- 60 Years	20	0	19	1	19	1	11	9
P value	***0.001*** ***		***0.001****		***0.001****		***0.001*** ***	

Table 3b: Association between the socio-demographic variable (Gender) with attitudes towards health education system

Questions ►	Do you think health education made change your attitude about sanitation & hygiene practices?		Do you think health education helped you to prevent some communicable diseases?		Do you think health education increased your knowledge and awareness about sanitation, hygiene, some diseases and about good health behavior?		Do you think health education helped you to prevent some non-communicable diseases?	
Options ►	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Gender								
Male	233	28	238	24	241	22	214	46
Female	216	28	216	29	220	26	177	68
P value	*0.789*		*0.325*		*0.395*		*0.007*	

Table 3c: Association between the socio-demographic variable (Educational status) with attitudes towards health education system

Questions ►	Do you think health education made change your attitude about sanitation & hygiene practices?		Do you think health education helped you to prevent some communicable diseases?		Do you think health education increased your knowledge and awareness about sanitation, hygiene, some diseases and about good health behavior?		Do you think health education helped you to prevent some non-communicable diseases?	
Options ►	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Educational Status								
Illiterate	275	0	273	4	273	4	230	46
Primary Level	152	50	158	44	166	38	144	58
Middle Level	20	4	19	5	18	6	13	10
Graduate	2	2	4	0	4	0	4	0
P value	***0.001***		***0.001***		***0.001****		***0.001***	

Table 3d : Association between the socio-demographic variable (Occupation) with attitudes towards health education system

Questions ►	Do you think health education made change your attitude about sanitation & hygiene practices?		Do you think health education helped you to prevent some communicable diseases?		Do you think health education increased your knowledge and awareness about sanitation, hygiene, some diseases and about good health behavior?		Do you think health education helped you to prevent some non-communicable diseases?	
Options ►	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Occupational Status								
Housewife	178	20	179	21	178	22	149	50
Daily Worker	127	17	132	12	131	13	122	22
Unemployed	34	3	33	4	34	3	25	12
Shopkeeper	27	4	27	3	30	1	28	3
Student	69	11	68	13	73	9	63	17
Job	14	1	15	0	15	0	4	10
P value	*0.904*		*0.396*		*0.569*		***0.001***	

Table 3e: Association between the socio-demographic variable (Type of family) with attitudes towards health education system

Questions ►	Do you think health education made change your attitude about sanitation & hygiene practices?		Do you think health education helped you to prevent some communicable diseases?		Do you think health education increased your knowledge and awareness about sanitation, hygiene, some diseases and about good health behavior?		Do you think health education helped you to prevent some non-communicable diseases?	
Options ►	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Type of family								
Nuclear	212	4	211	6	215	4	159	58
Joint	237	52	243	47	246	44	232	56
P value	***0.001*** ***		***0.001*** ***		***0.001****		*0.053*	

Table 3f: Association between the socio-demographic variable (Marital status) with attitudes towards health education system

Questions ►	Do you think health education made change your attitude about sanitation & hygiene practices?		Do you think health education helped you to prevent some communicable diseases?		Do you think health education increased your knowledge and awareness about sanitation, hygiene, some diseases and about good health behavior?		Do you think health education helped you to prevent some non-communicable diseases?	
Options ►	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Marital status								
Married	272	33	276	29	274	32	220	86
Single	177	23	178	24	187	16	171	28
P value	*0.812*		*0.393*		*0.330*		***0.001*** ***	

Part - 4

Objective 4: To reveal the socio-demographic factors associated with different diseases (both communicable and non-communicable) of the respondents.

Participants (duration & sample size) and data collection tool (Questionnaire):

The survey was administered to the Rohingya Refugee people of different ages (excluding children). In order to achieve the goals of the study, 6 different questionnaires were first developed, then validated, then translated, and last personalized. The 6 different questionnaires were applied to 6 different camps separately to avoid repeatedness of respondents and answers. The socio-demographic questions that were asked were tailored to the group of refugees. There were categorical responses to questions on knowledge, attitude and practices around communicable diseases and non-communicable diseases. For the purpose of linguistic validation, the questionnaires were translated into English and Rohingya using forwarding and backward translation respectively.

RESULTS

Socio-demographic information: Table 1 describes the socio-demographic information of the respondents. A total of 3060 individual refugee people from different refugee camps where water borne diseases, tuberculosis, mosquito-borne diseases, hypertension, diabetes mellitus and iron deficiency anemia had 504, 523, 511, 504, 517 and 501 respondents, respectively (Table 1)

Association between socio-demographic variables with knowledge, attitude and practices on water-borne diseases (N=504): Age groups had significantly associated with practice variables on whether they wash their hands after defecation with soap ($p<0.05$). Gender had significantly associated with practice part on whether they cook their foods properly or not ($p<0.001$). Educational status had found significant association with knowledge part of whether they know about diarrhea ($p<0.05$) and whether they know the causative agents of Diarrhea ($p<0.001$); Educational status also found significant association with “Do you use sanitary latrine?” variable ($p<0.001$) and whether they cook their foods properly ($p<0.001$). Occupational status had found significant association with whether they know the causative agents of Diarrhea ($p<0.001$) and with whether they always keep your food & water clean ($p<0.001$). Type of family had significantly associated with whether they know about diarrhea” variable ($p<0.05$), with whether they know the causative agents of Diarrhea ($p<0.001$); type of family had also been significantly associated with whether they use sanitary latrine ($p<0.001$). Marital status had found significant association with whether know the causative agents of Diarrhea

($p<0.05$). Monthly family income had found significant association with whether they know about diarrhea ($p<0.001$); Monthly family income had also found association with whether they use sanitary latrine ($p<0.001$), and with whether they cook your foods properly ($p<0.05$), with whether they always keep their food & water clean ($p<0.05$) respectively (Table 2).

Association between socio-demographic variables with knowledge, attitude and practices on tuberculosis (N=523): Age groups had significant association with whether they know what TB is ($p<0.05$). Gender distribution significantly associated with whether they smoke cigarettes or not variable ($p<0.001$), and with whether they cough in public place without carefulness ($p<0.001$). Educational status had found significant association with whether they know what TB is ($p<0.001$), with whether they know what the causative agent of TB ($p<0.001$), with whether they think personal hygiene decrease TB risk ($p<0.001$), with whether sharing personal items will increase TB risk ($p<0.05$), with whether they think TB is a result of great sin ($p<0.001$), with whether they smoke cigarettes or not ($p<0.001$), and also with whether after being diagnosed, they keep themselves away not to spread TB ($p<0.05$) (Detailed in, Table 3)

Association between socio-demographic variables with knowledge, attitude and practices on mosquito-borne diseases (N=511): Age groups had found significant association with "Do you know about Mosquito-borne disease?" variable ($p<.001$) and with "Do you know the causes of Mosquito-borne disease?" variable ($p<.001$); with "Do you consult from nearest health post first after being sick?" variable ($p<.05$), with "Did your any family member / neighbor get infected by Mosquito-borne disease" variable ($p<.001$). Gender distribution had found significant associationwith "Did you give blood sample to lab?" variable ($p<.05$). (Detailed in, Table 4)

Association between socio-demographic variables with knowledge, attitude and practices on hypertension (N=504): Age group and educational status both traits had found significant association with whether they know about hypertension ($p<0.001$), with whether they know about causes of Hypertension ($p<0.001$), and also with whether they know the signs & symptoms of hypertension ($p<0.05$). Occupational status had significantly associated with whether they know about Hypertension ($p<0.05$) and with whether they check their BP regularly ($p<0.001$). (Detail in Table 5)

Association between socio-demographic variables with knowledge, attitude and practices on diabetes mellitus (N=517): Age groups and gender distribution both had significantly associated with whether they take sufficient fruits and vegetables regularly ($p<0.05$) and with whether they practice exercise regularly ($p<0.05$). Educational status had found significant association with whether they are suffering by Diabetes Mellitus ($p<0.05$) and with whether they

have regular meals daily ($p<0.05$). Monthly family income had found significant association with whether they take sufficient fruits and vegetables regularly ($p<0.05$), and with whether have regular meals daily ($p<0.05$). (Detail in Table 5)

Association between socio-demographic variables with knowledge, attitude and practices on iron deficiency anemia (N=501): Age group and educational status both traits had found significant association with whether they know about Iron-deficiency Anaemia ($p<0.001$), with whether they know about causes of iron-deficiency anaemia ($p<0.001$), and also with whether they think that proper diet and taking essential nutrients can prevent anaemia ($p<0.05$). Occupational status had significantly associated with whether they think that anaemia can be cured by drugs and are preventable ($p<.05$) and with whether they take iron rich foods ($p<0.001$) (Detail in Table 7).

Table 1: Socio-demographic information of the respondents

Variables	Communicable diseases						Non-Communicable Diseases					
	Water-borne Diseses (N=504)		Tuberculosis (N=523)		Mosquito-borne Diseases (N=511)		Hypertension (N=504)		Diabetes mellitus (N=517)		Iron deficiency anaemia (N=501)	
	n	n%	n	n%	n	n%	n	n%	n	n%	n	n%
Age												
< 20 Year	176	34.9	64	12.2	80	15.7	57	11.3	174	33.7	185	37%
21-30 Years	187	37.1	241	46.1	198	38.8	245	48.6	126	24.4	170	34%
31-40 Years	79	15.7	162	31.0	132	25.9	130	25.8	81	15.7	91	18%
41-50 Years	32	6.3	40	7.6	62	12.2	51	10.1	51	9.9	28	6%
51- 60 Years	18	3.6	14	2.7	30	5.9	16	3.2	24	4.6	11	2%
>60+ Years	12	2.4	2	.4	8	1.6	5	1.0	61	11.8	16	3%
Gender												
Male	253	50.2	321	61.4	269	52.7	267	53.0	281	54.4	0	0%
Female	251	49.8	202	38.6	241	47.3	237	47.0	236	45.6	501	100%
Education												
Illiterate	197	39.1	276	52.8	374	73.3	255	50.6	386	74.7	288	57%
Primary level	261	51.8	238	45.5	122	23.9	240	47.6	118	22.8	213	43%
Middle level	44	8.7	9	1.7	13	2.5	8	1.6	9	1.7	0	0%
Graduate	2	.4	0	0	1	.2	1	.2	4	.8	0	0%
Occupation												
Housewife	166	32.9	204	39.0	220	43.1	230	45.6	223	43.1	396	79%
Daily worker	149	29.6	232	44.4	168	32.9	169	33.5	215	41.6	46	9%
Unemployed	36	7.1	25	4.8	43	8.4	21	4.2	34	6.6	7	2%
Shopkeeper	38	7.5	36	6.9	36	7.1	42	8.3	28	5.4	10	2%
Student	96	19.0	18	3.4	33	6.5	26	5.2	14	2.7	27	5%
Job	19	3.8	8	1.5	10	2.0	16	3.2	3	.6	15	3%
Type of family												
Nuclear	293	58.1	349	66.7	297	58.2	310	61.5	135	26.1	358	71%
Joint	211	41.9	174	33.3	213	41.8	194	38.5	382	73.9	143	29%
Marital status												
Married	210	41.7	443	84.7	393	77.1	429	85.1	422	81.6	407	81%
Single	279	55.4	67	12.8	102	20.0	64	12.7	91	17.6	91	18%
Widow/widower /divorced	15	3.0	13	2.5	15	2.9	11	2.2	4	.8	3	1%
Monthly family income (BDT)												
<3.5K	117	23.2	95	18.2	125	24.5	120	23.8	107	20.7	107	21%

3.5K to 7K	317	62.9	387	74.0	308	60.4	290	57.5	328	63.4	319	64%
>7K	70	13.9	41	7.8	77	15.1	94	18.7	82	15.9	75	15%
Number of family members (persons)												
1 to 4	106	21.0	195	37.3	222	43.5	186	36.9	200	38.7	144	29%
5 to 8	332	65.9	303	57.9	242	47.5	257	51.0	247	47.8	333	66&
> 8	66	13.1	25	4.8	46	9.0	61	12.1	70	13.5	24	5%

Table 2: Association between socio-demographic variables with knowledge, attitude and practices on water-borne diseases:

Variables	**Knowledge Part**				**Practice Part**								**Attitude Part**			
	Do you know about diarrhea?		Do you know the causative agents of diarrhea?		Do you wash your hands before eating with soap?		Do you wash your hands after defecation with soap?		Do you use sanitary latrine?		Do you use clean water & follow safe sanitation?		Is diarrhea cured by drugs and proper management?		Is diarrhea preventable?	
	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Age																
< 20 Year	172	4	107	69	174	2	166	10	145	31	173	3	161	15	173	3
21-30 Years	180	7	133	54	185	2	183	4	153	34	183	4	175	12	184	3
31-40 Years	73	6	51	28	78	1	72	7	56	23	78	1	75	4	78	1
41-50 Years	29	3	22	10	32	0	27	5	27	5	31	1	30	2	31	1
51- 60 Years	17	1	14	4	18	0	15	3	16	2	17	1	18	0	17	1
>60+ Years	10	2	8	4	12	0	12	0	11	1	12	0	11	1	11	1
P value	*0.079*		*0.347*		*0.981*		***0.021****		*0.193*		*0.857*		*0.756*		*0.507*	
Gender																
Male	240	13	159	94	251	2	243	10	207	46	249	4	225	28	245	8
Female	241	10	176	75	248	3	232	8	201	50	245	6	245	6	249	2
P value	*0.535*		*0.084*		*0.647*		*0.218*		*0.619*		*0.515*		***0.001****		*0.507*	
Education																
Illiterate	194	3	151	46	197	0	185	12	194	3	195	2	195	2	195	2
Primary Level	242	19	151	110	256	5	249	12	194	67	255	6	239	22	254	7
Middle Level	43	1	31	13	44	0	39	5	19	25	42	2	35	9	43	1
Graduate	2	0	2	0	2	0	2	0	1	1	2	0	1	1	2	0
P value	***0.026****		***0.000****		*0.195*		*0.066*		***0.000****		*0.456*		***0.000****		*0.645*	
Occupation																
Housewife	158	8	119	47	164	2	153	13	132	34	162	4	164	2	164	2
Daily Worker	143	6	100	49	146	3	144	5	119	30	149	0	138	11	148	1
Unemployed	30	6	18	18	36	0	34	2	29	7	34	2	32	4	32	4

Shopkeeper	38	0	17	21	38	0	35	3	31	7	36	2	33	5	35	3
Student	93	3	63	33	96	0	90	1	80	16	94	2	85	11	96	0
Job	19	0	18	1	19	0	19	0	17	2	19	0	18	1	19	0
P value	*0.009*		***0.001****		*0.615*		*0.690*		*0.902*		*0.155*		*0.009*		***0.001****	
Type of family																
Nuclear	275	18	214	79	288	5	280	13	207	86	286	7	266	27	288	5
Joint	206	5	121	90	211	0	195	16	201	10	208	3	204	7	206	5
P value	***0.045****		*0.001****		*0.057*		*0.062*		***0.001****		*0.442*		*0.009*		*0.598*	
Marital status																
Married	205	5	135	75	208	2	200	10	176	34	207	3	194	16	207	3
Single	261	18	194	85	277	2	262	17	221	58	273	6	261	18	272	7
Widow/widower/ divorced	15	0	6	9	14	1	13	2	11	4	14	1	15	0	15	0
P value	*0.071*		***0.042****		*0.077*		*0.317*		*0.329*		*0.356*		*0.502*		*0.597*	
Monthly family income (BDT)																
<3.5K	101	16	65	52	114	3	111	6	71	46	112	5	102	15	111	6
3.5K to 7K	310	7	215	102	315	2	296	21	274	43	312	5	301	16	314	3
>7K	70	0	55	15	70	0	68	2	63	7	70	0	67	3	69	1
P value	***0.001****		*0.004*		*0.131*		*0.752*		***0.001****		*0.089*		***0.011****		***0.020****	
Number of family members (persons)																
1 to 4	98	8	70	36	104	2	96	10	84	22	104	2	97	9	100	6
5 to 8	320	12	220	112	331	1	317	15	278	54	324	8	312	20	329	3
> 8	63	3	45	21	64	2	62	4	46	20	66	0	61	5	65	1
P value	*0.240*		*0.950*		*0.072*		***0.031****		***0.026****		*0.438*		*0.650*		*0.009*	

Table 3: Association between socio-demographic variables with knowledge, attitude and practices on Tuberculosis:

Variables	**Knowledge Part**				**Attitude Part**						**Practice Part**					
	Do you know what TB is?		Do you know what the causative agent of TB?		Do you think personal hygiene decrease TB risk?		Do you think sharing personal items will increase TB risk?		Do you think TB is a result of great sin?		Do you smoke cigarettes?		Do you cough in public place without carefulness?		After being diagnosed, do you keep you away not to spread TB?	
	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Age																
< 20 Year	48	16	28	36	50	14	42	22	22	42	28	36	20	44	43	21

21-30 Years	180	61	107	134	172	69	155	86	78	163	121	120	65	176	173	68
31-40 Years	98	64	83	79	100	62	85	77	55	107	95	67	67	95	107	55
41-50 Years	25	15	24	16	29	11	24	16	18	22	28	12	20	20	30	10
51- 60 Years	9	5	14	0	12	2	10	4	11	3	12	2	1	13	12	2
>60+ Years	1	1	1	1	2	0	1	1	0	2	2	0	1	1	2	0
P value	***0.043****		*0.008*		*0.073*		*0.196*		*0.009*		*0.005*		*0.002*		*0.441*	
Gender																
Male	224	97	149	172	215	106	190	131	120	201	209	112	130	191	219	102
Female	137	65	108	94	150	52	127	75	64	138	77	125	44	158	148	54
P value	*0.637*		*0.362*		*0.078*		*0.402*		*0.184*		***0.001****		***0.001****		*0.220*	
Education																
Illiterate	208	68	185	91	222	54	181	95	133	143	170	106	94	182	207	69
Primary Level	151	87	69	169	140	98	131	107	48	190	116	122	78	160	154	84
Middle Level	2	7	3	6	3	6	5	4	3	6	0	9	2	7	6	3
Graduate	-	-	-	-	-	-			-	-	-	-	-	-	-	-
P value	***0.001****		***0.001****		***0.001****		***0.049****		***0.001****		***0.001****		*0.741*		***0.038****	
Occupation																
Housewife	141	63	111	93	151	53	132	72	67	137	86	118	54	150	149	55
Daily Worker	168	64	104	142	159	73	147	85	93	139	156	76	82	150	161	71
Unemployed	10	15	17	8	14	11	11	14	9	16	15	10	12	13	15	10
Shopkeeper	21	15	12	24	18	18	14	22	11	25	23	13	19	17	24	12
Student	14	4	7	11	16	2	11	7	3	15	6	12	7	11	10	8
Job	7	1	6	2	7	1	2	6	1	7	0	8	0	8	8	0
P value	***0.011****		*0.111*		***0.010****		*0.006*		*0.168*		***0.001****		*0.004*		*0.183*	
Type of family																
Nuclear	212	137	144	205	234	115	188	161	85	264	170	179	131	218	234	115
Joint	149	25	113	61	131	43	129	45	99	75	116	58	43	131	133	41
P value	***0.001****		***0.001****		*0.053*		***0.001****		***0.001****		***0.001****		*0.003*		***0.027****	
Marital status																
Married	310	133	223	220	310	133	278	165	162	281	248	195	152	291	315	128
Single	46	21	23	16	44	23	34	33	19	48	34	33	21	46	42	25
Widow/widower/divorced	5	8	11	2	11	2	5	8	3	10	4	9	1	12	10	3
P value	*0.053*		***0.029****		*0.386*		***0.044****		*0.276*		*0.156*		*0.125*		*0.323*	
Monthly family income																
<3.5K	61	34	49	46	53	42	50	45	36	59	58	37	46	49	44	51

3.5K to 7K	272	115	189	198	286	101	245	142	136	251	204	183	111	276	298	89
>7K	28	13	19	22	26	15	22	19	12	29	24	17	17	24	25	16
P value	*.220*		*.693*		*.002*		*.103*		*.626*		*.300*		*.002*		***.001****	
Number of family members																
1 to 4	12	29	81	114	138	57	125	70	60	135	102	93	57	138	134	61
5 to 8	97	97	167	136	208	95	174	129	116	187	175	128	109	194	215	88
> 8	17	8	9	16	19	6	18	7	8	17	9	16	8	17	18	7
P value	*0.802*		*0.003*		*0.693*		*0.162*		*0.21 7*		*0.07 7*		*0.294*		*0.850*	

Table 4: Association between socio-demographic variables with knowledge, attitude and practices on mosquito-borne diseases

Variables	**Knowledge Part**				**Practice Part**				**Attitude Part**			
	Do you know about mosquito-borne disease?		Do you know the causes of mosquito-borne disease?		Do you give blood sample to lab? (if suspected)		Do you use mosquito nets in home during sleeping?		Do you think cleaning bushes & water deposited pots can prevent MBDs mostly?		Do you think consult from nearest health post first after being sick is important?	
	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Age												
< 20 Year	60	20	66	14	61	19	74	6	79	1	79	1
21-30 Years	183	15	184	14	129	69	173	25	193	5	197	1
31-40 Years	107	24	106	26	107	25	117	15	126	6	131	1
41-50 Years	41	21	45	17	42	20	54	8	58	4	60	2
51- 60 Years	25	5	26	4	12	18	21	9	30	0	29	1
>60+ Years	1	7	2	6	5	3	8	0	5	3	8	0
P value	***0.001****		***0.001****		***0.001****		***0.040****		***0.001****		*0.479*	
Gender												
Male	224	44	230	39	198	71	237	32	262	7	266	3
Female	193	48	199	42	158	83	210	31	229	12	238	3
P value	*0.306*		*0.366*		***0.048****		*0.740*		*0.157*		*0.892*	
Education												
Illiterate	310	64	316	58	310	64	320	54	359	15	369	5
Primary level	98	23	104	18	98	23	117	5	118	4	121	1
Middle level	8	5	8	5	8	5	10	3	13	0	13	0
Graduate	1	0	1	0	1	0	0	1	1	0	1	0
P value	*0.243*		*0.366*		*0.243*		***0.001****		*0.875*		*0.944*	
Occupation												
Housewife	179	41	183	37	144	76	194	26	210	10	217	3
Daily worker	148	20	147	21	128	40	145	23	165	3	168	0

Unemployed	30	12	35	8	21	22	36	7	42	1	40	3
Shopkeeper	30	6	30	6	29	7	33	3	31	5	36	0
Student	21	12	24	9	27	6	31	2	33	0	33	0
Job	9	1	10	0	7	3	8	2	10	0	10	0
P value	*0.009*		*0.226*		*0.002*		*0.664*		***0.013****		*0.009*	
Type of family												
Nuclear	224	72	231	66	222	75	261	36	280	17	294	3
Joint	193	20	198	15	134	79	186	27	211	2	210	3
P value	***0.001****		***0.001****		*0.004*		*0.851*		*0.005*		*0.681*	
Marital status												
Married	333	59	336	57	265	128	337	56	380	13	388	5
Single	78	24	87	15	81	21	97	5	100	2	101	1
Widow/widower/divorced	6	9	6	9	10	5	13	2	11	4	15	0
P value	***0.001****		***0.001****		*0.061*		***0.038****		***0.001****		*0.885*	
Monthly family income												
<3.5K	113	12	109	16	100	25	116	9	212	10	125	0
3.5K to 7K	258	49	265	43	280	28	299	9	233	9	304	4
>7K	46	31	55	22	67	10	76	1	46	0	75	2
P value	*0.001****		*0.004*		*0.007*		***0.049****		*0.340*		*00.239*	
Number of family members												
1 to 4	197	25	194	28	155	67	196	26	210	12	221	1
5 to 8	190	51	201	41	172	70	214	28	230	12	240	2
> 8	30	16	34	12	29	17	37	9	40	6	43	3
P value	***.001****		*0.062*		*0.554*		*0.297*		*0.743*		*0.002*	

Table 5: Association between socio-demographic variables with knowledge, attitude and practices on hypertension

Variables	**Knowledge Part**				**Attitude Part**				**Practice Part**			
	Do you know about hypertension?		Do you know the causes of hypertension?		Do you think hypertension can be cured by drugs & are preventable?		Do you think regular exercise can reduce the chance of hypertension?		Do you check your BP regularly?		Do you avoid oily or fat rich foods?	
	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Age												
< 20 Year	53	4	53	4	49	8	54	3	32	25	44	13
21-30 Years	210	35	204	41	225	20	224	21	110	135	228	17
31-40 Years	96	34	96	34	117	13	106	24	55	75	120	10
41-50 Years	31	20	30	21	45	6	43	8	23	28	43	8
51- 60 Years	13	3	11	5	14	2	16	0	8	8	15	1

>60+ Years	4	1	4	1	4	1	4	1	3	2	5	0
P value	***0.001****		***0.001****		*0.729*		***0.016****		*0.593*		*0.005*	
Gender												
Male	223	44	215	52	241	26	239	28	132	135	243	24
Female	184	53	183	54	213	24	208	29	99	138	212	25
P value	*0.094*		*0.363*		*0.884*		*0.536*		*0.085*		*0.555*	
Education												
Illiterate	183	72	178	77	221	34	222	33	131	124	234	21
Primary level	215	25	213	27	224	16	219	21	97	143	214	26
Middle level	8	0	6	2	8	0	5	3	3	5	6	2
Graduate	1	0	1	0	1	0	1	0	0	1	1	0
P value	***0.001****		***0.001****		*0.067*		***0.049****		*0.070*		*0.360*	
Occupation												
Housewife	173	57	173	57	209	21	197	33	93	137	208	22
Daily worker	138	31	134	35	151	18	153	16	89	80	159	10
Unemployed	16	5	15	6	14	7	21	0	10	11	17	4
Shopkeeper	40	2	38	4	41	1	39	3	17	25	39	3
Student	26	0	26	0	24	2	24	2	19	7	16	10
Job	14	2	12	4	15	1	13	3	3	13	16	0
P value	*0.004*		***0.022****		*0.006*		*0.198*		*0.002*		***0.001****	
Type of family												
Nuclear	223	87	212	98	277	33	267	43	132	178	279	31
Joint	184	10	186	8	177	17	180	14	99	95	176	18
P value	***0.001****		***0.001****		*0.492*		***0.022****		*0.064*		*0.790*	
Marital status												
Married	342	87	333	96	385	44	377	52	184	245	400	29
Single	60	4	62	2	60	4	60	4	42	22	45	19
Widow/widower/divorced	5	6	3	8	9	2	10	1	5	6	10	1
P value	***0.001****		***0.001****		*0.395*		*0.374*		*0.003*		*0.363*	
Monthly family income												
<3.5K	102	18	96	24	106	14	108	12	42	78	111	9
3.5K to 7K	250	40	246	44	260	30	263	27	159	131	255	35
>7K	55	39	56	38	88	6	76	18	30	64	89	5
P value	***0.001****		***0.001****		*0.410*		***0.028****		***0.001****		*0.102*	
Number of family members												
1 to 4	163	23	154	32	168	18	170	16	73	113	173	13
5 to 8	188	69	187	70	229	28	221	36	113	144	231	26
> 8	56	5	57	4	57	4	56	5	45	16	51	10
P value	***0.001****		***0.001****		*0.589*		*0.149*		***0.001****		*0.094*	

Table 6: Association between socio-demographic variables with knowledge, attitude and practices on diabetes mellitus

Variables	Knowledge Part				Attitude Part				Practice Part					
	Do you know about Diabetes Mellitus?		Are you suffering by Diabetes Mellitus?		Do you think DM is curable & preventable?		Do you think diet therapy and enough physical activity can control DM?		Do you check blood sugar regularly?		Do you practice exercise regularly?		Do you follow prescribed medicines and advises of doctor regularly?	
	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Age														
< 20 Year	171	3	48	126	48	126	169	5	166	8	21	153	169	5
21-30 Years	120	6	44	82	38	88	125	1	122	4	16	110	124	2
31-40 Years	78	3	22	59	30	51	79	2	81	0	6	75	81	0
41-50 Years	50	1	18	33	17	34	48	3	48	3	7	34	51	0
51- 60 Years	21	3	10	14	4	20	23	1	22	2	1	23	23	1
>60+ Years	59	2	32	29	20	41	57	4	58	3	3	58	59	2
P value	*0.291*		*0.004*		***0.041****		*0.286*		*0.337*		***0.030****		*0.453*	
Gender														
Male	271	10	99	182	92	189	274	7	272	9	34	247	275	6
Female	228	8	75	161	65	171	227	9	225	11	30	216	232	4
P value	*0.865*		*0.461*		***0.043****		*0.450*		*0.392*		***0.013****		*0.717*	
Education														
Illiterate	373	13	146	240	114	272	373	13	371	15	32	354	379	7
Primary level	114	4	25	93	37	81	117	1	115	3	20	98	116	2
Middle level	8	1	2	7	5	4	7	2	7	2	1	8	8	1
Graduate	4	0	1	3	1	3	4	0	4	0	1	3	4	0
P value	*0.388*		***0.013****		*0.371*		*0.004*		***0.031****		*0.002*		*0.247*	
Occupation														
Housewife	213	10	76	147	61	162	215	8	214	9	20	203	218	5
Daily worker	208	7	85	130	74	141	211	4	209	6	24	191	212	3
Unemployed	34	0	7	27	7	27	31	3	29	5	2	32	32	2
Shopkeeper	28	0	4	24	10	18	27	1	28	0	3	25	28	0
Student	13	1	1	13	4	10	14	0	14	0	4	10	14	0
Job	3	0	1	2	1	2	3	0	3	0	1	2	3	0
P value	*0.862*		***0.029****		*0.283*		*0.352*		***0.021****		***0.001*****		*0.532*	
Type of family														
Nuclear	125	10	34	101	32	103	126	9	126	9	20	115	131	4
Joint	374	8	140	242	125	257	375	7	371	11	34	348	376	6
P value	***0.013****		***0.001*****		*0.087*		*0.005*		***0.050****		*0.149*		*0.313*	

Marital status														
Married	407	13	149	273	130	292	410	12	409	13	44	378	414	8
Single	89	2	23	68	26	65	87	4	85	6	10	81	89	2
Widow/widower/divorced	3	1	2	2	1	3	4	0	3	1	0	2	4	0
P value	***0.019****		*0.199*		*0.645*		*0.694*		***0.026****		*0.926*		*0.944*	
Monthly family income														
<3.5K	100	7	37	70	25	82	100	7	96	11	9	98	101	6
3.5K to 7K	319	9	115	213	110	218	320	8	320	8	38	290	324	4
>7K	80	2	22	60	22	58	81	1	81	1	7	75	82	0
P value	*0.286*		*0.093*		***0.011****		*0.059*		***0.001*****		***0.044****		*0.006*	
Number of family members														
1 to 4	196	2	71	129	67	133	194	6	192	8	19	181	197	3
5 to 8	234	13	85	162	75	172	237	10	238	9	32	215	241	6
> 8	69	1	18	52	15	55	70	0	67	3	3	67	69	1
P value	*0.298*		*0.063*		*0.184*		*0.224*		*0.963*		*0.055*		*0.736*	

Table 7: Association between socio-demographic variables with knowledge, attitude and practices on Iron deficiency anemia

Variables	**Knowledge Part**				**Attitude Part**				**Practice Part**			
	Do you know about iron-deficiency anaemia?		Do you know the causes of iron-deficiency Anemia?		Do you think proper diet & taking essential nutrients can prevent s anaemia?		Do you think anaemia can be cured by drugs & are preventable?		Do you take iron rich foods?		Do you take sufficient meals daily?	
	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Age												
< 20 Year	51	4	54	1	48	8	53	3	31	25	43	13
21-30 Years	210	35	204	41	223	20	223	21	109	135	225	17
31-40 Years	96	34	95	34	117	13	105	23	55	75	123	9
41-50 Years	31	20	30	21	45	6	43	8	23	27	43	7
51- 60 Years	13	3	11	5	14	2	17	0	8	7	15	1
>60+ Years	3	1	4	1	4	1	4	1	4	2	5	0
P value	***0.001*****		***0.001*****		*0.729*		***0.016****		*0.593*		*0.005*	
Education												
Illiterate	182	71	176	76	221	31	220	32	131	121	231	21
Primary level	215	25	213	27	224	16	219	21	97	143	214	26

Middle level	8	0	6	2	8	0	5	3	3	5	6	2
Graduate	1	0	1	0	1	0	1	0	0	1	1	0
P value	***0.001****		***0.001****		*0.067*		***0.049****		*0.070*		*0.360*	
Occupation												
Housewife	170	57	171	55	207	20	195	32	91	136	205	22
Daily worker	138	31	134	35	151	18	153	16	89	80	159	10
Unemployed	16	5	15	6	14	7	21	0	10	11	17	4
Shopkeeper	40	2	38	4	41	1	39	3	17	25	39	3
Student	26	0	26	0	24	2	24	2	19	7	16	10
Job	14	2	12	4	15	1	13	3	3	13	16	0
P value	*0.004*		***0.022****		*0.006*		*0.198*		*0.002*		***0.001****	
Type of family												
Nuclear	220	87	212	95	274	33	264	43	132	175	276	31
Joint	184	10	186	8	177	17	180	14	99	95	176	18
P value	***0.001****		***0.001****		*0.492*		***0.022****		*0.064*		*0.790*	
Marital status												
Married	342	84	330	96	382	44	374	52	184	242	400	26
Single	60	4	62	2	60	4	60	4	42	22	45	19
Widow/widower/divorced	5	6	3	8	9	2	10	1	5	6	10	1
P value	***0.001****		***0.001****		*0.395*		*0.374*		*0.003*		*0.363*	
Monthly family income												
<3.5K	102	15	96	21	103	14	105	12	42	75	111	6
3.5K to 7K	250	40	246	44	260	30	263	27	159	131	255	35
>7K	55	39	56	38	88	6	76	18	30	64	89	5
P value	***0.001****		***0.001****		*0.410*		***0.028****		***0.001****		*0.102*	
Number of family members												
1 to 4	160	23	151	32	165	18	170	13	70	113	170	13
5 to 8	188	69	187	70	229	28	221	36	113	144	231	26
> 8	56	5	57	4	57	4	56	5	45	16	51	10
P value	***0.001****		***0.001****		*0.589*		*0.149*		***0.001****		*0.094*	

Chapter 5: General Discussions

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This study examines the socio-demographic characteristics of communicable diseases such as water-borne diseases, tuberculosis (TB), and mosquito-borne illnesses, as well as non-communicable diseases including hypertension, diabetes mellitus and iron deficiency anemia within the Rohingya population residing in refugee camps in Bangladesh. While analyzing the socio demographic characteristics, the study revealed that there is a notable correlation between an individual's gender and their ability to cook meals accurately. Based on the findings of this study, it is suggested that targeted health education interventions focusing on food preparation techniques could potentially offer valuable support within refugee camps. According to a study conducted by [52], gender-specific health interventions have been found to enhance health outcomes among displaced individuals. There was a strong positive correlation observed between educational attainment and understanding-related characteristics, specifically the awareness of diarrhea and comprehension of its underlying causes. The findings of this study underscore the significance of disease awareness educational initiatives targeting the Rohingya community. The research findings revealed a significant association between different age cohorts and their level of awareness regarding mosquito-borne illnesses. This finding is consistent with the research conducted by [53], which similarly observed differences in disease awareness among refugees based on age. The research conducted by [54] and [53] has yielded valuable insights into the socio-demographic factors associated with the prevalence of illness and health behaviors among dispersed populations. These studies provide empirical evidence regarding the impact of age, gender, and educational attainment on refugees' understanding of diseases and their health-related practices.

The results of the study indicated that specific socio-demographic variables were linked to differences in knowledge and behaviors pertaining to diarrheal or water-borne illnesses within the Rohingya refugee community. There was a significant correlation between age groups and the practice of handwashing with soap after defecation, suggesting that younger individuals may demonstrate superior hygiene practices. There was a notable correlation between gender and adherence to proper cooking practices, indicating that females potentially assume a more prominent role in the community's food preparation and safety. The educational status of individuals demonstrated notable correlations with their understanding of diarrhea and its causative agents, as well as their adherence to practices such as using sanitary latrines and properly cooking food. This finding suggests that individuals who have attained higher levels of education may possess a more comprehensive comprehension of disease prevention and appropriate hygiene protocols. The results of this study indicate that the Rohingya refugee

population have a satisfactory degree of knowledge pertaining to different diseases and the methods through which they are transmitted. Awareness could serve as a foundation for programs focused on promoting health and education.

The book offers valuable insights into the health practices of Rohingya refugees in relation to illness prevention. Remarkably, a significant percentage of participants indicated consistent adherence to hand washing with soap prior to meals and following toilet use, exemplifying a commendable commitment to cleanliness. Furthermore, it was found that the majority of the participants acknowledged the practice of treating or boiling water prior to ingestion, while a portion reported engaging in frequent nail clipping. The results pertaining to hand washing behaviors are consistent with a study conducted by [55] on displaced communities, wherein the significance of hand washing as a preventive strategy against diarrheal illnesses was underscored. The correlation between educational attainment and understanding of diarrhea aligns with the findings of [56], who emphasized the beneficial influence of education on knowledge about diseases. Furthermore, the correlation between monthly household income and awareness of diarrhea aligns with the findings of [57], indicating that increased income levels are linked to enhanced health consciousness within refugee populations. The association between age groups and knowledge of tuberculosis suggests that different cohorts may possess differing levels of awareness regarding the disease. The correlation between gender distribution and smoking habits, as well as coughing in public places, indicates the existence of gender-specific risk behaviors that may contribute to the transmission of tuberculosis (TB). The educational attainment of individuals exhibited various correlations with their understanding of tuberculosis (TB) and its causative agent, as well as their beliefs regarding personal hygiene and the transmission of diseases.

This suggests that individuals with higher levels of education may possess a more comprehensive comprehension of tuberculosis and its preventive measures. Furthermore, smoking habits and adherence to self-isolation after diagnosis were found to be influenced by educational status, thus underscoring the significant impact of education on the formation of health-related behaviors. The results of the study align with the research conducted by [53], wherein it was discovered that educational attainment among refugee populations exhibited a significant correlation with their understanding of tuberculosis. There was a significant association observed between occupational status and individuals' knowledge of hypertension as well as their awareness of regular BP checkups. The results are consistent with a study conducted by [58] on displaced populations, wherein it was observed that educational attainment had an impact on the level of knowledge regarding hypertension. We can observe that the majority of the respondents knew about water-borne diseases, how water-borne diseases are transmitted and about different signs and

symptoms of water-borne diseases. It was seen that the majority of the respondents knew about mosquito-borne diseases, how mosquito borne diseases are transmits and about different signs and symptoms of mosquito-borne diseases. It was found that the majority of the respondents knew about how to prepare ORS at home. Most of them knew about TB and how TB transmits. The findings of the paper suggest that the Rohingya refugees possess a rather high level of knowledge concerning waterborne and mosquito-borne diseases. This observation is consistent with research indicating that refugees frequently acquire specialized information regarding diseases that are widespread in their respective countries of origin [59, 60]. The observed prevalence of frequent hand washing among Rohingya refugees is a favorable result, aligning with endeavors to encourage hygienic behaviors among displaced communities [61]. Nonetheless, the insufficient participation in habitual physical activity and the restricted intake of milk and protein-rich meals indicate obstacles in the promotion of holistic health and nutrition [62]. The participant's capacity to recognize vitamins and minerals is like the results observed in refugee populations from different geographical areas [63]. Enhancing the efficacy of nutritional therapies could be achieved by addressing deficiencies in knowledge pertaining to nutrient sources and their correlation with various diseases. The Rohingya refugee's capacity to identify prevalent communicable and non- communicable illnesses aligns with the significance of health education initiatives that are customized to meet the needs of groups [64, 65]. The results presented in this manuscript indicate that health education programs exert a beneficial influence on health behavior and health status within the Rohingya refugee community. The successful execution of health education programs has resulted in enhanced understanding of various health concerns, heightened consciousness regarding both communicable and non-communicable diseases, and favorable modifications in sanitation, hygiene practices, and disease prevention behaviors. The provision of health education to the Rohingya community has led to enhanced healthcare utilization and a positive shift in attitudes towards health education and preventive measures. There is substantial evidence from various contexts that health education has a favorable influence on health behavior and health status among refugee populations and health education interventions were associated with a decrease in the occurrence of diarrheal diseases among populations that have been displaced [55]. In a similar vein [58, 66] conducted studies that demonstrated the positive impact of health education on diabetes management and mental health outcomes within refugee populations, respectively. The research conducted in this study has revealed noteworthy correlations between socio-demographic variables, knowledge pertaining to health education, and individuals' attitudes towards health education. The findings highlight the significance of age and educational attainment in influencing individuals' knowledge and attitudes towards health-related matters. The significance of health education in the Rohingya refugee community corresponds with findings from comparable studies conducted

in other refugee settings, thereby affirming the crucial role of health education in enhancing health outcomes among displaced populations. Although the study offers valuable insights, it is imperative to acknowledge certain limitations. The utilization of a cross-sectional design poses limitations in establishing a causal relationship between socio-demographic factors and outcomes in health education. Moreover, it is important to consider the potential influence of self-reporting bias on the respondents' answers, as this could have implications for the accuracy and reliability of the collected data. In its entirety, the manuscript makes a valuable contribution to the expanding corpus of literature pertaining to health education within refugee contexts. Additional investigation and assessment are required to delve into the enduring viability and efficacy of health education endeavors, as well as the possibility of expanding these interventions to yield advantages for a greater number of refugee populations on a global scale.

Chapter 6: General Conclusion

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The findings of the manuscript indicate that health education has a significant impact on enhancing health behavior and health status within the Rohingya refugee population residing in refugee camps located in Bangladesh. The Rohingya refugee crisis has posed considerable obstacles, encompassing a substantial illness load and restricted availability of healthcare facilities. The research conducted in this study has revealed noteworthy correlations between Socio-demographic variables, knowledge pertaining to health education, and individuals' attitudes towards health education. The findings highlight the significance of age and educational attainment in influencing individuals' knowledge and attitudes towards health-related matters. The significance of health education in the Rohingya refugee community corresponds with findings from comparable studies conducted in other refugee settings, thereby affirming the crucial role of health education in enhancing health outcomes among displaced populations.

Although the study offers valuable insights, it is imperative to acknowledge certain limitations. The utilization of a cross-sectional design poses limitations in establishing a causal relationship between Socio-demographic factors and outcomes in health education. Moreover, it is important to consider the potential influence of self-reporting bias on the respondents' answers, as this could have implications for the accuracy and reliability of the collected data. In its entirety, the manuscript makes a valuable contribution to the expanding corpus of literature pertaining to health education within refugee contexts. Additional investigation and assessment are required to delve into the enduring viability and efficacy of health education endeavors, as well as the possibility of expanding these interventions to yield advantages for a greater number of refugee populations on a global scale.

The study's findings offer significant insights into the understanding and behaviors pertaining to both communicable and non-communicable diseases within the Rohingya refugee community. The significance of customized health interventions in refugee settings is underscored by the correlations observed between Socio-demographic variables and disease-related knowledge and practices. Policymakers and healthcare providers can enhance health outcomes and facilitate disease prevention among displaced populations by comprehending the factors that impact disease awareness and behaviors. This understanding enables the design of focused interventions. Nevertheless, it is imperative to acknowledge the limitations of the study and take them into account when interpreting the results. Additional research is required in various refugee settings to corroborate and build upon the existing discoveries, thereby augmenting the efficacy of healthcare interventions for marginalized populations on a global scale.

This paper provides a comprehensive analysis of the Socio-demographic factors influencing the prevalence of communicable and non-communicable diseases within the Rohingya population residing in refugee camps in Bangladesh. The results of the study highlight the significance of various factors, including age, gender, educational attainment, and job title, in influencing refugees' perceptions of illnesses and health-related behaviors. The findings of this study hold considerable implications for health intervention strategies pertaining to refugees. In order to enhance awareness and prevention of illnesses, it is imperative to design health education initiatives that are customized to cater to the unique requirements of diverse age cohorts, genders, and educational levels. Enhancing health outcomes and reducing the prevalence of infectious and non-communicable diseases among the Rohingya refugee population can be achieved by advocating for the adoption of hygienic practices, disseminating disease-specific information, and encouraging modifications in lifestyle choices.

The study's findings offer significant insights into the knowledge and awareness of both communicable and non-communicable diseases among the Rohingya refugee community. This study helps in finding knowledge on different health behaviors related to different diseases. In this study, respondents replied about ideas on nutrients, their sources, malnutrition and associated diseases. Satisfactory ideas on different communicable and non-communicable diseases found. The respondents also mentioned common communicable and non-communicable diseases in their particular area or camp, diseases they were suffering from and also the prevalence of different communicable and non-communicable diseases. Policymakers and healthcare providers can enhance health outcomes and facilitate disease prevention among displaced populations by comprehending the factors that impact disease awareness and behaviors. Nevertheless, it is imperative to acknowledge the limitations of the study and take them into account when interpreting the results. Additional research is required in various refugee settings to corroborate and build upon the existing discoveries, thereby augmenting the efficacy of healthcare interventions for marginalized populations on a global scale.

Chapter 7: Limitations of the study

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Notwithstanding its valuable contributions, it is imperative to acknowledge the limitations inherent in the manuscript that necessitate careful consideration. The utilization of a cross-sectional design poses a constraint on the ability to establish a causal relationship between socio-demographic factors and disease outcomes. Longitudinal studies have the potential to offer a more comprehensive comprehension of the dynamic nature of disease prevalence and health behaviors among refugee populations over an extended period. Furthermore, the study's utilization of self-reported data may introduce response biases, potentially compromising the accuracy and reliability of the obtained results. The inclusion of clinical assessments or objective measures to validate self-reported information would contribute to the overall strength and reliability of the study. Moreover, it is important to note that the research was carried out within a particular refugee camp setting in Bangladesh. Therefore, caution should be exercised when attempting to apply the findings to other refugee populations or different settings. The socio-demographic characteristics and disease patterns are subject to variation across diverse refugee camps and regions.

Chapter 8: Recommendations and Future Perspectives

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- The NGOs should provide counseling and emotional support services to refugees, especially to children who are exposed to violence and other traumas.
- Strengthening protections and support services for adolescent girls and women at risk.
- The authority should pull out the implicit competency of individual refugees and utilize them for productive work so that they can be self-reliant.
- Ensuring authorized immunization and compulsory vitamin supplements for every refugee child to decrease the prevalence of the diseases.
- Improving the sanitation condition of the camps with the availability of sufficient drinking water. They should increase the number of latrines according to the increasing population of refugees so that they do not need to wait in a vacant washroom for so long and ultimately decrease the tendency of people to defecate outside.
- Providing maternal and newborn child health care.
- The government should raise more funds for the Rohingya refugees to meet their needs.
- As the research was carried out within a particular refugee camp setting in Bangladesh, caution should be exercised when attempting to apply the findings to other refugee populations or different settings.
- Longitudinal studies should be done which offer a more comprehensive comprehension of the dynamic nature of disease prevalence and health behaviors among refugee populations over an extended period.
- The inclusion of clinical assessments or objective measures to validate self-reported information would contribute to the overall strength and reliability of such studies.
- Further research can be done to analyze the efficiency of health education endeavors, as well as the possibility of expanding these interventions to yield advantages for a greater number of refugee populations on a global scale.
- Policymakers and healthcare providers should enhance health outcomes and facilitate disease prevention among displaced populations by comprehending the factors that impact disease awareness and behaviors.

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Appendices

Appendices

Appendix-A: Informed Consent

I Mr/Mrs.....…. have read all the statements in the consent form and I do hereby agree to voluntarily participate as a subject in the study of **"*Life Style, Health Behavior and Health Status of different FDMN community people in Rohingya Refugee Settlement, Cox's Bazar, Bangladesh*"**. I have clear idea of this research including its purpose, duration and the procedures to be followed. I have understood that all information will be kept confidential. My name will not be published in the study report and I will not be entertained with any financial benefits or incentives.

I have been given opportunity to ask questions concerning research procedures and for further questions. I may contact the research workers.

I have also been given information on the risk and discomforts for participating in this research.

I understood that I have the right to leave or cancel my consent and withdrawal myself from the study at any time for any reason without penalty.

I have been informed that I shall be given a copy of the signed consent to keep.

I, the undersigned, certify that I have signed this document willingly to participate in the said research work myself or in presence of the following witness.

.....	.....
Participant's signature/Thumb prints	Witness signature
Name:	Name:
Date:	Date:

.....
Investigator's signature

Name:

Date:

Appendix-B:

Title/Abstract pages of manuscripts prepared and published from this research work:

1) Impact of health education on regular health behavior in improving health outcomes among the FDMN community in Rohingya refugee settlement, Cox's Bazar, Bangladesh.

2) Knowledge, attitude and practices regarding different diseases among different people of FDMN community in Rohingya refugee settlement, Cox's Bazar, Bangladesh.

3) Different socio-demographic factors associated with different diseases(both communicable and non communicable) among different people of FDMN community in Rohingya refugee settlement, Cox's Bazar, Bangladesh.

4) Knowledge and awareness on occurrence/incidence of different diseases (disease burden) among the Rohingya refugee people: A cross sectional study on FDMN community in Rohingya Refugee settlement, Cox's Bazar, Bangladesh.

Appendix-C: List of titles of questionnaires

1. **Questionnaire 1:** Impact of health education on knowledge, awareness, practices, attitude and regular health behavior in improving health outcomes among the FDMN community in Rohingya refugee settlement, Cox's Bazar, Bangladesh

2. **Questionnaire 2:** Knowledge and awareness of diarrheal diseases among different community people: A study on different populations of Rohingya refugee settlement, Cox's Bazar, Bangladesh

3. **Questionnaire 3:** Knowledge, attitude and practices of some selected mosquito-borne diseases (MBDs): A cross sectional study among the community people of Rohingya refugee settlement, Cox's Bazar, Bangladesh

4. **Questionnaire 4:** Knowledge and awareness of iron deficiency anaemia among women of different ages: A cross sectional study among the community people of Rohingya refugee settlement, Cox's Bazar, Bangladesh

5. **Questionnaire 5:** Knowledge, awareness and occurrence of different non-communicable diseases (NCDs) and malnutrition among different FDMN Community in Rohingya refugee settlement, Cox's Bazar, Bangladesh

6. **Questionnaire 6:** Knowledge and awareness about tuberculosis (TB): A cross sectional study in selected hospitals near Rohingya refugee settlement, Cox's Bazar, Bangladesh

7. **Questionnaire 7:** Knowledge and awareness about HIV-AIDS, Hepatitis-B & Hepatitis-C among different community people: A cross sectional study in selected hospitals near Rohingya refugee settlement, Cox's Bazar, Bangladesh

8. **Questionnaire 8:** Knowledge, awareness and burden/occurrence of different diseases among the Rohingya refugee people: A cross sectional study on FDMN community in Rohingya refugee settlement (Kutupalong Rohingya Refugee camp), Cox's Bazar, Bangladesh

Appendix-D: Questionnaire

Dear participant,

I'm Md Jahedul Islam, completing my PhD degree at CVASU. As a part of my course, I have to conduct a research work. The title of my research is **"*Life Style, Health Behavior and Health Status of different FDMN community people in Rohingya Refugee Settlement, Cox's Bazar, Bangladesh*"**. This is purely academic. Some information is needed from you in this regards. This information will be used only for this study and confidentiality will be maintained strictly. I seek your kind co-operation as much as possible. Your co-operation would highly be appreciated.

Individual Questionnaire

Common part of all questionnaire

Socio-Demographic Information		
Sl. No.	**Questions**	**Options**
ID No		
1	Name	
2	Age in years	a. ~ 20 Years b. 21-30 Years c. 31-40 Years d. 41-50 Years e. 51- 60 Years
3	Gender	a. Male b. Female
4	Educational Status	a. Illiterate b. Primary c. SSC d. HSC e. Graduate
5	Current Occupation (If any)	a) Doing nothing b) Small Shopkeeper c) Tea stall d) Student e) Daily labor f) Street Hawker g) Driver h) Imam i) NGO worker j) Paid volunteer k) House wife l) Mazhee
6	Types of Family	a. Nuclear b. Joint
7	Monthly family income in BDT	a. <10K b. 10K c. >10K

8	Religion	a. Muslim b. Hindu c. Christian d. Buddhist
9	Number of Family members	a. 2-4 persons b. 5-7 persons c. 8-10 persons
10	Marital Status	a) Single b) Married c) Divorced d) Widow/Widower
11	Which camp do you live in?	a. Kutupalang b. Teknaf c. Balukhali d. Noyapara e. Hakimpara f. Moynarghona g. Jamtoli h. Chakmarkul i. Unchiprang j. Shamlapur

Questionnaire 1

Impact of Health Education on knowledge, awareness, practices, attitude and regular health behavior in improving health outcomes among the FDMN community in Rohingya refugee settlement, Cox's Bazar, Bangladesh		
Sl. No.	**Questions**	**Options**
ID No.		
1.	Do you know the Health Workers?	a. Yes b. No
2.	How often they visit you or you visit them?	a. Daily b. Weekly c. Monthly
3.	Do they arrange Health Camp near you?	a. Yes b. No
4.	Do they teach you about Different Health Issues?	a. Yes b. No
5.	Do they guide you about practicing Sanitation & Hygiene?	a. Yes b. No
6.	Do they guide you about preventive issues?	a) Yes b) No
7.	Do they educate you about Communicable & Non-communicable diseases?	a. Yes b. No
8.	Do you know about Diarrhea, Cholera, Typhoid & Hepatitis?	a. Yes b. No
9.	Do you know the germs causing different communicable diseases?	a. Yes b. No
10.	Do you know about HIV & other sexually transmitted diseases?	a. Yes b. No
11.	Do you know about Hypertension, Diabetes, Stroke & Heart failure?	a. Yes b. No
12.	Do they provide you charts, leaflets and brochure about different health issues?	a. Yes b. No
13.	Do the health workers provide you treatment?	a) Yes b) No
14.	Do they give you medicine support?	a) Yes

		b) No
15.	Do health centers are available near you?	a. Yes b. No
16.	Do the health workers arrange Health Camp near your home?	a) Yes b) No
17.	Do you take sufficient Fruits & Vegetables?	a. Yes b. No
18.	Do you take sufficient water daily?	a. Yes b. No
19.	If yes how much?	a. 2-4 Glasses b. 4-6 Glasses c. 6-8 Glasses d. > 8 Glasses
20.	Do you think Fruits & Vegetables are good sources of Vitamins & Minerals?	a. Yes b. No
21.	Do you know about Vitamins, Minerals, Carbohydrates, Proteins & Fats/Oils?	a. Yes b. No
22.	Do you know the daily requirements of the nutrients?	a. Yes b. No
23.	Do you take Bath regularly?	a. Yes b. No
24.	Do you wash your hands regularly?	a. Yes b. No
25.	How long you wash your hand with soap?	a. 5 second b. 10 second c. 15 second d. 20 second
26.	Wash fruits and raw foods properly before consume?	a) Yes b) No
27.	Wash vegetables, fish and meats properly before cook?	a. Yes b. No
28.	Do you cut your nails & hairs regularly?	a. Yes b. No
29.	If yes, how often you cut these?	a. weekly b. 15 days c. 30 days
30.	Do you wash hands before meal and after defecation?	a. Yes b. No
31.	What diseases you suffered from in last 6 month?	a. Food Poisoning? b. Cough / cold? c. Cholera? d. Typhoid? e. Diarrhea? f. Hepatitis? g. Dysentery?
32.	Do you keep your cloths clean always?	a. Yes b. No
33.	Do you prefer hygienic food / environment?	a. Yes b. No
34.	What diseases you suffered from in last 1 month?	a. Food Poisoning? b. Cough / cold? c. Cholera? d. Typhoid? e. Diarrhea? f. Hepatitis?
35.	How often health workers arrange health camp near your home for health education?	a. Monthly b. By each 2 month c. By each 3 month d. By each 6 month e. By each year
36.	Do you think Health Promotion helped you to prevent some non-communicable diseases?	a. Yes b. No
37.	Do you think Health Promotion helped you to prevent some communicable	a. Yes

	diseases?	b. No
38.	Do you think Health Education made change your attitude & behavior regarding different health issues?	a. Yes b. No
39.	Do you think Health Education changed your attitude about Sanitation & Hygiene practices?	a. Yes b. No
40.	Do you think Health Education helped you to prevent some communicable diseases?	a. Yes b. No
41.	Do you think Health Education increased your awareness on different health issues?	a. Yes b. No
42.	Do you think Health Education helped you to prevent some non-communicable diseases?	a. Yes b. No
43.	Do you think Health Education & Promotion increased your awareness and knowledge about Sanitation, Hygiene, diseases and good health?	a. Yes b. No

Questionnaire 2

Knowledge and Awareness of Diarrheal Diseases among Different Community People: A study on different populations of Rohingya refugee settlement, Cox's Bazar, Bangladesh		
Sl. No.	**Questions**	**Options**
ID No.		
1.	Do you know about Diarrhea?	a. Yes b. No
2.	If yes, what Diarrhea is?	
3.	Do you know the causative agents of Diarrhea?	a. Yes b. No
4.	Any of your family member/s got infected by any diarrheal diseases by last 3 months?	a. Yes b. No
5.	If yes, which one from the list?	a. Diarrhea b. Cholera c. Dysentery d. Food poisoning
6.	What are the causative agents of Diarrhea?	a. Bacteria b. Virus c. a & b d. None of them
7.	What are the symptoms of Diarrhea?	a. Loose-watery stools, abdominal cramps & abdominal pain. b. Constipation, stomach pain, high fever & nausea. c. Cough, sputum with blood and weight loss. d. None of them
8.	How Diarrhea is transmitting? Through -	a. mosquito vector b. sneeze & cough c. polluted food & water d. none of them
9.	Any infection by any helminthes?	a. Yes b. No
10.	If yes, helminthes infected person of which age group?	a. <1-2 years b. 2-5 years c. 6-10 years d. 11-15 years e. 16-20 years f. 21-25 years g. 26-30 years h. > 30 years
11.	Do you wash your hands before eating with soap?	a. Yes b. No
12.	Do you wash your hands after defecation with soap?	a. Yes b. No
13.	Do you use sanitary latrine?	a. Yes

		b. No
14.	Do you use clean water & follow safe sanitation?	a. Yes b. No
15.	Do you cook your foods properly?	a. Yes b. No
16.	Do you always keep your food & water clean?	a. Yes b. No
17.	Is Diarrhea cured by drugs and proper management?	a. Yes b. No
18.	Is Diarrhea preventable?	a. Yes b. No
19.	Where you consult first after being seek?	a. Govt. Hospitals b. Private Doctors' Chamber c. Homio Doctor d. Kabiraj e. Local Pharmacy
20.	How far distance the health center from your house?	a. Below 1 km b. 1 to 3 km c. 4 to 6 km d. Above 7 km
21.	From where you get information about Diarrhea?	a. Radio b. TV c. Newspaper d. Billboard e. Health Worker f. Family Members g. Friends
22.	How often Health Workers visit you with the updates of Diarrhea?	a. Each year b. After 6 months c. After 3 months d. Every month

Questionnaire 3

Knowledge, Attitude and Practices of some selected Mosquito Borne Diseases (MBDs): A cross sectional study among the community people of Rohingya refugee settlement, Cox's Bazar, Bangladesh		
Sl. No.	**Questions**	**Options**
ID No.		
1.	Do you know about mosquito borne diseases?	a. Yes b. No
2.	If yes, tell what you know…..	a. Typhoid, Cholera, TB b. Malaria, Dengue, Chikungunya c. Diabetes, Anemia, Pneumonia
3.	Do you know the causes of mosquito borne diseases?	a. Yes b. No
4.	If yes, what are the causes?	a. Infected mosquito bite b. Eating contaminated food & water c. They are blood borne diseases d. They are genetic diseases
5.	How Malaria is transmitting?	a. Through mosquito vector b. Through contaminated food & water c. Through sneeze and cough d. Air borne pathogen
6.	How Dengue is transmitting?	a. Through mosquito vector b. Through contaminated food & water c. Through sneeze and cough d. Air borne pathogen
7.	How Chikungunya is transmitting?	a. Through mosquito vector

		b. Through contaminated food & water c. Through sneeze and cough d. Air borne pathogen
8.	What are the symptoms of Dengue?	a. high fever, flu like symptoms, skin rash. b. high blood pressure, jaundice, cold c. sleeplessness, restlessness, cold d. Constipation, back pain, cold
9.	What are the symptoms of Malaria?	a. high fever, chills, feeling of discomfort, headache, nausea, vomiting, muscle or joint pain, fatigue b. high blood pressure, jaundice, cold c. sleeplessness, restlessness, cold d. Constipation, back pain, cold
10.	What are the symptoms of Chikungunya?	a. high fever, flu like symptoms, skin rash. b. high blood pressure, jaundice, cold c. sleeplessness, restlessness, cold d. Constipation, back pain, cold
11.	Did any family member/neighbor get infected by Malaria / Chikungunya / Dengue before?	a. Yes b. No
12.	If Yes, when last?	
13.	Do Mosquito is common everywhere in your area?	a. Yes b. No
14.	Do you use Mosquito nets in home during sleeping?	a. Yes b. No
15.	Do you use other mosquito preventive repellents?	a. Yes b. No
16.	What symptoms you suffered from in last 3 months?	a. Fever? b. Skin rash? c. Headache? d. Vomiting? e. Cough / cold? f. Any bleeding? g. Sleeplessness? h. Restlessness? i. Body pain? j. Diarrhea? k. None of above
17.	Did you give blood sample to lab for diagnosis purpose?	If Yes, collection of report
18.	From where you get information about ……? a. Malaria, b. Dengue c. Chikungunya	a. Radio b. TV c. Newspaper d. Billboard e. Health Worker f. Family Members g. Friends
19.	How often NGO / Health Workers visit you with updates of …..? a. Malaria, b. Dengue c. Chikungunya	a. Each year b. After 6 months c. After 3 months d. Every month
20.	Where you consult first after being seek?	a. Govt. Hospitals b. Private Doctors Chamber c. Homeo Doctor d. Kabiraj e. Others (specify)

Questionnaire 4

Knowledge and Awareness of Iron Deficiency Anemia among women of different ages: A cross sectional study among the community people of Rohingya refugee settlement, Cox's Bazar, Bangladesh		
Sl. No.	**Questions**	**Options**
ID No.		
1.	Do you know about Iron-deficiency Anemia?	a. Yes b. No
2.	If Yes, say few words -	
3.	Are you or any family member (female) suffering by Iron deficiency anemia?	a. Yes b. No
4.	Do you know the causes of Anemia?	a. Yes b. No
5.	If Yes, say few words -	
6.	Do you know the symptoms of Anemia?	a. Yes b. No
7.	What are the symptoms you suffering from?	a) Fever b) Headache c) Vomiting d) Bleeding e) body pain f) Restlessness g) Sleeplessness h) Weakness
8.	Do you take sufficient meals daily?	a. Yes b. No
9.	What diet you usually eat daily	a. Vegetarian b. Mixed
10.	Do you know the Iron rich foods?	a. Yes b. No
11.	If Yes, what are them?	
12.	Do you visit Doctors regularly?	a. Yes b. No
13.	Did you give blood sample to lab?	If Yes, collection of report
14.	Where you consult first?	a. Govt. Hospitals b. Private Doctors Chamber c. Homio Doctor d. Kabiraj e. Others (specify)
15.	How far distance the health center from your house?	a. Below 1 km b. 1 to 3 km c. 4 to 6 km d. Above 7 km
16.	Do you take sufficient fruits daily?	a. Yes b. No
17.	Do you take Iron tablets?	a. Yes b. No
18.	From where you get information about Anemia?	a. Radio b. TV c. Newspaper d. Billboard e. Health Worker f. Family Members g. Friends
19.	How often Health Workers visit you with updates of Anemia?	a. Each year b. After 6 months

		c. After 3 months d. Every month
20.	Is Anemia cured by drugs?	a. Yes b. No
21.	Are you aware enough about Anemia?	a. Yes b. No

Questionnaire 5

Knowledge, awareness and occurrence of different Non-Communicable Diseases (NCDs) and Malnutrition among different FDMN Community in Rohingya Refugee Settlement, Cox's Bazar, Bangladesh		
Sl. No.	**Questions**	**Options**
ID No.		
Knowledge, Awareness and Practice Based Questions		
1.	Do you know about Non-communicable diseases (NCDs)?	a. Yes b. No
2.	If yes, what are the NCDs from the list?	a. Malaria, Dengue b. Diabetes, Hypertension
3.	Do you know about Diabetes Mellitus?	a. Yes b. No
4.	Are you suffering by Diabetes Mellitus?	a. Yes b. No
5.	Do you know about Hypertension?	a. Yes b. No
6.	Are you suffering by Hypertension?	a. Yes b. No
7.	Do you know about Dyslipidemia?	a. Yes b. No
8.	Are you suffering by Dyslipidemia?	a. Yes b. No
9.	Do you know about Coronary Heart Disease (CHD)?	a. Yes b. No
10.	Are you suffering by Coronary Heart Disease (CHD)?	a. Yes b. No
11.	Do you know about Cancer?	a. Yes b. No
12.	Are you suffering by any Cancer?	a. Yes b. No
13.	Do you know about Malnutrition?	a. Yes b. No
14.	Are you suffering by anemia?	a. Yes b. No
15.	Are you suffering by vision problem?	a. Yes b. No
16.	Are you suffering by arthritis?	a. Yes b. No
17.	Are you suffering by any Vitamin deficiency disorder?	a. Yes b. No
18.	Are you suffering by any Mineral deficiency disorder?	a. Yes b. No
19.	Are you suffering by Anxiety / depression, fatigue?	
20.	Do you know about PEM?	
21.	Weight?	

22.	Height?	
23.	BMI?	
24.	Do you take sufficient fruits and vegetables regularly?	a. Yes b. Sometimes c. Very rarely
25.	Do you take protein rich foods regularly?	a. Yes b. Sometimes c. Very rarely
26.	Do you take milk and dairy products regularly?	a. Yes b. Sometimes c. Very rarely
27.	Do you take sufficient water daily?	a. Yes b. No
28.	Do you take regular meal in time daily?	a. Yes b. No
29.	Do you wash your hands before meal and after toilet with soap properly?	a. Yes b. No
30.	Do you practice exercise regularly?	a. Yes b. Sometimes c. Very rarely
31.	Do you consult doctor regular after being sick immediately?	a. Yes b. No
32.	Where you consult first after being sick?	a. Govt. Hospitals b. Private Doctors Chamber c. NGO d. Community Clinic e. Homio Doctor f. Kabiraj
33.	From where you get information about different diseases and nutrition facts?	a. Radio b. TV c. Newspaper d. Billboard e. Health Worker f. Family Members g. Friends
34.	How often NGO/Health workers visit you with updates of diseases and nutrition facts?	a. Every month b. By each 3 months c. By each 6 months d. By each year

Questionnaire 6

Knowledge and Awareness about Tuberculosis (TB): A Cross Sectional Study in Selected Hospitals near Rohingya Refugee Settlement, Cox's Bazar, Bangladesh		
Sl. No	**Statement**	**Options**
ID No.		
1.	Do you know what TB is?	a. Yes b. No
2.	If yes, say few words -	----------
3.	Do you know what the causative agent of TB?	a. Virus b. Bacteria c. None of them

4.	Do you think personal hygiene decrease TB risk?	a. Yes b. No
5.	Sharing personal items will increase TB risk?	a. Yes b. No
6.	Is it transmitted from person to person?	a. No b. Yes
7.	What are the main symptoms of TB? (mark at least two)	a. Fever b. Cough c. Bleeding d. Body pain e. Weakness f. Chest pain
8.	TB is diagnosed by.	a. Blood b. Sputum
9.	What is the main source of information on TB?	a. Social Media b. TV c. Internet
10.	Duration of TB treatment?	a. 1-3 Months b. 3-6 Months c. 6-9 Months d. 9-12 Months
11.	How long you have been suffering by TB?	a. 1-3 Months b. 3-6 Months c. 6-9 Months d. Not patient
12.	Do you take healthy foods that is good for quick come round?	a. No b. Yes
13.	Is TB curable by drugs?	a. No b. Yes
14.	Do you smoke Cigarettes?	a. No b. Yes
15.	Do you cough in public place without carefulness?	a. No b. Yes
16.	After being diagnosed, do you keep you away not to spread TB?	a. No b. Yes
17.	Do you think TB is a result of great sin?	a. No b. Yes
18.	Do you think that TB is preventable?	a. No b. Yes
19.	Is anybody of your family infected by you?	a. No b. Yes
20.	Do you think you are getting well gradually with current management & treatment?	a. No b. Yes
21.	Are you satisfied with current management & treatment of the Hospital?	a. No b. Yes

Questionnaire 7

Knowledge and Awareness about HIV-AIDS, Hepatitis-B & Hepatitis-C among different community people: A cross sectional study in selected hospitals near Rohingya Refugee Settlement, Cox's Bazar, Bangladesh		
Sl. No	**Questions**	**Options**
ID No.		
1.	Do you know about Hepatitis B?	a. Yes b. No

2.	If yes, what is it?	
3.	Do you know about Hepatitis C?	a. Yes b. No
4.	If yes, what is it?	
5.	What are the causative agents of Hepatitis-B & C?	
6.	What is the target organ of Hepatitis-B & C?	a. Heart b. Kidney c. Liver d. Pancreas
7.	What are the Hepatitis-B & C?	a. Bacteria b. Fungi c. Viruses d. Parasites
8.	Are Hepatitis-B & C curable by drugs?	a. Yes b. No
9.	Are they infectious or communicable?	a. Yes b. No
10.	If yes, what are the rout of transmission?	a. Oral, during drink and eat food. b. During blood transfusion. c. During unsafe physical relation
11.	Is there anybody diagnosed with Hepatitis-B or C in your family?	a. Yes b. No
12.	If yes, which one from the list?	a. Hepatitis B b. Hepatitis C
13.	Do you know the signs & symptoms of Hepatitis - B & C?	a. Yes b. No
14.	If yes, what are them?	a. Bacterial Disease b. Viral Disease c. Protozoa Disease d. Fungal Disease
15.	Is the time period of cure from Hepatitis-B & C is prolonged?	a. Yes b. No
16.	Do you know about safe blood transfusion?	a. Yes b. No
17.	Do you know disposable syringe for IM & IV injection is safe?	a. Yes b. No
18.	Do you know about safe physical relation?	a. Yes b. No
19.	Do you know about HIV-AIDS?	
20.	If yes, tell about it -	
21.	Do you know about the causative agent of it?	
22.	If yes, what?	
23.	How long you know about HIV?	a. 1 year b. 2 years c. 3 years d. 3 years +
24.	Does HIV-AIDS infectious?	a. Yes b. No
25.	Is HIV-AIDS curable by drugs?	a. Yes b. No
26.	Do you know about the symptoms of HIV-AIDS	a. Yes b. No
27.	If yes, what are them?	
28.	Do you believe HIV infection is a result of great sin?	a. Yes b. No
29.	How HIV-AIDS transmits from one to other exactly?	
30.	Do all of your family members know about HIV-AIDS?	a. Yes

		b. No
31.	Have you ever gone to lab for diagnosis?	a. Yes b. No
32.	If yes, what was the result?	
33.	Do you know a patient of HIV-AIDS? (who is your relative, neighbor or friend)	a. Yes b. No
34.	Do you think that modern treatment can save the life of a patient of HIV-AIDS?	a. Yes b. No
35.	Do you think HIV-AIDS treatment is expensive?	a. Yes b. No
36.	Do you know the causes of HIV-AIDS?	a. Yes b. No
37.	Do you know the rout of transmission of HIV-AIDS?	a. Yes b. No
38.	Are you aware about transmission of HIV-AIDS yourself?	a. Yes b. No

Questionnaire 8

Knowledge, Awareness and Burden/Occurrence of different diseases among the Rohingya Refugee people: A cross sectional study on FDMN community in Rohingya refugee settlement (Kutupalong Rohingya Refugee camp), Cox's Bazar, Bangladesh

Common Communicable & Non Communicable Diseases in your area?

Which communicable diseases are common in your area?		**Which non-communicable diseases are common in your area?**	
Diseases	**Options**	**Diseases**	**Options**
1. Diarrhoea	a) Yes b) No	1. Any Injury by accident	a. Yes b. No
2. Cholera	a. Yes b. No	2. Asthma	a) Yes b) No
3. Malaria	a) Yes b) No	3. Back Pain	a. Yes b. No
4. Scabies	a. Yes b. No	4. Bronchitis	a) Yes b) No
5. Other Skin Infection	a) Yes b) No	5. Daibetes Mellitus	a. Yes b. No
6. Covid-19	a) Yes b) No	6. CHD	a. Yes b. No
7. Dysentery	a. Yes b. No	7. Breathing Problem	a) Yes b) No
8. Food Poisoning	a) Yes b) No	8. Hypercholesterolemia	a. Yes b. No
9. TB	a. Yes b. No	9. COPD	a) Yes b) No
10. Dengue	a) Yes b) No	10. Mental Disorder	a. Yes b. No
11. Aching Pox	a. Yes b. No	11. Stroke	a) Yes b) No
12. Typhoid	a) Yes b) No	12. Arthritis	a. Yes b. No
13. Viral Cold And Fever	a. Yes b. No	13. Neuropathy	a) Yes b) No
14. RTI	a) Yes b) No	14. Lung Disease (Pulmonary Problem)	a. Yes b. No
15. Aids	a. Yes b. No	15. Hypertension	a) Yes b) No

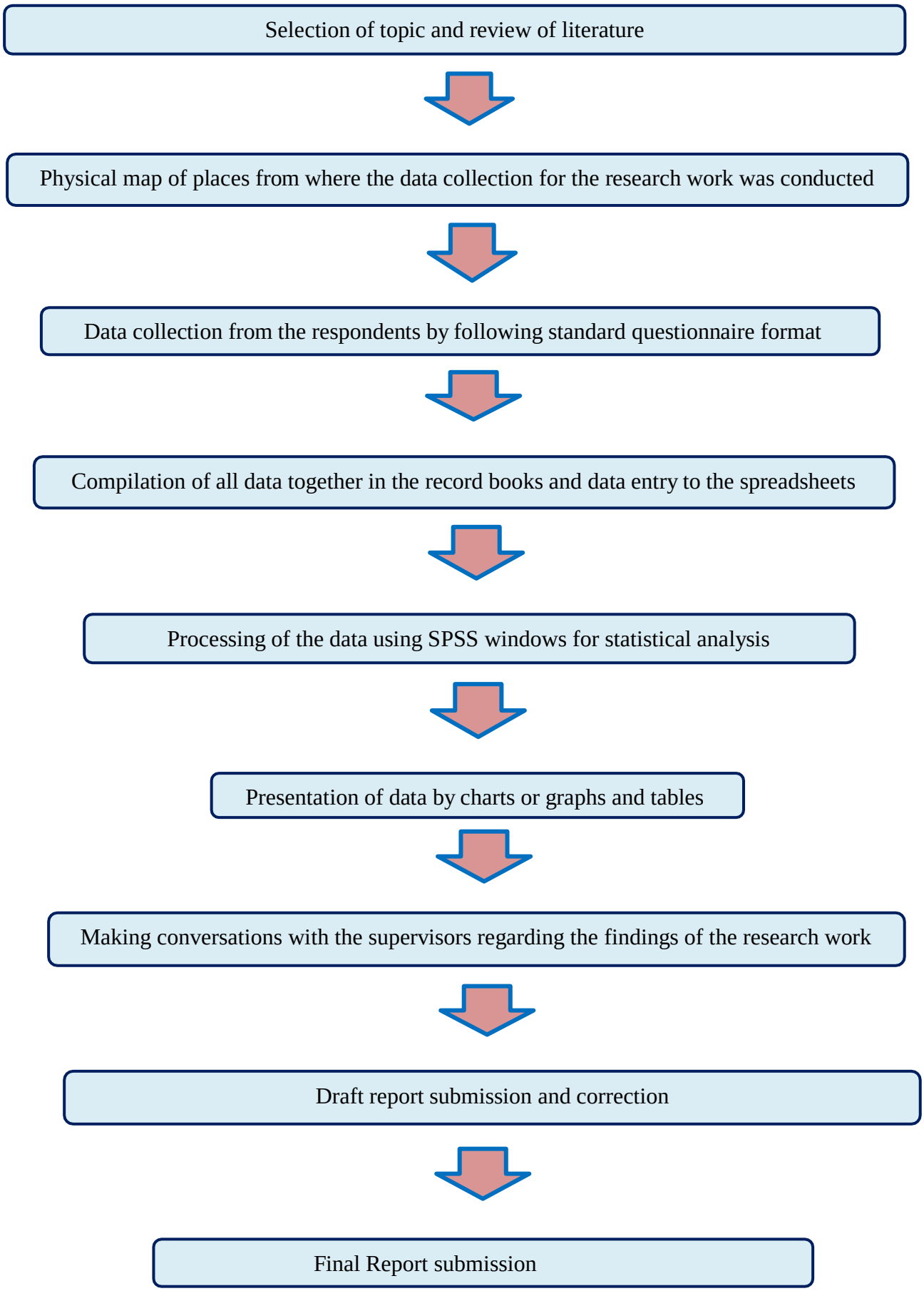
16. Dengue	a) Yes b) No	16. Cancer	a. Yes b. No
17. Chikunguniya	a. Yes b. No	17. Anemia	a) Yes b) No
18. Influenza	a) Yes b) No	18. Dislipidemia	a. Yes b. No
19. UTI	a. Yes b. No	19. Nephropathy	a) Yes b) No
20. Rabies	a) Yes b) No	20. Ratinopathy	a. Yes b. No
21. Oral Infection	a. Yes b. No	21. MI	a) Yes b) No

Communicable & Non-Communicable Diseases suffering from.
(Diagnosed by last three months)

Which communicable diseases you are suffering from?		**Which non-communicable diseases you are suffering from?**	
Diseases	**Options**	**Diseases**	**Options**
1) Diarrhoea	c) Yes d) No	1) Any Injury by accident	c. Yes d. No
2) Cholera	c. Yes d. No	2) Asthma	c) Yes d) No
3) Malaria	c) Yes d) No	3) Back Pain	c. Yes d. No
4) Scabies	c. Yes d. No	4) Bronchitis	c) Yes d) No
5) Other Skin Infection	c) Yes d) No	5) Daibetes Mellitus	c. Yes d. No
6) Covid-19	c) Yes d) No	6) CHD	c. Yes d. No
7) Dysentery	c. Yes d. No	7) Breathing Problem	c) Yes d) No
8) Food Poisoning	c) Yes d) No	8) Hypercholesterolemia	c. Yes d. No
9) TB	c. Yes d. No	9) COPD	c) Yes d) No
10) Dengue	c) Yes d) No	10) Mental Disorder	c. Yes d. No
11) Aching Pox	c. Yes d. No	11) Stroke	c) Yes d) No
12) Typhoid	c) Yes d) No	12) Arthritis	c. Yes d. No
13) Viral Cold And Fever	c. Yes d. No	13) Neuropathy	c) Yes d) No
14) RTI	c) Yes d) No	14) Lung Disease (Pulmonary Problem)	c. Yes d. No
15) Aids	c. Yes d. No	15) Hypertension	c) Yes d) No
16) Dengue	c) Yes d) No	16) Cancer	c. Yes d. No
17) Chikunguniya	c. Yes d. No	17) Anemia	c) Yes d) No
18) Influenza	c) Yes d) No	18) Dislipidemia	c. Yes d. No
19) UTI	c. Yes d. No	19) Nephropathy	c) Yes d) No
20) Rabies	c) Yes d) No	20) Ratinopathy	c. Yes d. No
21) Oral Infection	c. Yes d. No	21) MI	c) Yes d) No

Prevalence of Communicable & Non-Communicable Diseases			
Non-Communicable Diseases		**Communicable Diseases**	
Diseases	**Options**	**Diseases**	**Options**
MI		Covid-19	
Stroke		Dengue	
CHD		Diarrhea	
Diabetes Mellitus		Dysentary	
Iron deficiency		Food Poisoning	
Dyslipidemia		Helminthiasis	
Hypercholesterolemia		Cholera	
Neuropathy		Hepatitis B	
Retinopathy		Malaria	
Cataract		Pneumonia	
Non-Viral Hepatitis		Skin Infection	
Mental Disorder		TB	
Arthritis		Typhoid	
Osteoporosis		Viral Cold and Fever	
Rheumatic Fever		Hepatitis C	
Back Pain		Pox	
Gastric Ulcer		Mums	
Stomatitis		Measles	
Asthma		Oral Infection	
Calcium deficiency		Conjunctivitis	
Bronchitis		Rabies	
Angina Pactoris		Titanus	
Any Injury by accident		Scabies	
Anemia		UTI	
COPD		RTI	

Appendix-E: Flowchart of the study



Appendix-F: Time line of the study

	WORK STATEMENT	Year																							
		2020						2021						2022						2023					
		Months																							
		2	3	4-5	6-8	9-10	11-12	1-2	3-4	5-6	7-8	9-10	11-12	1-2	3-4	5-6	7-8	9-10	11-12	1-2	3-4	5-6	7-8	9-10	11-12
1	Selection of topic																								
2	Approval by REC																								
3	Selection of guide																								
4	Planning and design																								
5	Literature review																								
6	Writing objective, key variables																								
7	Preparation of questionnaires																								
8	Pre-testing of questionnaires																								
9	Finalization of questionnaires																								
10	Data collection																								
11	Data tabulation and analysis																								
12	Report writing																								
13	Report Submission																								
13	Thesis defense																								
14	Correction																								
15	Final print, binding and submission																								

Chapter 10:

Article Publications
Informations from the Dissertation

Title and Abstract part of Article-1

IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS)
e-ISSN: 2319-2380, p-ISSN: 2319-2372. Volume 16, Issue 10 Ser. I (October. 2023), PP 08-23
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Knowledge, Attitude And Practices Regarding Different Diseases Among Different People Of FDMN Community In Rohingya Refugee Settlement, Cox's Bazar, Bangladesh.

Md Jahedul Islam[1, 2], Sharmin Chowdhury[1, 3],
AMAM Zonaed Siddiki[1], Kazi Mahbub Ur Rahman[1],
Moyshumi Binta Manik[1], Mohammad Alamgir Hossain[1]

[1]*Department of Pathology and Parasitology, Chattogram Veterinary and Animal Sciences University (CVASU)*
[2]*Department of Public Health, Premier University, Chittagong (PUC)*
[3]*One Health Institute, Chattogram Veterinary and Animal Sciences University (CVASU)*

Abstract
Background: *The Rohingya refugee crisis persists as a significant humanitarian issue on a global scale, as a large number of Rohingya individuals have been compelled to escape from violence and mistreatment in Myanmar, and are currently seeking shelter in nearby nations, predominantly Bangladesh. The Rohingya refugee community encounters a range of difficulties, such as overcrowded living conditions, restricted healthcare access and insufficient sanitation.* ***Aim of the study:*** *The aim of this research is to focus on gaining an insight into the knowledge, attitude and behavioral practices (KAP) relating to different communicable and non-communicable diseases among the Rohingya refugee population.*
Methods: *A descriptive and cross-sectional survey on Rohingya people (N = 3060) living in refugee camps in Bangladesh. Data was collected via face-to-face interviews, after voluntary consent, using a pretested, language validated questionnaire on Knowledge, attitude and behavioural practices. Ethical approval and trial registration were obtained prospectively.*
Results: *A total of 3060 individual refugee people from different refugee camps where water borne diseases, tuberculosis, mosquito borne diseases, hypertension, diabetes mellitus and iron deficiency anemia had 504, 523, 511, 504, 517 and 501 respondents respectively. Socio-Demographic variables had found significant association on different diseases knowledge and practice part. Age groups had significantly associated with practice part "Do you wash your hands after defecation with soap?" variables ($p<.05$). Gender had significantly associated with practice part "Do you cook your foods properly?" variable ($p<.001$).Age groups had significant association with "Do you know what TB is?" variable ($p<.05$). Age groups had found significant association with "Do you know about Mosquito-borne disease?" variable ($p<.001$) and with "Do you know the causes of Mosquito-borne disease?" variable ($p<.001$). Monthly family income had found significant association with "Do you take sufficient fruits and vegetables regularly?" variable ($p<.05$), and with "Do you have regular meals daily?" variable ($p<.05$).*
Discussions & Conclusion: *Rohingya refugees struggle to manage communicable and non-communicable diseases, which affect their health. Overcrowding, lack of healthcare, and cultural obstacles affects the Knowledge and practices toward community diseases. Governments, humanitarian groups, and healthcare professionals must work together to undertake focused interventions that increase health education, access to healthcare, and disease prevention. Addressing knowledge gaps and encouraging positive healthcare-seeking behaviors can enhance health outcomes and quality of life for Rohingya refugees and other displaced groups. It is imperative to acknowledge the limitations of the study and take them into account when interpreting the results. Additional research is required in various refugee settings to corroborate and build upon the existing discoveries, thereby augmenting the efficacy of healthcare interventions for marginalized populations on a global scale.*
Key words: *FDMN, refugee, communicable, non communicable, KAP, Diseases.*

Date of Submission: 24-09-2023 Date of Acceptance: 04-10-2023

Title and Abstract part of Article-2

International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Knowledge and Awareness on Occurrence/Incidence of Different Diseases (Disease Burden) Among the Rohingya Refugee People: A Cross Sectional Study on FDMN Community in Rohingya Refugee Settlement, Cox's Bazar, Bangladesh.

Md Jahedul Islam[1], AMAM Zonaed Siddiki[2], Sharmin Chowdhury[3], Kazi Mahbub Ur Rahman[4], Moyshumi Binta Manik[5], Mohammad Alamgir Hossain[6]

[1,2,3,4,5,6]Department of Pathology and Parasitology, Chattogram Veterinary and Animal Sciences University (CVASU)
[1]Department of Public Health, Premier University, Chittagong (PUC)
[3]One Health Institute, Chattogram Veterinary and Animal Sciences University (CVASU)

Abstract

Background: The Rohingya refugee crisis is a prominent humanitarian issue that has compelled many Rohingya individuals to vacate their residences in Myanmar and seek asylum in nearby nations, with a special emphasis on Bangladesh. Since the commencement of this crisis, the Rohingya refugees have been residing in densely populated and resource-limited settlements, encountering a multitude of health-related difficulties. The prevalence and control of infections inside refugee populations have emerged as a significant issue for humanitarian organizations and public health professionals.

Aim of the study: The aim of this study is to determine the knowledge and awareness on occurrence/incidence of different diseases (disease burden) among the Rohingya Refugee people in Rohingya Refugee settlement, Cox's Bazar, Bangladesh.

Methods: A descriptive and cross-sectional survey on Rohingya people (N = 510) living in refugee camps in Bangladesh. Data was collected via face-to-face interviews, after voluntary consent, using a pretested, language validated questionnaire on knowledge and awareness. The non-probability and purposive sampling methods have been used in this study.

Results & Discussion: A total of 510 refugee people were enrolled in this study where maximum participants' age group was 21-30 years (n=224, 43.9%). Male and female respondents' participation was nearly equal (male: n=264, 51.8%; female: n=246, 48.2%). About half of the respondents (n=277, 54.3%) were illiterate or did not have any institutional education. Satisfactory ideas on different communicable & non-communicable diseases found. Different respondents replied positively about knowledge on different health issues that are related to different diseases. Here 84% respondents knew

about water borne diseases, 81% respondents knew about transmission of water borne diseases and 78% respondents knew about signs-symptoms of water borne diseases. 68% respondents replied A, B complex, C, D, E and K are the examples of vitamins, 24% respondents mentioned about K, Fe, Zn and Cu where only 8% respondents told about Na, I, Ca and electrolyte. 72% respondents replied the correct option regarding water borne diseases like Cholera, Tyohoid, Diarrhea, Dysentary, Giardia as example; 69% respondents told the correct option regarding Mosquito Borne Diseases like Malaria, Dengue, Chikunguniya as example; 39% respondents mentioned the correct option regarding Sexually Transmitted Diseases like Gonorrhoea, Syphilis, HIV, Viral Hepatitis as example; 49% respondents replied the correct option regarding Respiratory Tract Infections like Pneumonia, Influenza, Covid-19, TB as example where 39% respondents gave examples of other communicable diseases which were correct. Again when the respondents were asked about examples of non-communicable diseases, 48% replied about Diabetes, Hypertension, MI, Dyslipidemia, Stroke, Osteoporosis.

Conclusion: The respondents also mentioned about common communicable & non-communicable diseases in their particular area or camp, diseases they were suffering from and also prevalence of different communicable and non communicable diseases was observed. Policymakers and healthcare providers can enhance health outcomes and facilitate disease prevention among displaced populations by comprehending the factors that impact disease awareness and behaviors. Nevertheless, it is imperative to acknowledge the limitations of the study and take them into account when interpreting the results.

Keywords: Occurrence, Burden, Communicable Diseases, Non Communicable Diseases, Socio-Demography.

1. Introduction:

The Rohingya refugee crisis is a prominent humanitarian issue that has compelled many Rohingya individuals to vacate their residences in Myanmar and seek asylum in nearby nations, with a special emphasis on Bangladesh (UNHCR, 2023). Since the commencement of this crisis, the Rohingya refugees have been residing in densely populated and resource-limited settlements, encountering a multitude of health-related difficulties. The prevalence and control of infections inside refugee populations have emerged as a significant issue for humanitarian organizations and public health professionals (Islam & Nuzhath, 2018). The objective of this book is to examine the level of knowledge and awareness of the prevalence of various diseases, known as disease burden, within the Rohingya refugee community dwelling in the refugee settlement located in Cox's Bazar, Bangladesh. It is imperative to assess the extent of information and awareness about diseases among the Rohingya refugee community to develop efficacious health interventions and enhance health outcomes. The present cross-sectional study offers significant insights into the existing level of health awareness and potential information gaps among this susceptible population. Refugee communities, such as the Rohingya, frequently have distinct health obstacles because of their forced displacement, restricted healthcare accessibility, and densely populated living environments. According to Islam and Nuzhath (2018), there is a high prevalence of communicable diseases, including diarrhea, respiratory infections, and vector-borne illnesses. Additionally, there is typically inadequate access to vital healthcare services. The danger of disease transmission in refugee settlements is heightened by factors such as high population density, insufficient sanitary facilities, and restricted availability of clean water (Akhter et al., 2020). The acquisition and understanding of health-related information and the cultivation of

Title and Abstract part of Article-3

about water borne diseases, 81% respondents knew about transmission of water borne diseases and 78% respondents knew about signs-symptoms of water borne diseases. 68% respondents replied A, B complex, C, D, E and K are the examples of vitamins, 24% respondents mentioned about K, Fe, Zn and Cu where only 8% respondents told about Na, I, Ca and electrolyte. 72% respondents replied the correct option regarding water borne diseases like Cholera, Tyohoid, Diarrhea, Dysentary, Giardia as example; 69% respondents told the correct option regarding Mosquito Borne Diseases like Malaria, Dengue, Chikunguniya as example; 39% respondents mentioned the correct option regarding Sexually Transmitted Diseases like Gonorrhoea, Syphilis, HIV, Viral Hepatitis as example; 49% respondents replied the correct option regarding Respiratory Tract Infections like Pneumonia, Influenza, Covid-19, TB as example where 39% respondents gave examples of other communicable diseases which were correct. Again when the respondents were asked about examples of non-communicable diseases, 48% replied about Diabetes, Hypertension, MI, Dyslipidemia, Stroke, Osteoporosis.

Conclusion: The respondents also mentioned about common communicable & non-communicable diseases in their particular area or camp, diseases they were suffering from and also prevalence of different communicable and non communicable diseases was observed. Policymakers and healthcare providers can enhance health outcomes and facilitate disease prevention among displaced populations by comprehending the factors that impact disease awareness and behaviors. Nevertheless, it is imperative to acknowledge the limitations of the study and take them into account when interpreting the results.

Keywords: Occurrence, Burden, Communicable Diseases, Non Communicable Diseases, Socio-Demography.

1. Introduction:

The Rohingya refugee crisis is a prominent humanitarian issue that has compelled many Rohingya individuals to vacate their residences in Myanmar and seek asylum in nearby nations, with a special emphasis on Bangladesh (UNHCR, 2023). Since the commencement of this crisis, the Rohingya refugees have been residing in densely populated and resource-limited settlements, encountering a multitude of health-related difficulties. The prevalence and control of infections inside refugee populations have emerged as a significant issue for humanitarian organizations and public health professionals (Islam & Nuzhath, 2018). The objective of this book is to examine the level of knowledge and awareness of the prevalence of various diseases, known as disease burden, within the Rohingya refugee community dwelling in the refugee settlement located in Cox's Bazar, Bangladesh. It is imperative to assess the extent of information and awareness about diseases among the Rohingya refugee community to develop efficacious health interventions and enhance health outcomes. The present cross-sectional study offers significant insights into the existing level of health awareness and potential information gaps among this susceptible population. Refugee communities, such as the Rohingya, frequently have distinct health obstacles because of their forced displacement, restricted healthcare accessibility, and densely populated living environments. According to Islam and Nuzhath (2018), there is a high prevalence of communicable diseases, including diarrhea, respiratory infections, and vector-borne illnesses. Additionally, there is typically inadequate access to vital healthcare services. The danger of disease transmission in refugee settlements is heightened by factors such as high population density, insufficient sanitary facilities, and restricted availability of clean water (Akhter et al., 2020). The acquisition and understanding of health-related information and the cultivation of

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INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

IMPACT OF HEALTH EDUCATION ON REGULAR HEALTH BEHAVIOR IN IMPROVING HEALTH OUTCOMES AMONG THE FDMN COMMUNITY IN ROHINGYA REFUGEE SETTLEMENT, COX'S BAZAR, BANGLADESH

Md Jahedul Islam[1, 2,*], Sharmin Chowdhury[1, 3], AMAM Zonaed Siddiki[1] and Mohammad Alamgir Hossain[1]

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Health Education, FDMN Community, Health Behavior, Health Outcome, Impact.

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ABSTRACT

Background: The Rohingya population encounters a multitude of health-related obstacles while residing in densely populated refugee camps that are constrained in terms of resources. These challenges encompass both communicable and non-communicable diseases, malnutrition, and restricted availability of healthcare services. Health education programs have been implemented in order to enhance the health behavior and health status of the Rohingya refugees, as a means of addressing the aforementioned health concerns. ***Aim of the study:*** The aim of this study is to find out the impact of health education on regular health behavior in improving health status among the FDMN community in Rohingya refugee settlement, Cox's Bazar, Bangladesh. ***Materials and Methods:*** A cross-sectional survey on Rohingya refugee people (N=510) living in refugee camps in Cox's Bazar, Bangladesh was conducted to assess the impact of health education on the health behavior. Data was collected via face-to-face interviews after having voluntary consent from the participants using a pre-tested, structured and language validated questionnaire on knowledge, attitude and behavioral practices on different health outcomes. Randomized, Non probability and purposive sampling methods were followed. ***Results:*** A total of 510 refugee people were enrolled in this study where maximum participants' age was between 21-30 years (n=224, 43.9%). Male and female respondents' participation was nearly equal (male: n=264, 51.8%; female: n=246, 48.2%). About half of the respondents (n=277, 54.3%) were illiterate or did not have any institutional education. Socio-demographic variables showed significant association with different diseases-based knowledge and attitudes. Impact of health education was found noticeable as The impact of health education might be regarded as satisfactory as 71% respondents are currently using anti-mosquito nets/coils/spray where it was 57% during 6 months back. Here 68% respondents found practicing hand wash properly before meal and after toilet with soap compared to 51% during 6 months back. It was seen that 61% respondents knew about essential nutrients where it was 47% during 6 months back. Again 73% respondents thought that fruits & vegetables are good sources of vitamins & minerals which was recorded 68% in 6 months back. 78% respondents used to wash fruits, vegetables and other raw foods before consumption which was 61% before 6 months. Also seen that 66% respondents believed that healthy lifestyle and healthy food habit can prevent diseases (both communicable and non-communicable) where 52% thought similar in 6 months earlier. ***Discussion and Conclusion:*** According to this study, we found that Rohingya refugees in Cox's Bazar, Bangladesh got many opportunities, benefits and cooperation in many ways like shelter, food-nutrition support, healthcare facilities, safety, safe drinking water access, health education through many health communication approaches from Bangladesh Government, local authority, local NGOs and different global NGOs. We observed that socio-demographic characteristics, health education related knowledge and attitudes were correlated. The findings showed that age and education shape health knowledge and attitudes. Health education's impact on Rohingya refugees is consistent with other refugee studies, indicating its value in improving health outcomes. Beside these, there was a satisfactory impact of health education in improving the knowledge, attitude and practices regarding different health issues.

Citation: ***Md Jahedul Islam, Sharmin Chowdhury, AMAM Zonaed Siddiki1 and Mohammad Alamgir Hossain.*** **2023.** "Impact of health education on regular health behavior in improving health outcomes among the FDMN community in Rohingya refugee settlement, Cox's Bazar, Bangladesh*". International Journal of Current Research*, 14, (09), 25963-25972.

Title and Abstract part of Article-4

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International Journal of Recent Advances in Multidisciplinary Research

Vol. 10, Issue 10, pp.8974-8985, October, 2023

RESEARCH ARTICLE

DIFFERENT SOCIO-DEMOGRAPHIC FACTORS ASSOCIATED WITH DIFFERENT DISEASES (BOTH COMMUNICABLE & NON COMMUNICABLE) AMONG DIFFERENT PEOPLE OF FDMN COMMUNITY IN ROHINGYA REFUGEE SETTLEMENT, COX'S BAZAR, BANGLADESH

Md Jahedul Islam[1, 2], AMAM Zonaed Siddiki[1], Sharmin Chowdhury[1, 3], Kazi Mahbub Ur Rahman[1], Moyshumi Binta Manik[1] and Mohammad Alamgir Hossain[1]

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ARTICLE INFO

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Key Words:

Communicable Diseases, Non Communicable Diseases, Socio-Demography, Knowledge, Attitude, Practices.

ABSTRACT

Background: The Rohingya refugee crisis has resulted in a significant population of displaced individuals who are currently seeking refuge in refugee camps located in Bangladesh. These individuals are confronted with a multitude of health-related obstacles. In densely populated and resource-constrained environments, the prevalence of communicable diseases, including but not limited to diarrhea, tuberculosis (TB), dengue, and malaria, presents substantial hazards. ***Aim of the study:*** The purpose of this study is to assess association of the Socio-Demographic factors with different communicable and non-communicable diseases among the Rohingya refugee population. ***Methods:*** a prospective, cross-sectional study of the Rohingya population (N=3060) in Bangladeshi refugee camps. After receiving voluntary consent, information was gathered through in-person interviews utilizing a language-validated, pretested questionnaire on knowledge, attitude and behavioral practices. Prospectively obtained trial registration and ethical approval randomized, non probability and purposivesampling methods were followed. ***Results:*** A total of 3060 individual refugee people from different refugee camps where water borne diseases, tuberculosis, mosquito borne diseases, hypertension, diabetes mellitus and iron deficiency anemia had 504, 523, 511, 504, 517 and 501 respondents respectively. Socio-Demographic variables had found significant association on different diseases knowledge and practice part. Age groups had significantly associated with practice part "Do you wash your hands after defecation with soap?" variables ($p<.05$). Gender had significantly associated with practice part "Do you cook your foods properly?" variable ($p<.001$).Age groups had significant association with "Do you know what TB is?" variable ($p<.05$). Age groups had found significant association with "Do you know about Mosquito-borne disease?" variable ($p<.001$) and with "Do you know the causes of Mosquito-borne disease?" variable ($p<.001$). Monthly family income had found significant association with "Do you take sufficient fruits and vegetables regularly?" variable ($p<.05$), and with "Do you have regular meals daily?" variable ($p<.05$). ***Discussions & Conclusion:*** The results of the study highlight the significance of various factors, including age, gender, educational attainment, and job title, in influencing refugees' perceptions of illnesses and health-related behaviors. The findings of this study hold considerable implications for health intervention strategies pertaining to refugees. In order to enhance awareness and prevention of illnesses, it is imperative to design health education initiatives that are customized to cater to the unique requirements of diverse age cohorts, genders, and educational levels. The study has significant ramifications for refugee-related health intervention techniques. To improve illness awareness and prevention, health education programs must be specifically tailored to the needs of various age groups, genders, and educational backgrounds. The Rohingya refugee population can benefit from improved health outcomes and a decrease in the burden of infectious and non-communicable diseases through promoting hygiene habits, disease-specific knowledge, and lifestyle changes.

INTRODUCTION

The Rohingya refugee crisis has resulted in a significant population of displaced individuals who are currently seeking refuge in refugee camps located in Bangladesh. These individuals are confronted with a multitude of health-related obstacles.

In densely populated and resource-constrained environments, the prevalence of communicable diseases, including but not limited to diarrhea, tuberculosis (TB), dengue, and malaria, presents substantial hazards. Furthermore, it is noteworthy that non-communicable diseases (NCDs), such as diabetes mellitus, as well as hypertension virus infections, have become significant health issues within the Rohingya community.

Thank You