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ACCESSIBILITY TO HEALTHCARE SERVICES AND TREATMENT FOR PEOPLE WITH NONCOMMUNICABLE DISEASES IN ROHINGYA REFUGEE CAMPS IN BANGLADESH

MASTER'S THESIS

Mohammed Abdullah JAINUL

HEALTH POLICY AND GLOBAL HEALTH

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ANKARA YILDIRIM BEYAZIT ÜNİVERSİTESİ
HALK SAĞLIĞI ENSTİTÜSÜ

Bangladeş'teki Rohinya Mülteci Kamplarında Bulaşıcı Olmayan Hastalıklara Sahip Kişiler için Sağlık Hizmetlerine ve Tedaviye Erişim

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ABSTRACT

Noncommunicable diseases (NCDs) are the leading cause of mortality and disability worldwide. Considering the ongoing health and humanitarian crisis and addressing NCD-related issues in Rohingya refugee camps has become a growing challenge. The purpose of this study is to assess the accessibility of healthcare services and treatment for people suffering from NCDs in Rohingya refugee camps in Bangladesh's Cox's Bazar.

This cross-sectional study included people with NCDs, specifically those who had one or more of the following diagnoses: cardiovascular disease, diabetes, musculoskeletal disorders, or chronic obstructive pulmonary disease. Participants were chosen from 25 makeshift camps in the Cox's Bazar district, specifically Kutupalong and Balukhali. Between November 1 and December 30, 2023, data was collected through face-to-face interviews.

The data were obtained from 430 respondents. 51.6% of the respondents were from the age group above 45 years old. 50.7% of the participants were male. Among the study group, musculoskeletal disorders were the most dominant NCD (65.8%), then diabetes (58.4%), COPD (32,3%), and CVD (14.9%), with 55.8% of the respondents reported more than one NCD. Health facilities inside the camp settlement (87.5%), and pharmacies (59.4%) were the most common type of the accessible healthcare settings. In our study, no such statistical significance was found among the socioeconomic status or camp locations for accessibility to healthcare services, or for outreach healthcare services. No such significant different results have been observed between employed and unemployed groups. Almost all the respondents' income was lower than the expenses. 79.4% of the participants reach to the health facilities on foot, while for majority of the respondents (83.7) travel more than 3 km to reach the facilities. Most respondents were less likely to get the required services. 94.2% of the respondents didn't receive all the required health services for their existing NCDs. Lack of imaging facilities (99.0%), lab test (75.0%) and lack of specialized doctors (43.1%) were the dominant factors for not getting accessing to desired healthcare. Unavailability of free medication and higher out-of-pocket expenses had also been mentioned to be the barriers for accessibility to healthcare. Stigma (20.2%), experiencing of unpleasant behaviors (17%) and mistrust of existing services are the major barriers to access to NCDs Healthcare. When desirable services were absent within their nearby area, 76.3% participants didn't travel far to access the healthcare services.

Keywords: noncommunicable diseases, healthcare services, free medications, camps, Cox's Bazar district of Bangladesh, Rohingya.

ÖZET

Bulaşıcı olmayan hastalıklar (BOH), dünya genelinde ölüm ve sakatlık nedenlerinin başında gelmektedir. Rohingya mülteci kamplarında BOH ile ilgili sorunların ele alınması, devam eden sağlık ve insani krizlerle birlikte giderek artan bir zorluk oluşturmaktadır. Bu çalışmanın amacı, Bangladeş'in Cox's Bazar bölgesindeki Rohingya mülteci kamplarında BOH olan bireylerin sağlık hizmetlerine ve tedaviye erişilebilirliğini değerlendirmektir.

Bu kesitsel çalışma, kardiyovasküler hastalık, diyabet, kas-iskelet sistemi bozuklukları veya kronik obstrüktif akciğer hastalığı gibi tanılı bireyleri içermektedir. Katılımcılar, özellikle Kutupalong ve Balukhali dahil olmak üzere Cox's Bazar bölgesindeki 25 geçici kampından seçilmiştir. Veriler, 1 Kasım-30 Aralık 2023 tarihleri arasında yüz yüze görüşmeler yoluyla toplanmıştır.

Veriler, 430 katılımcıdan elde edilmiştir. Katılımcıların %51,6'sı 45 yaş üstü yaş grubundadır. Katılımcıların %50,7'si erkektir. Çalışma grubunda kas-iskelet sistemi bozuklukları en baskın BOH (%65,8) olarak belirlenmiştir, ardından diyabet (%58,4), KOAH (%32,3) ve KVH (%14,9) gelmektedir; katılımcıların %55,8'i birden fazla BOH'a sahip olduklarını belirtmiştir. Kamp yerleşimindeki sağlık tesisleri (%87,5) ve eczaneler (%59,4), erişilebilir sağlık hizmetlerinin en yaygın türleridir. Çalışmamızda, sağlık hizmetlerine erişilebilirlik için sosyoekonomik durum veya kamp konumları arasında istatistiksel olarak anlamlı bir fark bulunmamıştır veya saha dışı sağlık hizmetleri için farklı sonuçlar gözlenmemiştir. Çalışmayı yapan ve yapmayan gruplar arasında önemli farklı sonuçlar gözlenmemiştir. Neredeyse tüm katılımcıların gelirleri giderlerinden düşüktü. Katılımcıların %79,4'ü sağlık tesislerine yaya olarak ulaşmaktadır, çoğu katılımcı (%83,7) ise tesislere 3 kilometreden daha uzun mesafelerden gitmektedir. Çoğu katılımcı, gereken hizmetleri alamamaktadır. Katılımcıların %94,2'si mevcut BOH'ları için gereken sağlık hizmetlerini alamamıştır. Görüntüleme tesislerinin eksikliği (%99,0), laboratuvar testleri (%75,0) ve uzman doktorların eksikliği (%43,1), istenilen sağlık hizmetlerine erişimde başlıca engeller olarak belirtilmiştir. Ücretsiz ilaçların mevcut olmaması ve cepten yüksek düzeyde yapılan harcamalar da sağlık hizmetlerine erişim için engeller olarak öne çıkmaktadır. Toplumsal damgalama (%20,2), hoş olmayan davranışlarla karşılaşma (%17) ve mevcut hizmetlere güvensizlik, BOH sağlık hizmetlerine erişimde başlıca engeller arasında yer almaktadır. Yakınlardaki alanlarda istenen hizmetler mevcut olmadığında, katılımcıların %76,3'ü sağlık hizmetlerine ulaşmak için uzun mesafeler katetmemektedir.

Anahtar Kelimeler: bulaşıcı olmayan hastalıklar, sağlık hizmetleri, ücretsiz ilaçlar, kamplar, Bangladeş'in Cox's Bazar bölgesi, Rohingya.

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LIST OF ABBREVIATIONS

AOR	: Adjusted Odds Ratio
CCCM	: Camp Coordination and Camp Management
CHE	: Catastrophic Health Expenditures
COPD	: Chronic obstructive and pulmonary diseases
COVID-19	: Coronavirus disease 2019
CVDs	: Cardiovascular diseases
EHR	: Electronic Health Record
FDMN	: Forcibly Displaced Myanmar Nationals
GOB	: Government of Bangladesh
HPs	: Health Posts
ICESCR	: International Covenant on Economic, Social and Cultural Rights
LMICs	: Low- and Middle-Income Countries
MHPSS	: Mental Health and Psychosocial Support
MUAC	: Mid-upper arm circumference
MSD	: Musculoskeletal disorders
NCDs	: Noncommunicable diseases
OCHA	: Office for Coordination of Humanitarian Affairs
PEN	: Package of essential noncommunicable diseases
PHC	: Primary Healthcare
SGD	: Sustainable Development Goals
SPSS	: Statistical Package for the Social Science
SAF	: Strategic Advisory Group
UHC	: Universal Health Coverage
UN	: United Nations

UNFPA	: United Nations Population Fund
UNICEF	: United Nations Children's Emergency Fund
UNOCHA	: United Nations Office for the Coordination of Humanitarian Affairs
WASH	: Water, Sanitation and Hygiene
WG	: Working Group
WHO	: World Health Organization

CHAPTER 1

1. INTRODUCTION

1.1. Background

Over recent years, non-communicable disease (NCD) have garnered significant attention toward the global health counterparts considering overall population mortality, morbidity, and economic burden due to the NCDs [1]. The World Health Organization (WHO) consistently warning about their devastating impact on global public health. The WHO reported that among the all deaths globally, NCDs are responsible for 74% of them which accounts approximately 41 million each year [2]. The impact is huge specially in the Low- and middle-income countries (LMICs), which contribute 86% of the total premature deaths among the population aged between 30 to 69 years old caused by the NCDs which equates approximately 17 million every year. Particularly the threat is significant among the population in refugee or humanitarian settings in LMICs where the resources are limited and financial constrains are always there [2].

According to WHO's counts, among all NCDs Cardiovascular diseases (CVDs) are the most common which is responsible for 17.9 million deaths of people in each year. The other major types of NCDs include cancers, chronic respiratory diseases and Diabetes which cause the global deaths of 9.3 million, 4.1 million and 2.0 million people respectively. Of all NCD, these four types of NCDs alone contribute to 80 percent of total premature deaths globally [2].

NCDs are the type of chronic, non-transmissible diseases or medical conditions, usually develops during a long period of time with a slow progression [3]. Unlike, infectious or communication diseases (CDs), neither NCDs transmission occur from person to person nor these are caused by vectors, infectious vector or via contaminated objects. Rather, a combination of risk factors like lifestyles, genetics, work and living environmental hazards, food, metabolic factors etc. are the results of the development of NCDs [3][4]. LMICs, where poverty cycle is omnipresent, and health system is fragile that ultimately leads to the factors that associated to the development of NCDs [5]. Moreover, inadequate resources for screening and treatment facilities results the rise and persistence of NCDs [6]. Presence of

NCDs among the population impacts negatively on their lives due to the loss of earning capability and disabilities resulted poor quality of lives, increasing mortality and morbidity that causes poverty cycle perpetuation [7]. In addition to that, in refugee and humanitarian contexts, specifically in LMICs, accurate measurements are absent due to several factors including the availability of testing resources, healthcare seeking behavior of the actual figures about NCDs etc.

One of the biggest challenges to contain the NCDs is inability to adopt the right treatment approach, both clinical and public health approach withing limited financial resources and inadequate healthcare infrastructure [6]. Since the management of NCDs is long term approach as well as costly, the political instability is also considered as one of the major barriers to adopt long term policies for NCDs especially in the LMICs [8].

To ensure the healthy life of the patients with NCDs as well as to reduce the risk to get further complications it is obvious for the population and patients to get access to proper healthcare that includes the accurate clinical treatment, needed care, regular follow-up at an interval, long term observation and adequate public health education. Hence the NCDs management approach is multidisciplinary, cost consuming and long term [9].

In past few years, considering the high rise and persistence of NCDs, there is a growing emphasis on the prevention, control, and management of NCDs by the global health concerns. WHO developed the Global Action Plan and set up a list of voluntary targets and intervention strategies to the countries to reduce the percentage of premature deaths associated to NCDs to 25% by the year 2025 [10]. However, the fundamental question about how the selection, implementation and adaptation of those intervention would be coped up in the humanitarian contexts with financial and resource-constrained environment where there has always been financial hardship within the camps and the host itself.

The global action plan for the prevention and control of noncommunicable diseases 2013-2020 categorically emphasizes on increasing the availability of health services for NCDs patients to a significant extend through strengthening of health system, enhancing the control and prevention measures, and addressing the fundamental social factors that associated to the development of NCDs through the Universal health coverage (UHC) and people centered Primary Healthcare. In other words, to reach the target of reducing NCDs related mortalities and morbidities, everyone should have to have the wide access to the

required health services in a timely manner. The Global action plan also covered the multidimensional approaches in terms of health promotion to combat NCDs including prevention, prevention, management, rehabilitation, and care [10].

In a humanitarian context, where the camps had been immediately established for the forcibly displaced population from another country origin in previously uninhabited hilly forest [11]; where the host country itself is suffering with fragile healthcare infrastructure [12], unavailability of desired human resources, inadequate supplies of medications and medical devices, the vulnerability for people suffering with NCDs in the camp settlement would increase due to their continuous need of treatment, medications and care for long term. In addition to that, the other fragile infrastructures including tiny tarpaulin and bamboo made shelters, no electricity supplies, lack of proper pathways, improper water, sanitation, and hygiene management would make cause the onset of NCDs among the population and make them more vulnerable for the existing patients. In the conflict situations, the healthcare providers usually are in a state pressure to manage the infectious diseases [13]. Furthermore, the infectious disease outbreaks including COVID-19 made the situation worsen and put more constrains on existing health system [14]. That led the health services associated to management of NCDs to be disrupted. Moreover, report said that the risk of death due to severe COVID-19 symptoms is higher among the population with NCDs. Additionally, in humanitarian context, considering the resource-constrained setting in LMICs, including financial shortcomings, with limited budget the humanitarian health community try to allocate more resources towards combating the outbreaks and infectious diseases. Hence, in health emergencies NCDs care is in the front to be fully or partially affected. All these factors associate an acute complication towards NCDs management and care, and would become more critical to deal with that higher burden of NCDs during the recovery phase after the outbreak [15][16].

1.2. Problem statement

For decades, the Rohingya, a Muslim minority group from Myanmar's Rakhine state, formerly known as Arakan state, have been facing extreme persecution and widespread human rights violations [17][18]. Following decades of state led violences and tortures a brutal attack targeting to cleanse the Rohingya population had been launched on 25 august 2017 where a massive numbers of Rohingya were forced to flee to neighboring Bangladesh

[19]. Following the inhumane atrocities that shocked the world, Bangladesh has opened its border with remarkable compassion and support towards the displaced Rohingya and offered temporary refuge by setting up the world largest makeshift camps for the refugees in the southern district of Coxs Bazar that is bordering to Rakhine state. The latest report from the United Nations High Commissioner for Refugees (UNHCR) indicates that the camp's population has reached 900,078 until April 2024 [20]. The United Nations (UN) symbolized the crisis as one of the fastest growing refugee crises considering the situation that include population overflow within the confined camps area, insufficient shelter spaces, outbreaks of communicable diseases and other natural calamities including monsoon and landslides etc. [21]. Approximately a million displaced Rohingya are now set to live across 34 separate camps where several ministries and authorities of Bangladesh along different national and international Non-Government Organizations (NGOs) and United Nations (UN) agencies are involved in the response effort [22].

To the extent of my knowledge, there has been no government statistics or research data showing the prevalence of NCDs among the Rohingya population in the Rakhine states before 2017 exodus. Only one study has been found that performed a retrospective study of the data of more than 52 thousand Rohingya patients that have been recorded in electronic health records (EHR), where it was observed the rate of adult hypertension and diabetes among the Rohingya attended in hospitals and primary heath posts was 14.1% and 11.0%, respectively [23]. The lack of statistical research immerses the global public health community to ignorance in all dimensions about the epidemiology, risk factors and baseline health attributes of Rohingya population in Bangladesh [24]. However, concern grows as there are increasing risk of NCDs like diabetes, cardiovascular diseases, hypertension, and other chronic diseases due to mental trauma, unhealthy lifestyle, sexual and gender-based violence, physical activities, and dietary pattern [25]. Besides, the unconsciousness about their chronic diseases and the recent COVID-19 outbreak made them more susceptible to chronic diseases [26].

For the healthcare, the entire Rohingya refugee population is dependent on local and International NGOs' health posts established for refugees within the camps [27]. Access to local clinics and hospitals are limited due to restrictions imposed by the local government. However, few Rohingya visit to local clinics and hospitals outside the camps with prior

permission but most don't access the opportunity due to the hassles related to obtaining permission, financial issue and other issues.

As of March 2024, Health sector reporting, a total of 56 implementing partner including international and local NGOs and UN agencies as well as 17 appealing partners are actively working for the health response [28]. In all 33 camps there are total of 113 health facilities including health posts, primary health centers, facilities with Comprehensive Emergency Obstetric and Newborn Care (CEmONC) services. Of them only 3 health facilities are with surgical facilities that is far beyond the minimal requirements set by the United Nations for Humanitarian emergencies [29][30].

In the latest health facility monitoring survey that had been published in 2022, the total health facilities are equipped with only 507 beds and 198 dedicated maternity beds, where the facilities are quite basic in those mobile healthcare stations. According to WHO, a very minimum required number of beds per 10000 population is 18 [30]. However, only 03 camps met the requirements, whereas the other camps are on scarcity.

Being deprived of formal legal status made the Rohingya in the Cox's Bazar camps more vulnerable to live, including extreme movement restrictions and are not permitted to legally work. Therefore, the entire population is dependent on the humanitarian support from their day-to-day support to health. The camp condition is insecure and violent, overcrowding led to lack of minimal privacy and Water, Sanitation and Hygiene (WASH) facilities are irregular and inadequate. Despite these factors, this vulnerable group resides in makeshift camps, relying entirely on external aid from entities like the United Nations (UN), the Government of Bangladesh (GOB), and various non-governmental organizations (NGOs). Despite the combined efforts of diverse national and international bodies, comprehensive reports on the refugees' overall health status are rarely available [31]. They experienced a range of communicable and non-communicable illnesses, alongside frequent accidents and injuries within their camps. The absence of sufficient provisions such as food, water, shelter, sanitation, and notably low levels of immunization seemed to converge, forming a perfect storm for their public health challenges that could result the surge of chronic diseases.

What exacerbates the situation more severe is the capability to fulfill the demanded budget by the health sector that is established to coordinate the Rohingya refugee health in Bangladesh. As of April 2024, according United Nations Office for the Coordination of

Humanitarian Affairs (UNOCHA), against the required 86,810,515 US Dollar for the health response only 2.9% of that has been secured. Since the beginning of influx there were always huge differences between the required amount and secured budget. For instances, the health sector secured 26.2%, 23.4%, 36%, 35.5%, 45.3%, 41.1% and 34.7% in the year 2023, 2022, 2021, 2020, 2019, 2018 and 2017 respectively [32]. In such budget constrain environment, efforts were given to manage the acute medical care and the accessibility to healthcare the NCDs patients were largely unmet.

The scenarios greatly impacted the NCDs healthcare services and accessibility to NCDs healthcare by the patients. Our research aimed to assess the accessibility to healthcare services and treatment for Rohingya population suffering with NCDs in the refugee camps in Bangladesh. The NCDs included in our study are diabetes, chronic obstructive pulmonary diseases (COPD), cardiovascular diseases and musculoskeletal disorders. The assessment of accessibility meant in our research was assessing physical accessibility, accessibility to services and medications, and accessibility to outreach health services that include health education and preventive awareness messages. The research will also briefly assess the effect of socioeconomic determinants, camps of resident and other obstacles to get access to health services for NCDs care and treatment. The findings could contribute to the global health community as a resource for future research and most importantly translating the outcomes into health policy and practice in refugee camp settings.

1.3. Justification of the study

Despite a high need of healthcare and health services, the global humanitarian health always remains underfunded and so do the refugee response in Bangladesh. There is lack of research to evaluate the prevalence of NCDs and to assess the baseline attributes to NCDs among the Rohingya population either in Myanmar or in Bangladesh. In statistical research it was found that a significant number of displaced Rohingya attending in hospitals and primary health posts in the camps in Bangladesh had Hypertension (14.1%) and diabetes (11.0%) [23]. On the other hand, the overall camp situation including casualties caused by ongoing hostilities, fragile healthcare infrastructure, inadequate and interrupted health facilities and posts, shelter and livelihood options, distribution of resources, preexisting NCDs, trauma and mental illness, gender and sexual violences, service disruptions due to financial constraints, skilled workforce turnover and all such risk factors contribute to onset

and raise of NCDs among the Rohingya refugees in Bangladesh's camps. Accordingly, to contain the NCDs and to reduce the co-morbidity, morbidity and mortality related to NCDs, the determination of behavioral risk factors as well as the establishment of most practical interventions are utmost needs in a humanitarian setting like Rohingya response in Bangladesh.

The present study will contribute to bring the obstacles that the Rohingya population are experiencing in accessing the NCDs healthcare and treatment in the Rohingya camps in Bangladesh into the limelight and, and contribute as a basis for the global humanitarian health workers on how these barriers may be overcome. It also aims to aid the programming authorities and the donors in making their further assessments to allocate the needful funds as well as the undertake the appropriate interventions to effectively tackle all the obstacles with limited resources and strengthening the health system by mainstreaming the NCDs treatment and services for the Rohingya refugees in Bangladesh.

1.4. Objectives

1.4.1. General objectives

Assess the NCD patient's accessibility to healthcare services and treatment in the Rohingya refugee camps in Bangladesh.

1.4.2. Specific objectives

The specific objectives are,

1. To determine the most common NCDs among the study participants.
2. To determine the types of the accessible healthcare settings.
3. To assess the accessibility to healthcare services and treatment for people with the identified NCDs in refugee camps in Bangladesh.
4. To assess the accessibility to healthcare services and treatment per type of the identified NCDs.
5. To assess the effect of the socioeconomic determinants on accessibility to healthcare services and treatment for people with the identified NCDs

6. To explore barriers affecting access to healthcare services and treatment for people with the identified NCDs.
7. To assess the NCDs care-seeking behavior for people with the identified NCDs who do not have access to the required healthcare services.

1.5. Hypothesis

H1: Cardiovascular diseases are the most common NCD among the study group.

H2: makeshift health posts within the camp boundaries are the main type of the accessible healthcare settings for people with NCDs.

H3: The accessibility to healthcare services and treatment for people with the identified NCDs is different among the camps locations.

H4: Socioeconomic determinants impact the people's accessibility to healthcare services and treatment in Rohingya refugee camps in Bangladesh.

H5: Unavailability of health services and cost of the medicines and transportation are some of the most important barriers for people with the identified NCDs to access healthcare services and treatment.

H6: People who do not have access to the required healthcare services will switch health facilities to get the required healthcare services.

H7: access to health education related to NCD care and self-prevention messages is rarely available throughout the Rohingya refugee camps in Bangladesh.

CHAPTER 2

2. GENERAL INFORMATION

2.1. Introduction

Among the major challenges towards the sustainable development goals (SGD) 2023 is to combat the surge of NCDs throughout the world. The 2023 agenda for sustainable development adapted target to reduce the premature (aged between 30 to 69) mortality contributed by four major types of NCDs to one third, and a brief global action plan had been adopted for the prevention and control of NCDs [33].

Population of LMICs are more prone to premature deaths accounting 85% of global premature death due to NCDs. In low-resource settings, the population below the poverty lines are more vulnerable to access to access to NCD care due to excessive cost of immediate and long-term management of NCDs, that further push more people below the poverty line [2]. In humanitarian settings in LMICs, including Rohingya refugee response in Bangladesh, where the health infrastructure is fragile and resource-constrained, the NCDs are on upsurge that could cause significant burden on overall humanitarian response in the camps.

NCDs, being a leading barrier to achieve 2030 SGDs, addressing and minimizing the associated risk factors is crucial for its control and prevention [34]. Again, the appropriate management of NCDs includes scope access to existing health services. Accessibility to health services refers to the opportunity to obtain access to health services in the existing healthcare settings, if they are available. The term “obtaining access” to health services is multidimensional that depends on wide ranges of factor just beyond physical proximity to healthcare facilities, rather overcoming challenges related to finances, infrastructure or organization, sociocultural norms, and other barriers that limits people’s ability to get health services when they need it [35].

In terms of NCDs care specially in humanitarian crisis contexts, includes but not limited to access to treatment, continuation of needful cares, including health education for self-management of NCDs and health promotion; all these elements are considered as crucial [36].

2.2. Healthcare system in Bangladesh

Bangladesh healthcare system is of pluralistic structure by its nature that involves four main actors, the government, private sector, NGOs and donor agencies. These fours attribute to shape its organization and operations. As per constitution, the primary operational responsibilities are mainly onto the government or private sector. By law, they are mandated for the policy settings in one hand, and on the other hand to provide a coordinated health services that include financial and human resource management for healthcare [37].

Unlike many developing countries who are making considerable progress to reach United nations 3rd SDGs, that is, to ensure healthy lives and health and wellbeing of all peoples regardless of ages, Bangladesh, being a Low- and Middle-income country (LMIC) is still facing diverse challenges to access to healthcare services [38]. In terms of hospital equipment and standard of caregiving there are noticeable disparities in between rural and urban areas or Bangladesh [39]. Moreover, the underfinanced healthcare system, lack of available health insurance and universal health coverages (UHC) causes high out of pocket expenditures (OOPE) that hits to 67% of total health costs in Bangladesh [40]. Considering the financial status and poor health services the rural population are more likely to experience challenges to access to healthcare and hence suffers more in common diseases including malnutrition, infectious and non-communicable diseases and child mortality [41]. According to Bangladesh Household Income and Expenditure Survey (2016), 25% of the total population of Bangladesh suffered of Catastrophic Health expenditures (CHE), while another 14% of Bangladesh population lived without healthcare services mainly due to treatment cost, lack of accompany or permission to healthcare, and the travel distance to health facilities [40].

For decades, the Primary healthcare (PHC) system have been standing as the stems of healthcare in Bangladesh with vast networks until Upzilla level. However, NCDs treatment and management remained at the end of the prioritization list in PHC. Rather, the acute medical conditions, more specifically infectious diseases and diseases related to parasite infestation has got the focus it its first line response. With a view to control the population growth and to reduce child and maternal mortality, a vast investment in terms of financial, technical and human resources has been deployed primarily toward family planning and maternal and child health, as a share of PHC system. However, the research revealed that none of the 126 studied PHC across the country are equipped to manage the found major

NCDs as per global standard [42]. Besides PHC, it is challenging to receive adequate, effective and timely mannered treatment and medical care at the secondary and tertiary level healthcare facilities and hospitals. The challenge is not only due to cost but also due to distance to reach. Many of the hospitals are accessible to the population who resides in the urban or city centers of the country [43].

2.3. Health Sector of the Rohingya refugee response

The government of Bangladesh is the ultimate accountable authority for the Rohingya response in Bangladesh. The overall refugee response is divided into eight sectors including education, food security, Health, Livelihoods and skill development, nutrition, protection, Shelter-CCCM (Camp Coordination and Camp Management) and WASH [44].

The health sector is equivalent to a health cluster according to the who Global health cluster guide and WHO is in the lead of Health Sector in the Rohingya refugee response in Cox's Bazar. The Health Sector comprising of a Strategic Advisory Group (SAG), Working Groups (WG) and Partners for its functioning [45].

Health Sector SAG strategic advisory group (SAG) led by WHO. The other permanent members include Civil Surgeon Officer, Ministry of Health and Family Welfare, Health Coordinator, Refugee Health Unit, Office of RRRC, UNHCR, IOM, UNFPA and UNICEF. Several national and international NGOs are included as appealing partners, implementing partners and strategic partners for the health response in Cox's Bazar [45].

Figure 2.1 Coordination of Health Sector in Rohingya Refugee Response in Cox's Bazar.

2.4. Healthcare infrastructure in the Rohingya refugee camps

For the healthcare, the entire Rohingya refugee population is dependent on local and International NGOs (non-government organizations) health posts established for refugees within the camps. Access to local clinics and hospitals are limited due to restrictions imposed by the local government. However few Rohingya visit to local clinics and hospitals outside the camps with prior permission but most don't access the opportunity due to the hassles related to obtaining permission, financial issue and other issues.

In the latest health facility monitoring survey that had been published in 2022, the total health facilities are equipped with only 507 beds and 198 dedicated maternity beds, where the facilities are quite basic in those mobile healthcare stations. According to WHO, a very

minimum required number of beds per 10000 population is 18. However, only 03 camps met the requirements, whereas the other camps are on scarcity (Figure 2.2).

Figure 2.2 Snapshot of availability of the in-patient beds in all camps per 10000 refugee population [29]

The shortage of staffs and human resources (doctors, nurses and midwives) in healthcare is high in all in the makeshift camps. Where the Sphere standard minimum of skilled healthcare staffs is 23 per 10000 populations in humanitarian response, only 04 camps have met the requirements [30]. In some camps has the gap is too huge to reach half of the population (Figure 2.3). However, no data has been obtained about the number of doctors, nurses or midwives individually.

Figure 2.3 Snapshot of availability of skilled staffs per 10000 populations in the makeshift camps. [29]

In the humanitarian responses like Rohingya refugee response where the fertility rate is very high, the necessity of Basic Emergency Obstetric and Neonatal Care (BEmONC) is crucial. However, in Cox's Bazar makeshift camps almost half of the area the BEmONC facilities are beyond minimum requirements (Figure 2.4).

Figure 2.4 Snapshot of comparison of BEmONC service availability vs. need. [29]

As per report, about half of the total health posts and primary healthcare centers are deprived of basic lab and diagnostic testing facilities. A long-term experience of oppression and genocide caused the Rohingya community to suffer with mental and psychosocial health issues. Unfortunately, up to date, only 43 health posts have a trained staff who can provide Mental Health and Psychosocial Support (MHPSS). In response to communicable and infectious diseases, the whole response has 141 isolation beds which is tend to no support in such extremely congested camp where the prevalence of such diseases is very high [29]. However, most of the health posts (90%) and PHC (93%) have available Mid-upper arm circumference (MUAC) screening facilities to measure nutritional deficiency. In all PHCs and 98% of all Health Posts (HPs) have at least one family planning methods are available as per monitoring survey as of march 2022. No data has been published from respective authority about the HIV detection facilities, but it is quite limited according to Hossain et al., 2023 [46].

2.5. Health financing for Rohingya refugee response

Since the influx of displace Rohingya after 2017 exodus, there is a crisis of funding to provide the required health services to the refugees. According to OCHA (Office for Coordination of Humanitarian Affairs) financial tracking service health sector could secure a maximum of 45.3% of total required fund in 2017 while it was as low as 23.4% in the year 2022 [47]. The data showed that health, water, sanitation and hygiene, and shelter and non-food items sector are the ones who receive the minimal percentage of funds against their requirements.

Table 2.1 Coverage of health funding against required funding by year (2017-2024), adopted from OCHA [47]

Year	**Required fund in $**	**Secured fund in $**	**Coverage % (Health sector)**	**Coverage % (Total response)**
2017	48,336,000	16,759,599	34.7%	72.5%
2018	113,086,292	46,478,001	41.1%	72.4%
2019	88,748,586	40,212,118	45.3%	75.3%
2020	85,606,112	30,411,750	35.5%	59.5%
2021	134,960,124	48,646,124	36.0%	73.1%
2022	110,843,179	25,920,585	23.4%	69.4%
2023	97,325,626	25,494,940	26.2%	65.3%
2024 (until April)	86,810,515	2,518,913	2.9%	16.5%

2.6. Literature review

2.6.1. Universal Healthcare coverage

The public health development in 20th century is largely due to the Alma-Ata declaration in 1978, which is considered as the major milestone that set up as base for discussion about modern health policies, universal health coverage and human health

development. The declaration firmly denies the gross inequalities that exists in developed countries and LMICs, and withing the countries in respect to receiving healthcare. Hence, health has been identified as a common concern for all the countries. The Alma- Ata Declaration presented in the International Conference on Primary Healthcare dignifies the core humanitarian values and make of background to discuss the form of Universal Health to be attained regardless of class different [48][49].

Further development was made to describe the right to health in a highest attainable manner which has been outlined in the article 12 of the International Covenant on Economic, Social and Cultural Rights (ICESCR), that set out four standardized characters to assess the right to health as follows [50]:

Availability: availability of appropriately functioning healthcare services and products with enough to cover its population, and proper public healthcare system within the particular state.

Accessibility: the available healthcare system including the products, facilities and services needs to be accessible without any obstacles indiscriminately to its population, which means none of the patients with its jurisdiction would be discriminated to access the healthcare. Accessibility is further explained as physical accessibility, no discrimination, financial accessibility (affordability) and information accessibility.

Acceptability: within its jurisdiction all the available health settings must compatible to medical ethics and not culturally sensitive, that is, respectful toward multidimensions of culture including individuals, diverse communities, minorities and genders.

Quality: good quality refers to providing scientifically and medically proofed healthcare services in addition to being respectful toward the service seekers. Along with good facilities, skilled healthcare personnels, adequate and unexpired medications and medical instrumentations are inevitable part of a good quality health system.

2.6.2. Definition of access to healthcare in general

Access to healthcare is expressed by the interference between the health system and its community within its territory. Accessibility varies from country to country, communality to community [51]. Levesque et al. (2013) [52] reviewed several definitions and came into

a point to describe access to healthcare as "the opportunity to reach and obtain appropriate health care services in situations of perceived need for care." In the review the authors identify access as an opportunity of the care seekers that evaluates the possibility to a set of events to the care seekers including identifying the health needs to using of appropriate health services as seen in the Figure 2.5, and at the same time the tendency of providers to offer needful care. Hence accessibility starts from the availability of physical resources, seeker's ability of need identification and acceptability to the existing healthcare system to the utilization of services that is being appropriately offered by the provider's end.

Figure 2.5 Access to healthcare presented by Levesque et al. (2013) [52]

Here are several definitions which have been reviewed by Levesque et al. (2013)

Table 2.2 Definition of "access" and its dimensions [52]

Authors	Definition	Dimensions
Bashshur et al., 1971	Accessibility as the functional relationship between the population and medical facilities and resources, and which reflects the differential existence either of obstacles, impediments and difficulties, or of factors that are facilitators for the beneficiaries of health care	
Donabedian, 1973	Accessibility comprising the concept of degree of adjustment between resources and populations	
Salkever, 1976	Accessibility combining attributes of the resources and attributes of the population	Financial accessibility
		Physical accessibility
Aday & Andersen, 1974	Access as entry into the health care system	Predisposing factors
		Enabling factors
		Need for health care
Penchansky & Thomas, 1981		Affordability Accessibility
		Accommodation
		Availability
		Acceptability
Dutton, 1986	Utilisation viewed as the product of patients characteristics plus provider and system attributes	Financial
		Time
		Organizational factors
Frenk, 1992	Access as the ability of the population to seek and obtain care	

Authors	Definition	Dimensions
	Accessibility is the degree of adjustment between the characteristics of health care resources and those of the population within the process of seeking and obtaining care	
Margolis et al., 1995	The timely use of personal health services to achieve the best possible outcomes.	Financial
		Personal
		Structural
Haddad & Mohindra, 2002	The opportunity to consume health goods and services	Availability
		Affordability
		Acceptability
		Adequacy
Shengelia et al., 2003	Coverage: probability of receiving a necessary health intervention, conditional on health care need	Physical access
		Resource availability
	Utilization: quantity of health care services and procedures used	Cultural acceptability
		Financial affordability
		Quality of care
Peters et al. 2008	Access viewed as including actual use of services. A clear emphasis is given to consider both users and services characteristics in evaluation of access. The notion of fit between users and services is identified.	Quality
		Geographic accessibility
		Availability
		Financial accessibility
		Acceptability of services

2.6.3. Integration of NCD care into Primary Healthcare

Considering the vulnerability towards combating NCDs by LMICs, in the year 2010 WHO introduced the WHO Package of essential noncommunicable (WHO PEN) for primary healthcare in resource constrained settings. The intervention is cost effective, comprising cheap technologies for the early detection and diagnosis of NCDs, which allows the users to undertake affordable modification of NCDs risk factor and access to inexpensive medications for four major NCDs including cardiovascular disease, diabetes, asthma and cancer. These interventions ultimately introduced to reduce the NCDs treatment related cost and hence improve the living quality and productivity [53].

Diversity of factors make prevention, control and management of NCDs challenging in the humanitarian setups. The factors range from but not limited to the demography of the affected community, type of crisis, as well as the type and characters of NCDs. Considering the humanitarian emergency where the health services is disrupted, and the NCDs patients are the ones that affected greatly, in 2020, the group of NCD care in Humanitarian settings led by UNHCR developed the operational guideline for the integration of NCD care in Humanitarian settings. The major NCDs targeted in the guideline were DM, CVD and hypertension, asthma and COPD. However, mental health disorders were not prioritized in the guideline for the crisis settings, rather it had been focused in a separate guideline named the mhGAP Humanitarian Intervention Guide (WHO and UNHCR Mental Health Gap Action Programme MhGAP Humanitarian Intervention Guide) [54].

2.6.4. Global Action Plan for the control and prevention of NCDs

The very first global action plan for the prevention and control of NCDs 2013-2020 was adopted in 66th world health assembly that was held in 2013. The major focus of the action plan was the cost-effective interventions to prevent and control the major NCDs. In 72nd World Health Assembly the global leaders endorsed to extend the roadmap to 2030. In 2013 the baseline was set the reduce 25% of premature mortality by 2025, setting 8 other voluntary global targets. The voluntary targets included 1) considering the appropriateness of the national context, a minimum 10 % reduction of alcohol consumption, 2) at least 10% reduction of physical inactivity, 3) in mean population, a minimum of 30% salt intake, 4)

among the population aged 15+ years, at least 30% reduction of tobacco use, 5) the raised blood pressure reduction to 25%, and sustain the reduction, 6) stop the raise in diabetes induced obesity, 7) for the prevention of stroke and heart attack, at least 50% eligible population to get counselling and drug therapy, and 8) the healthcare facilities with 80% availability of medical equipment and essential medicines.

In 72nd assembly the amended global action plan for the prevention and control of NCDs 2013-2030 set a new mortality target to 33% of reduction of NCDs associated premature deaths, however, the other baseline target remained continued with slight modification. Considering the global trends and contexts, two other voluntary targets were amended, including reduction of harmful alcohol consumption to 20% and a 15% decrease in physical inactivity [55].

CHAPTER 3

3. MATERIAL AND METHOD

3.1. Study design

The study was a community based cross-sectional study. It was conducted by on face-to-face interviews with the participants with self-reported selected chronic diseases in refugee camp settings.

3.2. Study location

The makeshift camps for the Rohingya refugees are distributed in the Ukhiya and Teknaf Upzila of the Cox's Bazar District of Bangladesh. Among all 34 camps most of them are in Ukhiya Upzila, namely Kutupalong and Balukhali Area. The location of the study was in 25 makeshift camps distributed within Ukhiya Upzila as shown in the Figure 3.1.

Figure 3.1 Study location

The identified Upzila constitute the highest numbers of makeshift camps. These locations have been chosen due to their accessibility and availability of the data collectors. Additionally, the identified camps have the highest number of displaced populations.

3.3. Study population

The study population included the residents of selected camps reached by the data collectors, registered under UNHCR, male and female adults (≥18 years old), self-reported patients with any of the selected four types of noncommunicable diseases; cardiovascular diseases (CVD), chronic obstructive pulmonary diseases (COPD), diabetes mellitus (DM) and musculoskeletal disorders (MSD).

3.4. Sample size determination

The sample size will be calculated using the following formula: $n=\frac{n}{1+\frac{z^2\times p(1-p)}{d^2 N}}$ n, desired sample size. z, standard normal deviate, set at 1.96 corresponding to the 95% confidence level. d, degree of accuracy desired (Margin error), set at 0.05. P, the accessibility to treatment for people with NCDs in Rohingya makeshift camps in Bangladesh which was estimated 50% and N is the total population in of the study area in the Rohingya makeshift camps in Bangladesh, which was 746,644 as of November 2022. Therefore, the calculated value of sample size n is 385. We added 10% of the total sample size in case some patients would not like to participate, then the total sample size was (385*0.10) +385 = 424 which was the minimum sample size we could choose from the study population.

Provided 25 Rohingya makeshift camps in the study area, we had different population sizes, we divided 2 areas namely Kutupalong and Balukhali, comprising all 25 camps based on the accessibility and availability of the data collectors. we used proportion sampling to select study participants from each cluster. Therefore, a total of 430 respondents were planned for the study area.

3.5. Sampling techniques

To ensure representation of study population, using of stratified random sampling method the participants with self-reported NCDs were selected from two different areas consisting 25 Rohingya makeshift camps. All the blocks were enlisted from each selected camps, and from each camp randomly selected proportionate numbers of blocks. The first household at the reaching point of the block was selected as the starting point and from there other respondents were identified using snowball sampling method.

In Coxs bazar, a camp is made up several blocks; and a block includes multiple subblocks. For the identified households we checked if there is more than one self-reported NCD patients. In that case we offered them to choose one among them based on their comfortability. We predefined the number of male and female so that the gender was included proportionately.

The number of residents in the selected camps at the time of study design was obtained from UNHCR population infographic and the number of participants was determined as the proportion of the residents as below:

Table 3.1 Study sample by camps in Cox's Bazar District of Bangladesh.

Camps	Upzila	Camp location	Total population	% of total population in study area	Total collected sample
1E, 1W, 2E, 2W	Ukhiya	Kutupalong	132677	17.8	77
3, 4, 4E	Ukhiya	Kutupalong	79868	10.7	46
5, 6, 7	Ukhiya	Kutupalong	92133	12.3	54
8E, 8W, 9, 10	Ukhiya	Balukhali	130267	17.4	76
11, 12, 17, 18	Ukhiya	Balukhali	108736	14.6	62
13, 19, 20, 20E	Ukhiya	Balukhali	89911	12	51
14, 15, 16	Ukhiya	Balukhali	113052	15	64
Total					430

3.6. Inclusion and exclusion criteria

3.6.1. Inclusion criteria

People from the identified camps, only camp residents, registered as Rohingya of forcibly displaced Myanmar nationals (FDMN) under UHNCR were included as our study population.

Patients who reported to have one or more type of the four selected noncommunicable diseases including DM, CVD & hypertension, COPD and Musculoskeletal disorders (MSD), and;

- Reachable by the data collector in the identified camp area during their visit.
- Who give consent to participate will be included in the study.
- Equal or above of 18 years old.

3.6.2. Exclusion criteria

The exclusion criteria of the People with the any of the selected NCDs are as follows:

- People who were not willing to participate, or
- patients with severe condition/ non responsive,
- cannot answer the questions were excluded.

In addition to that, people who were living outside the identified camps, but visitors during the time of interview also were excluded.

3.6.3. The questionnaire and pre-testing

In order to meet the desired aim of the study, the questionnaire was prepared based on Rohingya refugee camp context in Bangladesh, by reviewing the previous literatures and studies done by other researchers and NGOs in humanitarian camp settings, as well as my knowledge about NCDs and access to healthcare services the makeshift camps in Bangladesh.

The questionnaire comprises two parts. In the first part, it contains the demographical characteristic including age, gender, employment status, location of shelter, marital status, educational background, means of financial status, type of existing NCD(s) and treatment, as well as family history of NCDs. On the other hand, the second part is more about assessment focused questionnaires comprising assessing available services, accessibility to several types of existing services/facilities; access to health set up including access to diagnostic services by mean of specialized doctors for the type of diseases, lab and imaging facilities etc.; access to treatment- in camp settings or local, primary and more, access to needful medications with or without cost and assessing the health promotion and outreach/mobile health services.

Feedback was collected from the personnels from UN Agency specialized in camp data collection for programming and needful modification was made. The modified questionnaire was then translated into Rohingya language and shared to the team of Rohingya data collectors to evaluate the comprehensiveness and linguistic accuracy. After that, data collectors collected few data with the established questionnaire and when it was seemed that all parts of the study were covered, the final data collection had started.

3.7. Variables

3.7.1. Independent variables

Age: age groups 18-44 years old, 45-65 years old and 65+ years group; Gender: male or female; employment status: employed or not employed; mean of livelihood: self-earning/employed, humanitarian support, family member's earning or other. Place of residence: camp number. Marital status: married, single, widowed, or divorced/separated. Economic status: income is higher than spending, income is lower than spending, or income equals to spending. Educational status: no education, primary school, secondary/high school, university education. Type of the NCD: cardiovascular diseases, chronic respiratory diseases, and diabetes and musculoskeletal disorders.

3.7.2. Dependent variables

Accessibility to the healthcare services and treatment for existing NCD(s). Accessibility refers to all dimensions of accessibility including physical accessibility, accessibility to existing services, medications, accessibility to mobile medical services and health promotion including preventive awareness/education messages.

3.7.3. Data collection method

To obtain the required approval to access and conduct the research in the Makeshift camps for the Rohingya refugees in Bangladesh, the researcher contacted the office of RRRC (Refugee, Relief and Repatriation Commission), the responsible authority assigned by the government of the Bangladesh and submitted required documents explaining the purpose, methods and participants for the study. After obtaining approval from RRRC, the researcher recruited two (02) enumerators with previous experience of survey data collection and familiar with the KOBO data collection tool. The researcher trained the enumerator on different aspects of survey data collection including informed consent, safe spaces, KIIs (key informant interviews), FGD (Focused group discussion) etc. The enumerators were explained with the purpose of study and methodology of the research and introduced to KOBO data collection tool with established questionnaire.

The questionnaire adopted to KOBO toolbox, deployed and shared to the enumerators KOBO toolbox account. The data collection was done in the months of November and December in the year 2023 by mean of face-to-face interviews. The collected information by the enumerators using kobo toolbox android application, it directed to the researcher KOBO account. Throughout the data collection period, the researcher had a regular contact to the camps, to ensure that the data was being collected following predesigned criteria. At the end, all the data had been exported to excel for analysis.

3.8. Statistics analysis

Data of 430 respondents from the Kobo Toolbox software was retrieved into an MS Excel sheet and transferred to SPSS version 20 for analysis. Findings are summarized in terms of frequencies, using descriptive statistics. The possible association between

dependent and independent variables were analyzed using bivariate analysis chi-square test. Subsequently, a multivariate logistic regression analysis was conducted to mark out potential predictors among the independent variables that impact on the accessibility to services and treatment for individuals with noncommunicable diseases. Odd ratio significance assessment was carried out at 95% confidence interval level where p values < 0.05 will be identified as statistically significant.

3.9. Strength and limitation

3.9.1. Strength

To the best of my knowledge, the study is the first to examine the NCDs patients' accessibility to healthcare services and potential barrier in among the Rohingya population in Bangladesh's camps, that is previously underexplored or overlooked issue of public health in the area of research. The ratio of the male and female participants in the study was almost 1:1, which means both males and females experiences were equally heard. Detailed and extensive data had been collected using trained and experienced enumerators in this study, which added additional credibility of the collected dataset.

3.9.2. Limitation

To note, due to geographical obstacles and hazard associated to required approval few camps in Teknaf Upzila and newly settled Bhasan Char had been excluded from the study. No self-reporting cancer patients had been found due to the limitations of diagnostic facilities within the camps or nearby local hospitals. Hence cancer had been excluded from the type of NCDs. Though the stratified random sampling is more representative in this kind of setting, however, due to geographical landscape and the situation of health facilities, the healthcare situation might be varied from camp to camp.

3.9.3. Ethical consideration

Ethical clearance for this study was obtained from the ANKARA YILDIRIM BEYAZIT UNIVERSITY (AYBU) HEALTH SCIENCE ETHICS COMMITTEE with the registration number (14.06.2023/06-305). The permission to conduct data collection was

obtained from the RRRC, the responsible camp authority in Bangladesh. Before the data collection process commenced, the study's purpose was explained to the participants, and permission was granted. All participants provided written informed consent before participating in the study. In order to protect the participants identity no name, shelter ID had been collected, as it was informed that their identity would be kept confidential and our policy to do no harm to any research participants. They interviewers did the community sensitization informing them that they research outcome neither would harm or damage them individually nor the community at large.

CHAPTER 4

4. RESULTS

4.1. Descriptive statistics

The study aims to evaluate the Non communicable diseases (NCDs) patients' accessibility to healthcare services and treatment facilities among the refugees who are residing in the Rohingya refugee camps in the cox's Bazar District. Additionally, the research compared the residents of different camps as well as tried to assess the most experiencing barriers to get access to the healthcare services and treatment. A total of 430 respondents from 25 different camps in cox's Bazar district of Bangladesh have responded in this study. In this chapter the results obtained in the analysis will be presented accordingly.

4.1.1. Socio-Demographic Characteristics of Respondents

All 430 respondents in the research have self-reported to have at least one of the four identified non communicable diseases. According to the obtained results, most of the respondents were from age group 45 years and above accumulating a 67.2% of total participants, as presented in Table 4.1. Among the respondents the minimum and maximum ages were 18 years old and 90 years old, whereas the mean age was 50.25 (STD=14.66).

According to our findings, 58.6% of the total study participants reside in the camps located in Balukhali area of Ukhiya Upzila and the remaining 41.4% were the residents of the camps located in Kutupalong area of the same Upzila. The number of male respondents was 218 which was 50.7% of the whole. 83.3% of the total participants were married followed by 13.7% widowed in this research.

A very few (55) among the study population were employed, accounting of 12.8% of all, while the remaining had no sources of income. While asking about their mean of livelihood, several respondents have chosen multiple sources as their mean of living, where 419 responded "humanitarian support" as their mean of livings, that comprising 64.1% of the total 654 responses for that query. Interestingly a 100% of the respondents expressed their income was lower than their needed expensed during the time of interview.

Regarding the educational attainments, 69.1% of the total study population were uneducated while only 1 participant went to university for higher education. Among the remaining respondents 21.3% went to either a primary school or Maktab (basic religious education institute).

Table 4.1 Socio-Demographic Characteristics of Respondents (N=430)

Variables	Categories	Frequency	Percentage (%)
Camp Location	Kutupalong	187	41.1
	Balukhali	252	58.6
Age group	18-44 years old	141	32.8
	45-65 years old	222	51.6
	65+ years old	67	15.6
Gender	Male	218	50.7
	Female	212	49.3
Marital Status	Single	6	1.4
	Married	358	83.3
	Divorced/ separated	7	1.6
	Widowed	59	13.7
Employment Status	Not Employed	375	87.2
	Employed	55	12.8
Mean of Livelihood*	Self-earning/employed	71	10.9
	Humanitarian support	419	64.1
	Family member's earning	150	22.9
	other	14	2.1
Economic Status	Income is lower than the expenses	430	100.0
	Income is higher than the expenses	0	0.0
Educational Attainments	No education	300	69.8
	Primary school	81	18.8
	Middle/high school	25	5.8
	University education	1	.2
	Basic religious study/ Maktab	13	3.0
	Advanced religious study	7	1.6
	Other	3	.7

*Participants made multiple responses

4.1.2. History of the chronic diseases

All 430 respondents of the study reported to have at least one of the four types of identified noncommunicable diseases. As per Table 4.2, more than half for the respondents (55.8%) have more than one type of selected NCDs. Considering the family history, 14.7%

of the total respondents shared that they have other family members in the same households with at least one of the four types of NCDs. It is worth mentioning that, a total of 273 of 430 participants mentioned that, their NCDs had been diagnosed after arriving into Bangladesh, that is within the last five years.

Table 4.2 Personal and family history of NCDs (N=430)

Variables	Categories	Frequency	Percentage (%)
When did the disease(s) has been diagnosed?	Less than 1 year	10	2.3
	1 to 5 years	263	61.2
	More than 5 years	157	36.5
How many types of NCDs?	Only one	190	44.2
	More than one	240	55.8
Family History of NCDs in the same household	No	367	85.3
	Yes	63	14.7

4.1.3. The most common NCDs among the study group

From all 430 respondents we received a total of 737 response where 240 participants responded to have multiple diseases. As shown in the Figure 4.1, most of the respondents were suffering from musculoskeletal disorder (65.8%) followed by diabetes mellitus (58.4%). The percentage responses from study population for COPD and cardiovascular diseases was 32.3% (n=251) and 14.9% (n=64) respectively.

Figure 4.1 The most common NCDs among the respondents (n=430). *Some participants made multiple responses.

4.1.4. Types of the accessible healthcare settings

With multiple responses, 87.5% of total respondents identified makeshift hospitals/clinics inside the camps as one of the means of available health setups (Figure 4.2). Surprisingly more than half of the respondents (59.4%) mentioned that they access to private pharmacy for their treatment and another 43.8% goes to traditional healers. Other types of accessible health care settings for the treatment and care of their existing NCDs obtained from the responses were local hospitals (42.8%), mobile clinics (19.5%) and local doctors (29.1%) inside the camps (quack doctors), which have been mentioned as one of their ways to access to treatment.

Figure 4.2 Types of the accessible healthcare settings. *Some participants responded multiple.

4.1.5. Availability of healthcare services for the existing NCDs

As it is represented in Figure 4.3, while questioned about the availability of health services to access to health services in their area for their disease(s), only 4% of the respondents replied that they have access to health facilities all the time they needed for their respective NCDs. Among them, 92.8% respondents mentioned that they have access but not all the time they were in need. Remaining 14 participants accounting 3.3% said that they didn't have an access by any mean for the treatment and care for their identified NCDs.

Figure 4.3 Availability to access to health services.

4.1.6. Mean used to access health facilities

Figure 4.4 clarifies that, among the participants (N=416) who had access to health services, fully or partially, only one of them used own vehicle to reach the available healthcare facility. Almost all participants have chosen walking as a mean to reach health facilities to access services. Besides walking, another 20.4% respondents used public transportation although this form of transportation is not well organized within the camps.

Figure 4.4 Mean of access to health settings (N=416) *Participants made multiple responses

4.1.7. Distance and maximum time to access healthcare settings

The fragility of infrastructure and transport system in the camps could be observed from the obtained data that has been represented in Table 4.3. From all the responses, 83.7% of the cases the nearest available health facilities are located at the distance more than 3 km. Only 13 respondents mentioned that they have available health facilities to access within 2 km from their shelters. Another 10% respondents reported to have an accessible health facility at a moderate distance of 2-3 km from their place of residence.

Considering the distance of health facilities and mean of transportation used to reach the health facilities it is assumable that the time required to reach the health facilities would be longer. According to table 4.3, only 14 of the respondents could be able to reach to the health facilities within 30 minutes from their place of residents, while the majority required more than 60 minutes to physically reach to the health settings. Another 8.8% respondents could reach to the nearest facility within 30-60 minutes.

Table 4.3 Types of the accessible healthcare settings by residency (N=416)

Variable	Category	Frequency	Percentage (%)
Distance to the accessible health settings	Less than 2 km	13	3.0
	2-3 km	43	10.0
	More than 3 km	360	83.7
Maximum time to reach the accessible health settings	Less than 30 minutes	14	3.3
	30-60 minutes	38	8.8
	More than 60 minutes	361	84.0

4.1.8. Accessibility to healthcare services

Of all 430 respondents who had fully or partially access to health services, or no access, while asked whether they could receive all the required services for the treatment and management of the identified NCDs, 94.4% of them reported not having the required services. Another 5.6% mentioned they could access the all the services they required (Table 4.4).

Table 4.4 Access to the required health services by location

Variable	Categories	Frequency		Total
		Kutupalong (n=178)	Balukhali (n=252)	
		Respondent n (%)		
Access to the required healthcare services	No	170 95.5%	236 93.7%	406 94.4%
	Yes	8 4.5%	16 6.3%	24 5.6%

Regarding the types NCDs, all have the similar accessibility to healthcare regardless of type of NCDs. As high as 6.7% of the patients with CVD mentioned to get access to all services required, while only 4.9% of the patients with DM gets all the health services required.

Table 4.5 Accessibility to healthcare services by type of the NCDs

Variable	Category	Frequency				Total
		CVD N=60	DM N=244	COPD N=136	MSD N=272	
		Respondent n (5%)				
Accessibility to required healthcare services	**Yes**	4 (6.7%)	12 (4.9%)	8 (5.9%)	15 (5.5%)	24 (5.8%)
	No	56 (93.3%)	232 (95.1%)	128 (94.1%)	257 (94.5%)	392 (94.2%)

4.1.9. Missing services in the accessible health settings

A total of 926 responses have been observed from 430 study population about the missing services that make them feel complicated to get access to healthcare services for the identified NCDs. Interestingly, 99% of the respondents reported about the unavailability of imaging services, while 75% of the respondents mentions that the lab testing services is missing in the available health facilities. More than 40% of the participants believed that there were no specialized doctors for their diagnosed NCDs. Complications to get treatment

and unavailability of medications have been chosen by 6.6% and 12.5% of the total respondents accordingly as the barriers to accessibility (Figure 4.5).

Figure 4.5 Missing services in the accessible health settings

4.1.10. Accessibility to outreach health services

In the fragile settings, for the management of NCDs the outreach health services are considered as an integral part. Unfortunately, in the Rohingya response at Cox's Bazar district of Bangladesh the outreach health services targeting NCDs patients is far beyond expectation. Only 5 respondents reported that they had been visited by a mobile medical team. Almost all the respondents (98.1%) didn't also attend any of the health education or awareness message (Table 4.6).

Table 4.6 Accessibility to outreach healthcare services by place of residency (N=430)

Variable	Categories	Frequency		Total
		Kutupalong (n=178)	Balukhali (n=252)	
		Respondent n (%)		
Attending any health education/awareness message	No	174	248	422
		97.8%	98.4%	98.1%
	Yes	4	4	8
		2.2%	1.6%	1.9%
Have you been visited by a mobile medical team?	No	177	248	425
		99.4%	98.4%	98.8%
	Yes	1	4	5
		.6%	1.6%	1.2%

4.1.11. Sources of the required medications

One of the most critical requirements regarding the management of NCDs is access to medications in timely manners. According to the Figure 4.6, it is noteworthy that 2.3% of the total participant having one or more types of selected NCDs didn't have any access to medications. Being fully supported on humanitarian aids, 91.2% of the respondents rightly chose NGO supported health facilities within the camps as the top source of medicine. However, besides, 72.8% participants depend on private pharmacy for their medication, where they need to buy it. Private hospitals/ clinics has also been chosen as a source of medication by some respondents (6.0%) as per Figure 4.6.

Figure 4.6 Sources of required medications

4.1.12. Accessibility to free medications and treatment

According to the obtained data, only 5.8% of the total study population have an uninterrupted access to medication, and is free of payment (Table 4.7). Of the total participants, 7.7% mentioned that they never receive medications for free, and the remaining 86.5% of the total study population occasionally receive medications for free of charges.

The study found that, 350 respondents had to buy medications from which 61.8% needed to pay some less than 2000 BDT (Bangladeshi Taka), while other 35.7% spent 2000-5000 BDT every month. Some 2.5% respondents had to expense more than 5000 BDT every month which is quite difficult in camp set up.

Table 4.7 Accessibility to free medications by place of residency

Variable	Category	Frequency		Total
		Kutupalong	Balukhali	
		Respondents n (%)		
Free Medication (n=430)	No	11 6.2%	22 8.7%	33 7.7%
	Yes, all the time	12 6.7%	13 5.2%	25 5.8%
	Yes, but not all the time	155 87.1%	217 86.1%	372 86.5%
How much do you pay monthly for Medication Monthly? (n=350)	Less than 2000 BDT	47 39.5%	154 74.8%	201 61.8%
	2000-5000 BDT	66 55.5%	50 24.3%	116 35.7%
	More than 5000 BDT	6 5.0%	2 1.0%	8 2.5%

As per Table 4.8, although 14.1% of the CVD patients received free medications regularly, but more than 80% of the patients of that type required to spend moderate to high amount of money (more than 2000 BDT) for their medications.

Table 4.8 Accessibility to free medications by type of NCDs

		Frequency				Total
		CVD	COPD	DM	MSD	
Variable	Category	Respondents n (%)				
Free Medication (n=430)	No	11 17.2%	8 5.8%	19 7.6%	27 9.5%	33 7.7%
	Yes, all the time	9 14.1%	10 7.2%	14 5.6%	16 5.7%	25 5.8%
	Yes, but not all the time	44 68.8%	121 87.1%	218 86.9%	240 84.8%	372 86.5%
How much do you pay monthly for Medication? (n=325)	Less than 2000 BDT	6 15.8%	62 59.6%	109 56.5%	115 56.7%	201 61.8%
	2000-5000 BDT	26 68.4%	37 35.6%	78 40.4%	81 39.9%	116 35.7%
	More than 5000 BDT	6 15.8%	5 4.8%	6 3.1%	7 3.4%	8 2.5%

Again, while questioned for the percentage of the free medications they received compared to their needs, 99.7% of the participants mentioned that more than half of the medicine that required they don't get for free. Hence, they received lesser than half of the

required medications for the treatment of their existing NCDs. Accordingly, 85.1% participants eventually had to pay to visit to a doctor for their NCDs.

Table 4.9 Accessibility to medication

Variable	Categories	Frequency		Total
		Kutupalong	Balukhali	
		Respondent n (%)		
How much of the required medicine you don't receive for free? (n=395)	Less than 50%	1	0	1
		.6%	0.0%	.3%
	More than 50%	160	234	394
		99.4%	100.0%	99.7%
Do you have to pay to visit a doctor for treatment? (n=416)	No	35	27	62
		20.6%	11.0%	14.9%
	Yes	135	219	354
		79.4%	89.0%	85.1%

Since majority of the participant didn't receive the full course of required medication, moreover, more than 80% of the responded required to pay for a visit to the doctor for their existing NCDs, the next question aroused how they did manage to finance for their treatment. According to the obtained data it was explored that, almost half of the participants used to sell non-food items (NFIs), while another 5.6% of the participants sold food rations for pay the treatment and medication costs. The cash for work (CFW) money (7.3%), other family member's income (17.6%) and other types occasional income (21.7%) were listed as the sources of treatment and medication financing by the participants (Figure 4.7).

Figure 4.7 Sources of finances for medication and treatment

4.1.13. Barriers to accessing healthcare services

As per Figure 4.8, stigma, or a feeling of not being able to access the healthcare services is the dominating reason that barred them to seek access to services that accounted 20.0% of the total responses. It has further been rectified as 17% of the respondents mentioned that they had experienced unpleasant or bad behaviors in the facilities, while another 11.9% participants expressed trust issues about the existing health services in the camps. 14.6% study participants thought that there were no health services available for their types of NCDs, and another 11% mentioned about lack of specialized services as one of the barriers to access the healthcare services. a significant number of respondents brought the security issue (10%) as an obstacle to get access to healthcare. Additionally, medication cost, cultural reasons, language barrier and lack of information about the health services in the camps have been identified as potential reasons that stopped them to seek access to healthcare.

Figure 4.8 Barriers to access healthcare services

4.1.14. NCD care – seeking behavior

More than three quarters of the respondents didn't access to or didn't have a chance to seek access other options for the treatment of their identified NCDs. However, 23.7% of the participants said they travel to a long distance to seek the access to get required services for their diseases (Table 4.10).

Table 4.10 NCD care – seeking behavior (N=430)

Variable	Category	Frequency	Percentage (%)
NCD care-seeking behavior for the services that are not available withing the area they reside.	I don't access	328	76.3
	Travel to get access- long distance	102	23.7

4.1.15. Bivariate analysis

We run Correlation Pearson chi-square test to determine if there was any association between the dependent and independent variables. In the test result represented in Table 4.11, the association between the socioeconomic variables and accessibility to healthcare services was determined, where p-value < 0.05 is considered statistically significant.

As per analysis result obtained from the Chi-square, the differences were significant among the participants of different marital status to access to healthcare services (p=0.000). however, the different was not statistically significant among the age groups to accessibility to health services. Indeed, other that marital status, no other associations had been observed between camp location, gender, employment status, income status or educational attainment with the access to health services.

Table 4.11 The association between socioeconomic variables and Accessibility to healthcare services (N=430)

Variable	Category	Frequency		Total	Chi - square	*p - value*
		No (n=406)	Yes (n=24)			
		Respondents n (%)				
Camp Location	Kutupalong	170 (41.9)	8 (33.3)	178 (41.4)	0.409	0.273
	Balukhali	236 (58.1)	16 (66.7)	252 (58.6)		
Gender	Male	207 (51.0)	11 (45.8)	218 (50.7)	0.241	0.624
	Female	199 (49.0)	13 (54.2)	212 (49.3)		
Age	18-44 years old	130 (32.0)	11 (45.8)	141 (32.8)	2.321	0.313
	45-65 years old	213 (52.5)	9 (37.5)	222 (51.6)		
	65+ years old	63 (15.5)	4 (16.7)	67 (15.6)		
Marital status	Unmarried	6 (1.5)	0 (0.0)	6 (1.4)	19.443	0.000*
	Married	341 (84.0)	17 (70.8)	358 (83.3)		
	Divorced/ separated	4 (1.0)	3 (12.5)	7 (1.6)		
	Widowed	55 (13.5)	4 (16.7)	59 (13.7)		
Employment Status	Not Employed	354 (87.2)	21 (87.5)	375 (87.2)	0.965	0.631
	employed	52 (12.8)	3 (12.5)	55 (12.8)		
Income status	Income is lower than the expenses	406 (100.0)	24 (100.0)	430 (100.0)		
Educational attainment	No education	284 (70.0)	16 (66.7)	300 (69.8)	1.56	0.955
	Primary school	76 (18.7)	5 (20.8)	81 (18.8)		
	Middle/high school	24 (5.9)	1 (4.2)	25 (5.8)		
	University	1 (.2)	0 (0.0)	1 (.2)		
	Basic religious study/ Maktab	12 (3.0)	1 (4.2)	13 (3.0)		
	Advanced religious study	6 (1.5)	1 (4.2)	7 (1.6)		
	Other	3 (.7)	0 (0.0)	3 (.7)		

*Significant relationship, $p < 0.05$.

In regards to the correlation between the types of NCDs and healthcare service accessibility, no significant association was found between any of the NCDs to accessibility to healthcare services (Table 4.12).

Table 4.12 The association between type of NCDs and accessibility to healthcare services (N=430)

Variable	Category	Frequency		Total	Chi - square	*p - value*
		No (n=406)	Yes (n=24)			
		Respondents n (%)				
Types of NCDs	CVD	60 14.8%	4 16.7%	64 14.9%	0.064	0.801
	COPD	131 32.3%	8 33.3%	139 32.3%	0.012	0.913
	DM	239 58.9%	12 50.0%	251 58.4%	0.733	0.392
	MSD	268 66.0%	15 62.5%	283 65.8%	0.124	0.725

*Significant relationship, $p < 0.05$.

NCDs treatment and management, as being a long-term management procedure, outreach healthcare service is considered as one of the crucial programs. With our obtained data about access to outreach health services, a Correlation Pearson chi-square test was carried out to determine any associations between the accessibility to outreach health services (dependent variable) and the socioeconomic variables (independent ones), considering p-value < 0.05 statistically significant. The data have been represented in Table 4.13.

According to the result, the independent variable, educational attainment is positively correlated to the access to outreach health services. No other attributes were found significantly associated to the accessibility to outreach healthcare. For the test, socioeconomic variables including camp location, gender, age, sex, marital status, employment status, income status were deployed along with educational attainment as independent variables.

Table 4.13 The association between socioeconomic variables and accessibility to outreach health services (N=430)

Variable	Category	Frequency		Total	Chi - square	*p - value*
		No	Yes			
		Respondents n (%)				
Camp Location	Kutupalong	174	4	178	0.008	0.928
		41.4%	40.0%	41.4%		
	Balukhali	246	6	252		
		58.6%	60.0%	58.6%		
Gender	Male	212	6	218	0.354	0.552
		50.5%	60.0%	50.7%		
	Female	208	4	212		
		49.5%	40.0%	49.3%		
Age	18-44 years old	138	3	141	0.368	0.832
		32.9%	30.0%	32.8%		
	45-65 years old	216	6	222		
		51.4%	60.0%	51.6%		
	65+ years old	66	1	67		
		15.7%	10.0%	15.6%		
Marital status	Unmarried	6	0	6	2.059	0.560
		1.4%	0.0%	1.4%		
	Married	348	10	358		
		82.9%	100.0%	83.3%		
	Divorced/ separated	7	0	7		
		1.7%	0.0%	1.6%		
	Widowed	59	0	59		
		14.0%	0.0%	13.7%		
Employment Status	Not Employed	368	7	375	2.781	0.099
		87.6%	70.0%	87.2%		
	employed	52	3	55		
		12.4%	30.0%	12.8%		
Income status:	Income is lower than the expenses	420	10	430		
		100.0%	100.0%	100.0%		
Educational attainment	No education	298	2	300	20.765	0.002*
		71.0%	20.0%	69.8%		
	Primary school	78	3	81		
		18.6%	30.0%	18.8%		
	Middle/high school	22	3	25		
		5.2%	30.0%	5.8%		
	University	1	0	1		
		.2%	0.0%	.2%		
	Basic religious study/ Maktab	12	1	13		
		2.9%	10.0%	3.0%		
	Advanced religious study	6	1	7		
		1.4%	10.0%	1.6%		
	Other	3	0	3		
		.7%	0.0%	.7%		

In the humanitarian crisis like Rohingya response in Bangladesh, where the refugees are not allowed to do formal work other than very few voluntary NGO works, it is crucial to

get access to free medications for NCDs patients specifically. Bivariate analysis had been caried out to find out of there was any difference in accessing free medications in terms of camps where they reside and employment status. However, no differences were significant as per the obtained result from Pearson Chi-square test, presented in Table 4.14.

Table 4.14 The association between place of residency and employment status to free medications (N=430)

Variable	Category	Frequency			Total	Chi - square	*p - value*
		No	Yes, all the time	Yes, but not all the time			
		Respondents n (%)					
Area of Residence	Kutupalong	5 50.0%	7 35.0%	166 41.5%	178 41.4%	0.644	0.725
	Balukhali	5 50.0%	13 65.0%	234 58.5%	252 58.6%		
Employment Status	Unemployed	10 100.0%	16 80.0%	349 87.3%	375 87.2%	2.399	0.301
	Employed	0 0.0%	4 20.0%	51 12.8%	55 12.8%		

*Significant relationship, $p < 0.05$.

A statistically significant association have been observed between the accessibility to free medications and having Cardiovascular disorder (CVD) (p=000), as presented in Table 4.15. No such correlation was found between access to free medicine and having NCDs other than CVD.

Table 4.15 The association between type of NCDs and accessibility to free medications (N=430)

Variable	Category	Frequency			Total	Chi - square	*p - value*
		No	Yes, all the time	Yes, but not all the time			
		Respondents n (%)					
Type of NCDs	CVD	11 33.3%	9 36.0%	44 11.8%	64 14.9%	20.408	0.000*
	DM	19 57.6%	14 56.0%	218 58.6%	251 58.4%	0.075	0.963
	COPD	8 24.2%	10 40.0%	121 32.5%	139 32.3%	1.666	0.435
	MSD	27 81.8%	16 64.0%	240 64.5%	283 65.8%	4.072	0.131

*Significant relationship, $p < 0.05$.

No differences are significant regarding the association between list of obstacles or barriers to access to healthcare services. We tested all the barriers on correlation Pearson Chi-square test, and the differences obtained were not significant (Table 4.16).

Table 4.16 Association between accessibility to healthcare setting and surveyed barriers. (N=413)

Variable	Category	Frequency		Total	Chi - square	*p - value*
		No	Yes			
		Respondents n (%)				
Barriers to accessing health services	No health services available	239 59.0%	2 25.0%	241 58.4%	3.734	0.053
	Lack of information on services	8 2.0%	0 0.0%	8 1.9%	0.161	0.688
	Lack of specialized services	178 44.0%	4 50.0%	182 44.1%	0.116	0.733
	Distance/ transportation costs	47 11.6%	0 0.0%	47 11.4%	1.048	0.306
	service/ medication cost	97 24.0%	0 0.0%	97 23.5%	2.504	0.114
	Mistrust	194 47.9%	3 37.5%	197 47.7%	0.34	0.560
	Stigma	328 81.0%	6 75.0%	334 80.9%	0.182	0.670
	Cultural reasons	74 18.3%	1 12.5%	75 18.2%	0.176	0.675
	Security reasons	163 40.2%	2 25.0%	165 40.0%	0.76	0.383
	Language Barrier	26 6.4%	1 12.5%	27 6.5%	0.745	0.491
	Unpleasant/ Bad behavior	278 68.6%	4 50.0%	282 68.3%	1.259	0.262

*Significant relationship, $p < 0.05$.

4.2. Multivariant analysis

To perform binary logistic regression analysis, variables were chosen as potential predictors to healthcare services accessibility and deployed for regression analysis, where p-value < 0.05 was set as statistically significant.

However, there were no difference between the participants residing Kutupalong area and in Balukhali area, between male and female, among age groups, among respondents of

different marital status, between employed and unemployed, or among respondents with different educational attainments, to access to health services. (Table 4.17).

Table 4.17 Multivariant analysis of the association between socioeconomic variables and accessibility to healthcare services (N=430)

Variable	Category	AOR***	95% CI **		*p* - value
			Lower	Upper	
Camp Location	Kutupalong		Reference	Reference	
	Balukhali	1.431	.567	3.613	.448
Gender	Male		Reference	Reference	
	Female	.926	.346	2.478	.878
Age	18-44 years old		Reference	Reference	
	45-65 years old	.529	.186	1.501	.231
	65+ year old	.593	.121	2.897	.518
Marital status	Unmarried		Reference	Reference	
	Married	103278480.609	0.000		.999
	Divorced/ separated	1142464235.332	0.000		.999
	Widowed	151013755.116	0.000		.999
Employment Status	Not Employed		Reference	Reference	
	employed	.728	.151	3.520	.693
Educational attainment	No education		Reference	Reference	
	Primary school	1.070	.321	3.569	.912
	Middle/high school	1.011	.100	10.211	.993
	University	.000	0.000		1.000
	Basic religious study/ Maktab	1.718	.189	15.648	.631
	Advanced religious study	3.667	.306	43.921	.305
	Other	.000	0.000		.999

*Significant relationship, $p < 0.05$. ** Confidence Interval, *** Adjusted Odd Ratio

Accordingly, as per result obtained in Table 4.18 by binary regression analysis no associations were found significant as well among the per types of surveyed NCDs in regards to access to healthcare services.

Table 4.18 Multivariant analysis of accessibility to the required services per type of the surveyed NCDs

Variable (Type of NCDs	Categories	AOR***	95% CI **		*p* - value
			Lower	Upper	
CVD	No		Reference	Reference	
	Yes	1.122	.369	3.417	.839
COPD	No		Reference	Reference	
	Yes	.941	.380	2.334	.896
DM	No		Reference	Reference	
	Yes	.640	.263	1.556	.325
MSD	No		Reference	Reference	
	Yes	.741	.296	1.857	.523

*Significant relationship, $p < 0.05$. ** Confidence Interval, *** Adjusted Odd Ratio

As it is presented in Table 4.19, considering the outreach health services accessibility, in terms of mobile medical services and health promotional activities like health education and awareness session targeting prevention of the diseases, no significant correlations were present except the population with different educational attainments. People with basic to medium educational backgrounds are more likely to be reached by outreach health services.

According to the obtained result, people who completed primary school, maktab and middle/high school are 10.6 (CI=1.467-76.767, p=0.019), 52.6 (CI=2.468-1123.204, p=0.011) and 94.6 (CI=5.853-1529.572, p=0.001) time more likely to be approached by the outreach healthcare providers, which include both health awareness session and mobile team visit (Table 4.19).

Table 4.19 Multivariant analysis of the association between socioeconomic variables and accessibility to outreach health services (N=430)

Variable	Category	AOR***	95% CI **		*p* - value
			Lower	Upper	
Camp Location	Kutupalong		Reference	Reference	
	Balukhali	1.623	.394	6.690	.503
Gender	Male		Reference	Reference	
	Female	4.090	.555	30.156	.167
Age	18-44 yrs		Reference	Reference	
	45-65 yrs	2.697	.508	14.327	.244
	65+ yrs	.986	.058	16.764	.992
Marital status	Unmarried		Reference	Reference	
	Married	69502431.919	0.000		.999
	Divorced/ separated	2.014	0.000		1.000
	Widowed	1.389	0.000		1.000
Employment Status	Not Employed		Reference	Reference	
	employed	.579	.079	4.220	.589
Educational attainment	No education		Reference	Reference	
	Primary school	10.613	1.467	76.767	.019*
	Middle/high school	94.622	5.853	1529.572	.001*
	University	.000	0.000		1.000
	Basic religious study/ Maktab	52.647	2.468	1123.204	.011*
	Advanced religious study	263.417	7.847	8843.001	.002*
	Other	.000	0.000		.999

*Significant relationship, *p < 0.05*. ** Confidence Interval, *** Adjusted Odd Ratio

Regarding the accessibility to free medication, the odd ratio was not statically significant regardless of population residing in Balukhali or in Kutupalong (Table 4.20).

Table 4.20 Multivariant analysis of accessibility to free medications by place of residence (N=430)

Variable	Category	AOR***	95% CI **		*p* - value
			Lower	Upper	
Camp Location	Kutupalong		Reference	Reference	
	Balukhali	0.6886228	0.325057	1.4588251	0.3300484

*Significant relationship, *p < 0.05*. ** Confidence Interval, *** Adjusted Odd Ratio

From the surveyed NCDs, respondents with existing COPD were 30.6% less likely to have access to free medicine (AOR=0.306, CI=0.139-0.674, P-value=0.003), as per result obtain from the regression analysis carried out to determine the accessibility of free medicine for each type of existing NCDs among the participants (Table 4.21).

Table 4.21 Multivariant analysis of accessibility to free medications per type of the surveyed NCDs (N=430)

Variable (Type of NCDs	Categories	AOR***	95% CI **		*p* - value
			Lower	Upper	
CVD	No		Reference	Reference	
	Yes	0.3066198	0.1394064	0.6743999	0.0032873*
COPD	No		Reference	Reference	
	Yes	1.437682	0.6204039	3.3315866	0.3971961
DM	No		Reference	Reference	
	Yes	0.8380732	0.3962641	1.7724713	0.643911
MSD	No		Reference	Reference	
	Yes	0.4037027	0.1578711	1.0323354	0.0582872

*Significant relationship, $p < 0.05$. ** Confidence Interval, *** Adjusted Odd Ratio

CHAPTER 5

5. DISCUSSION

The current study evaluated the noncommunicable disease patient's accessibility to the healthcare services in existing health settings for the Rohingya refugees in the cox's bazar district of Bangladesh. Referring to the accessibility, the research assessed all possible aspects of accessibility required for the NCDs patients including availability of services, physical accessibility to the available health services, accessibility to treatment and medications as well as the accessibility to the health education and aware sessions which is most prominent in the prevention, control and management of NCDs in fragile health structures including humanitarian settings. The study also determined the potential barriers to healthcare access, missing services in the existing accessible health facilities, the cost management to the treatment and medications, health seeking behavior at the situation when the nearby settings didn't exist with desirable services etc. Bivariate and multivariate analysis had also been conducted to find out associations between socioeconomic attributes and access to healthcare. This chapter captiously discuss about the findings of the study, and at the same time compare the findings with other studies having the similar theme and context.

Among the Rohingya participants with one or more selected NCDs for the current study, the proportion of musculoskeletal disorder is the most dominant type of NCD covering a proportion of 65.8% of total 737 cases responded. The second most NCDs reported by the respondents was diabetes mellitus (58.4%), followed by COPD (32.3%) and CVD (14.9%). Revising the facts, the state led organizational torture and communal attacks in terms of physical, sexual and mental, that happened over Rohingya for decades, and at the same time, delaying and denying to treatments upon injuries caused them developing numerous physical problems as well as mental disorders [56][57][58]. In a recent cross-sectional with 120 Rohingya population in the refugee setting in Bangladesh observed that 69.3% of the participants had been suffering from pain, including pain in lower back pain and joints dominantly [59]. Moreover, according to a review it was revealed that among the migrated populations several factors including experience during migration phase, issues related to mental health likely PTSD, anxiety and depression, socioeconomic status etc. greatly attribute to experience of chronic pain and musculoskeletal disorders [60]. The

authors also mentioned that poorer physical health is one of the dominant reasons associate to the musculoskeletal problems. It is worth-mentioning that, upon arrival in Bangladesh, depriving of adequate shelter space, open spaces for movement, and not barring them from doing work resulted increasing of inactivity and malnutrition, both of which boost them toward musculoskeletal disorders. Understandably, from the abovementioned factors, either one or more of them contribute to other NCDs.

The most common type of available settings that are fully or partially accessible to the Rohingya populations are the NGO provided health facilities inside the camps (87.5%). Other accessible health structures include private pharmacy (59.4%), usually set up by the nearby local host community or formally or informally, the local hospitals outside the camps, local doctors (quacks inside the camps) or the mobile health team. Interestingly, many populations also depend on traditional healer (spiritual healers, locally called boiddo) for the treatment of their existing NCDs. Despite the lack of treatment and care facilities, unfortunately the most refugees are unable to access the health facilities equipped with treatment facilities for NCDs, however, they reluctantly chose primary health facilities or any health facilities nearby their area of residence which has been set up by the NGOs as their first point to get access. A similar result had been obtained from the recent study that had been carried out on Syrian refugees in Jordan, where it showed that 90% of the respondents seek access to NCDs healthcare to NGO clinics, and around 7% of the respondents go to public health facilities regardless of the availability of the staffs, instruments and facilities as well as accessibility [61]. Furthermore, it was well documented that the Rohingya traditionally are adopted to indigenous healing practices like *boiddo* [62] for the treatment of their any sorts of diseases including mental healthcare. Another report claimed that, for Rohingya there is a tradition of going to faith healer fearing the modern medicine [63].

However, regardless of the palaces of residences, 94.4% of the total respondents mentioned that they didn’t have access to the services required for the treatment, management and care of their existing NCDs. No significant difference was observed in accessing to the healthcare in different socioeconomic groups or place so residence. Such situation is common phenomenon in other countries including Rohingya in India. Recent research found that most of the Rohingya refugees in India don’t have access to specialized services although 94% of the total respondents said they could go to hospitals or clinics [64].

Besides, a system review showed that three fourth of the Syrian refugees mentioned about inaccessibility of health services for their NCDs treatment [65]. In respect to health response for the Rohingya refugees in Bangladesh, due to the funding shortage specialized NCDs healthcare services would reasonably get less attention, in one hand due to high prevalence of communicable and infectious diseases, and on the other hand serious funding shortage in the health sector. From the beginning of the response until 2024, no fiscal years could secure half of the asked funding for the health sector [32]. That would justifiably make the policy makers difficult to allocate adequate money for NCDs management. Hence our research result is justifiable that, without a significant difference among various demographic groups and locations, the limitation to access to healthcare service is huge throughout the camps in Bangladesh. Indeed, being among LMICs, the capacity to manage the NCDs patients in the Upzila and Union level hospitals in Bangladesh for the local is questionable. Latest research revealed that, primary healthcare centers of any levels in Bangladesh are in deficit of providing services to major NCDs patients in terms of diagnostic equipment, skilled healthcare stuffs and very essential medications [42].

In the current research, as mentioned earlier, while majority of the participants reported not being able to access to needful services for the treatment of the existing NCDs, we tried to find out what was missing in the existing health facilities that obstacles them to get access. The imaging service, which they believed as an essential tool for the diagnostic purpose, is not available throughout, according to 99% of the respondents. The second most missing facility identified by 75% of the respondents was lab testing service, which is also related to diagnosis, followed by lacking of specialized doctor (43.1%), missing medicines (12.5%) and complications in treatment (6.6%). Recent report suggested that the incorrect NCD diagnosis increased the burden of diseases in the Rohingya camps in Coxs bazar and that is due to the unavailability of the diagnostic facilities inside the camps [66]. Specially for cancer, no diagnostic facilities are present even in the local area where the camps are situated. Upon getting prior permissions and arranging money, the camp population need to travel to at least 25 km to access to the diagnostic facility. On top of that, the chemotherapy, which is considered as the mainline treatment procedure, the nearest facility for the chemotherapy is available in the Chittagong city which is about 200 km away for the camps [66].

In the refugee settlement where in LMICs, where the refugees by laws are not eligible to do formal work, getting access to free medication of full course and specialized doctors in crucial for NCDs care and management. However, our study found that 395 of all 430 respondents used to buy medication. Unfortunately, 99% of them reported to receive less than 50% of the required medication. On the other hand, around 85% of the population needed to pay to visit a doctor. Since the management of NCDs are continuous approach, 35.7% of the respondents used to pay a moderate amount of money (2000-5000 BDT) while other 61.8% population paid less than 2000 BDT. Around 2.5% of the population pay 5000 BDT, which is extremely high amount of money to manage in the refugee settlement. The catastrophic out of pocket expenditure has been reported earlier among the Syrian refugees in Lebanon and Jordan. Regarding the access to free medication there is a correlation between CVD patients and access to free medication. In our study it was found that patients with CVDs is 30% less likely to get free medication (AOR=0.3066198, CI=0.139-0.674, p=0.003). For the medical services, 63.3% of the Syrian respondents residing Jordan refugee camps paid out of pocket money [65], while another research mentioned that 69.7% of the Syrian refugees made out-of-pocket payments for visiting a consultant for their existing NCDs [67]. A recent cross-sectional study in Uganda revealed that the refugees annually spend 129.64 US dollar for the management of chronic diseases per household [68]. In LMICs, with advanced illness the out-of-pocket expenditure for chronic diseases increases that cause financial catastrophe, and the medication cost and hospitalization due to NCDs are the foremost drivers to high out of pocket expenses [69]. Presumably, in refugee settlements like Rohingya camps in Bangladesh, where there are no or less resources to generate income, many refugees sell the foods and non-food items to buy their preferred items that are not included in the aid (ref: our thought). According to the obtained results from our research data, 311 respondents mentions that they sell non-food items to buy the required medicine, while other 37 respondents used to sell ration or food item which constrains food intake and NFIs utilization, ultimately drives to diseases.

With no statistically significant differences, residents of both Kutupalong and Balukhali area had a minimal access to outreach health services. As per our study results, 98.1% respondents did not attend to any sort of sessions or meetings related to awareness or health education which exposed a complete lack of health promotion activities throughout the camps. Likewise, 98.8% of the respondents had never been visited by a mobile health team. However, educational attainments play a role in accessing outreach health services.

People with little primary to high school education had better access to outreach health services than the population with no education. For instance, according to the obtained result, people who completed primary school, maktab and middle/high school are 10.6 (CI=1.467-76.767, p=0.019), 52.6 (CI=2.468-1123.204, p=0.011) and 94.6 (CI=5.853-1529.572, p=0.001) time more likely to be approached by the outreach healthcare providers, which include both health awareness session and mobile team visit. The similar result had been published with a study in Brazil, where NCDs patients with higher education in Brazil used to get more access compared to those who were uneducated [70]. As of my knowledge concerned, no similar studies with Rohingya population had been conducted yet conducted yet, our result does resemble to any of the research on Rohingya to compare outreach health services accessibility. In recent years, outside of typical healthcare services, the healthcare partners that contact with refugee migrants are increasingly realizing the value of improving health [71][72][73]. Health promotion, as defined by the WHO Ottawa Charter for Health Promotion (1986) [74], refers to practices that help people, families, and communities acquire more control over their lives. A salutogenic strategy, which focuses on improving individual health resources and abilities, is viewed as a means of increasing resistance to post-migration stresses and improving chances of successful resettlement and integration with a view to enjoying better health [71][73]. Although, the WHO emphasizes the importance of addressing social determinants of health and advocates for a multi-sectoral policy approach to health promotion, rather than focusing solely on the healthcare sector, however, in the refugee response in cox's bazar it seems that there is a huge gap in promoting health across the population.

The time required and the distance travelled to get to health services are important factors for noncommunicable disease (NCD) patients in refugee settlement. Clearly, most of our research participants (83.7%) travel more than three kilometer to reach to the health facilities for the treatment of NCDs. Only 13 of 416 respondents mentioned that they had a health facility within 2 kilometers for their desired treatment. While speaking about time to reach the health facilities, 84% respondents needed more than 1 hour to reach the facilities. While a huge percentage had to travel more than 3 km to reach, around 79% of the participants had to reach there on their foot and the remaining had a chance to get a public transport to access to health facilities. Long distances and lengthy travel times limit access to required care, resulting in lower health outcomes and greater problems for people with chronic diseases. Ensuring that health services are reasonably close and accessible within a

short timescale is critical for efficient NCD management in refugee populations [75]. according to MSF, the Rohingya are restricted to go out of the camps even within the camps since after 2019 by installing the wired fence around the camps and checkpoint that blocked the population movement [76].

Stigma, or a sense of inability to obtain healthcare services, was the most common reason that they did not seek access to services, accounting for 20.0% of all replies. It has also been corrected, since 17% of respondents stated that they have encountered unpleasant or poor conduct in the facilities, and another 11.9% raised doubts about the present health services in the camps. 14.6% of research participants believed that there were no health services accessible for their kinds of NCDs, while another 11% cited a lack of specialized services as a barrier to accessing healthcare services. A considerable percentage of respondents (10%) cited security concerns as a barrier to accessing healthcare. Additionally, Medication costs, cultural reasons, a language barrier, and a lack of knowledge about health services in the camps have all been mentioned as potential barriers to seeking healthcare. The outcome is compatible to the recent qualitative research published by IOM and ACAPS, which showed that 61% of the male participants and 48% of the female participants shared their thought of incorrect or ineffective treatment in the camp health facilities [77]. The event of being stigmatization to seek treatment has been mention in previous research. A lot of time, Rohingya are not willing to receive treatments form health post or clinics in the camps. That could be due to their previous experience of maltreatment in Myanmar where many times there was avoided treatment, subjected to extortion or experienced of intentional killings [78]. The research also mentioned about the trust issues in between health workers and the refugees, including the translators whether their statements had been translated accurately or not [77].

When age is considered as a factor determining access to healthcare settings, majority of the respondents were found to be older than 45. This is consistent with non-communicable diseases' (NCDs) medical character, which is often linked to older age groups [2][79]. Age groups and the availability of healthcare services, particularly outreach health services, did not correlate in our multivariant analysis, according to our research. This contrasts with earlier research that suggested older persons have difficulties during the epidemic getting regular medical care and medication access [80]. According to the author, in general, older people are more brittle and vulnerable than younger people, and they frequently suffer from

greater health issues. This makes using additional medications necessary, which increases the number of times patients must visit medical institutions to monitor their conditions and modify their prescription regimens to prevent adverse effects. The finding can be looked through a different way, since the access throughout the camp settlements are very limited and fragile, regardless of age groups, the facilities neither prefer older population nor reject youngers.

Patients may have to seek care elsewhere and may encounter similar difficulties and conditions if they are unable to obtain the essential medical care at institutions that are easily accessible. Multiple visits are frequently necessary for consultations and diagnostics in this condition. Patients who are unable to obtain the required services because of the hurdles will behave differently when seeking care depending on these challenges and the patient's capacity to overcome them. Regrettably, 76.3% of the respondents said they would not access to healthcare to a However, 47.9% mentioned that they would travel a long distance to get served, while the rest might switch health facilities and travel a long distance to get the required services from private or public health settings, but with the scarcity of the specialized health providers, poor capacity in terms of diagnostic procedures, unavailability of free medications, high cost of the available medical care including medications, in addition to above-mentioned socioeconomic situation, and poor infrastructure, the percentage of don’t access option will increase in the future.

CHAPTER 6

6. CONCLUSION AND RECOMMENDATIONS

6.1. Conclusion

In both the bivariate and multivariate analyses, we found no significant relationships between socioeconomic status or geography and healthcare accessibility or outreach accessibility. Similarly, the data for access to free medication showed no significant correlation. This absence of notable findings can be attributed to the consistently low level of healthcare accessible throughout the camp communities. Regardless of location, gender, marital status, or employment status, all demographic groups in camp settings have insufficient access to healthcare services, outreach healthcare, and free medication.

Overall health accessibility is severely limited by resource constraints, notably acute financial shortages, which hinder the installation of critical infrastructure as well as the recruitment and training of trained human resources. Since the start of the refugee response in 2017, fewer than half of the proposed money has been achieved in any fiscal year, illustrating the ongoing underfunding problem. Acute financing shortages have completely disrupted healthcare access for noncommunicable disease (NCD) patients in Bangladesh's Rohingya refugee camps. This disruption is exacerbated by several hurdles that seriously hamper effective NCD management. The stigma associated with some disorders discourages people from obtaining appropriate medical assistance, and the large distances to health facilities present a physical obstacle, particularly for individuals with mobility impairments or severe symptoms. Furthermore, bad staff behavior and attitudes can discourage patients from seeking treatment, aggravating their health problems. Out-of-pocket expenses for consultations, therapies, and prescriptions are a financial hardship that many immigrants cannot bear, resulting in untreated or inadequately managed ailments. Addressing these concerns would necessitate long-term funding, international collaboration, and novel solutions to ensure that this vulnerable group receives complete and accessible healthcare.

Efforts must be directed at upgrading infrastructure, guaranteeing a consistent supply of pharmaceuticals and equipment, training healthcare workers to offer compassionate care,

and implementing strategies to decrease stigma and financial difficulties. Only through collaborative efforts will the health and well-being of NCD patients in Rohingya refugee camps be fully maintained.

The introduction of stringent regulations within the camps, such as movement restrictions for obtaining medical treatment both within and outside the camps, directly impedes the settlement of NCD patients. Furthermore, health personnel' unpleasant behavior causes stigmatization among patients, limiting their motivation to seek treatment and care for NCDs. In addition to healthcare infrastructure, water, sanitation, hygiene, food, nutrition, shelter, and access to health promotion activities all have a direct impact on the development and progression of noncommunicable diseases (NCDs). In addition to boosting donor funding, responsible healthcare providers, including local government, local and international NGOs, and other players, must take a proactive role in improving overall NCD care, given that it is one of the top causes of mortality worldwide.

6.2. Recommendations

Based on our research findings, we can make the following recommendations:

- Donors and stakeholders should enhance funding allocations to address the critical gaps in NCDs care in refugee settlement in Bangladesh for Rohingya. This includes allocating sufficient funds for healthcare infrastructure, medical and medicine supplies, staff training, and outreach activities.
- To ensure compassionate and respectful treatment healthcare workers should receive specialized training to successfully manage and treat NCDs in refugee populations. This includes reducing stigma, developing communication skills, and increasing cultural competency.
- Re-distribution of health settings in Bangladesh's Rohingya refugee camps in accordance with national and international standards to ensure better coverage of existing ones and improved access to key health services.
- Advocacy efforts should be made to encourage policy changes in Cox's Bazar that prioritize NCD care in humanitarian responses. This means convincing legislators and professionals to develop a comprehensive NCD care and management strategy, which includes ensuring an adequate supply of drugs is delivered free of charge.

- To increase the capability of outreach health services, it is critical to broaden their scope to include preventative and basic curative services, which will supplement primary healthcare efforts. This program entails the creation of Standard Operating Procedures (SOPs) for mobile clinics that explicitly define their deployment sites and schedules. Crucially, these mobile clinics must be linked to higher levels of healthcare in order to provide a holistic answer to the population's healthcare requirements. Furthermore, there is an urgent need to develop an adequate healthcare delivery pathway and methods for maintaining crucial health services for older people with NCDs, particularly in conflict and epidemic settings.
- More study is needed to determine the considerable incidence of NCDs, including risk factors and preventive approaches, in Rohingya refugee camps. Furthermore, the health system in these camps must be assessed for its ability to effectively respond to the significant burden of NCDs. This study would provide important insights into the refugee population's specific healthcare requirements, enable targeted interventions, and guide policy and resource allocation to meet the expanding NCD epidemic in humanitarian circumstances.

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7. APPENDICES

Appendix – 1: CONSENT FORM

PLEASE ALLOW ENOUGH TIME TO READ THIS DOCUMENT CAREFULLY

You are invited to participate in the **research** study "**Accessibility to healthcare services and treatment for people with non-communicable diseases in the Rohingya makeshift camps in Cox's Bazar District of Bangladesh.**". You have to know how and why this research will be conducted. For this reason, it is very important to read and understand this form. If you do not understand things that are not obvious to you, or if you want more information, please do ask for further clarification.

Participation in this study is entirely **voluntary**. You **do not have to participate** in this study and if you participate, you have the right to **discontinue** at any time. **Your positive response to the study will be interpreted as you consent to participate in the study.** Do not feel oppressed or manipulated by anyone while answering the questions in the **forms** provided to you. The information obtained from these forms will be used purely for research purposes.

1. **Information About the Research Study:**

   a. Purpose of the Study: Assess the accessibility to healthcare services and treatment for patients with non-communicable diseases in Rohingya makeshift camps in Bangladesh.

   b. Content of the Study: A questionnaire will be filled by the people or their relatives with any of the four types of non-communicable diseases; cardiovascular diseases, chronic respiratory diseases, musculoskeletal problems and diabetes; who are reachable by the community-based data collectors in the identified areas of study. The names of the participants will be anonymized, and the data will be analyzed using statistical programs to get the results.

   c. Type of Research: () Scientific Research Study (*) Thesis Study.
   d. Estimated Time for the Study: one month.
   e. Expected Number of Participants / Volunteers to the study: 273.

   f. Location (s) of the Research: Rohingya makeshift camps in the Ukhiya area in Cox's Bazar district of Bangladesh.

2. **Consent to Participate in the Study:**

I fully understand the scope and purpose of the study and the volunteer responsibilities by reading the information above that should be given to the participants before participating/volunteering in the study. **Written and oral explanations about the study were made by the researcher named below, I had the opportunity to ask questions and discuss and got satisfactory answers. The potential risks and benefits of the study have been explained to me verbally as well.** I understand that I have the right to discontinue the study at any time without mentioning any reasons and that I will not encounter any negativity when I leave this study.

I agree to participate in the aforementioned study voluntarily under the conditions explained to me, without any pressure or force.

Participant's (with your own handwriting)
Name-Surname:
.....
Signature:

Researcher's:

Name-Surname: Mohammed Abdullah Jainul

Signature:

Appendix – 2: Questionnaire

Questionnaire for assessing the accessibility to healthcare services for people with non-communicable diseases in Rohingya Refugee Camps in Bangladesh.

Part 1: Demographical information:

1. Are you answering the questions for: a) yourself? b) relative?
2. Age (patient):
3. Sex (patient):
4. Place of residence (patient): Camp No: . …. Block No: …..
5. How long have you been in the camp? … years
6. Marital status (patient): a) Married b) single c) widowed d) divorced
7. Employment status (patient): a) Employed b) Unemployed
8. If employed (patient), what is it?
9. Economic status (patient): a) Income is higher than spending b) Income is lower than spending c) Income equals spending.
10. Educational attainments (patient): a) Uneducated b) Primary c) Middle school d) Secondary e) University (institute or university)
11. Type of chronic disease: a) cardiovascular b) Musculoskeletal problem c) chronic respiratory diseases e) diabetes.
12. Where it/they were diagnosed? a) private clinic/doctor b) public health setting c) private health setting e) other, please specify.
13. When has/have it/ they been diagnosed: a) less than on year b) 1 to 5 years c) more than 5 years.
14. Is there person with a chronic disease living in the same household? a) yes b) no
15. If yes selected, which chronic disease/diseases?
    a) cardiovascular
    b) Musculoskeletal problem
    c) chronic respiratory diseases
    d) Diabetes
    e) Other-please specify ……
16. If you are on a chronic disease treatment, how often you should take the treatment?
    a) every two months b) every month c) every three months e) other (please specify)
17. When did you receive the last treatment (before now)?

a) last month b) two months ago c) three months ago e) more than three months

Part 2: Accessibility to healthcare services for non-communicable diseases:

1. Do you have access to health services in your areas for your disease?
   a) yes, all the time b) yes, but not all the time c) no, not at all
2. If yes (access is present), please specify the health settings? Tick all that applies
   a) Mobile team/clinic
   b) Health facility inside camps (clinic/ hospital)
   c) Local hospitals (outside camps)
   d) Local doctor
   e) Pharmacy
   f) Traditional doctor
   g) Other (please specify)
3. How far are the health settings from your residence?
   a) less than 2 km b) 2-3 km c) more than 3 km.
4. Access (transportation) to the health setting – by which mean:
   a) by own car b) public transportation d) walk c) other (please specify).
5. How long it takes to reach the health setting - for each type of the transportation means selected above?
   a) less than 30 minutes b) 30 – 60 minutes c) more than 60 minutes.
6. Do you get all the services with the first selected accessible healthcare provider?
   a) Yes, b) no
7. If no, what are the major health needs that you are not able to get in the first selected accessible healthcare provider from these health service? - tick all that applies
   a) lab tests b) imaging services c) specialized doctor d) complications treatment e) unavailability of the medications (some or all).
8. Are you able to get medicines for your treatment?
   a) yes, all the time
   b) yes, but not all the time
   c) no
9. If yes (any of the two) above, what are the source of the medicines?
   a) NGO supported health facility.
   b) Private facility.
   c) Private pharmacy.
   d) Other, please specify.
10. If yes (any of the two) above, are these medications for your treatment available at no cost to you/for free?
    a) yes, all the time
    b) yes, but not all the time
    c) no
11. If yes, but not all the time or no, how much of they were missing?

a) Less than 50% b) more than 50%

12. If yes, but not all the time or no what do you do in such cases? - tick all that applies
    a) I purchase same medication
    b) I got it free from a different health facility
    c) I do not get the medication
    d) Other, please specify

13. If you pay to get medicines. How much do you pay monthly? ….

14. How do you pay for medicines/ doctors?
    a) money from CFW
    b) selling rations
    c) selling NFIs
    d) family members abroad
    e) other (Please specify)

15. If health access is not present, what are the main reasons? – tick all that applies
    a) No health services available
    b) Lack of information on services
    c) Lack of specialized services
    d) No access to health services due to the distance/transportation costs
    e) No access due to service/medication costs
    f) Mistrust in the existing health service provider
    g) Stigma
    h) Cultural reasons
    i) Security reasons
    j) Language barrier
    k) Other- please specify

16. For all the services that are not available, how do you access to the health care services?
    a) Don't access
    b) Travel to get access – long distance.
    c) Other, please specify

17. Have you even been visited by a mobile team – home visit? a) yes b) no

18. Have you ever participated in any session delivering health education messages?
    a) Yes
    b) No
    c) Not sure

19. If yes, where were they?
    a) In the health facility
    b) In the community
    c) At home

20. If yes above, can you recall the messages (titles) delivered within the session(s)?
    a) Yes, please specify
    b) No

The researcher's contact information:

Phone and WhatsApp: +

Email:

Appendix -3: Ethical Approval from Ankara Yildirim Beyazit University

ANKARA YILDIRIM BEYAZIT UNIVERSITY (AYBU)
HEATH SCIENCE ETHICS COMMITTEE
RESEARCH PROJECT APPROVAL DOCUMENT

Ankara Yıldırım Beyazıt University, Public Health Institute, Global Health and Health Policies Department, student of Master of Global Health and Health Policies, research titled "Accessibility to healthcare services and treatment for people with non-communicable diseases in the Rohingya makeshift camps in Cox's Bazar District of Bangladesh" was reviwed (*This section must be filled by the applicant)*

Approved. ☒
To be resubmitted. ☐
Rejected. ☐

AYBU HEALTH SCIENCE ETHICS COMMITTEE DECISION (This section will be filled by the committee)	
Research code (Year – Research order number)	2023 - 305
The date the application reached to the Ethics Committee	09.06.2023
Ethics Committee decision meeting date and decision number	14.06.2023/06-305
Place	Ankara Yildirim Beyazit University, Esenboga Kulliyesi, Ankara-Turkey
Participants	Members who signed the form attended the meeting.

THE CHAIRMAN AND THE MEMBERS OF THE COMMITTEE:

		SIGNATURE
Prof. Dr. Özden YALÇINKAYA ALKAR	Başkan	
Prof. Dr. Tahir Kurtuluş YOLDAŞ	Üye	
Assoc. Prof. Dr. Oktay GÜRCAN	Üye	
Assoc. Prof. Dr. Metin DİNÇER	Üye	
Assoc. Prof. Dr. Bahar KÜLÜNKOĞLU	Üye	
Assoc. Prof. Dr. Sevil ŞAHİN	Üye	
Assoc. Prof. Dr. Gözde ALGÜN DOĞU	Üye	
Assoc. Prof. Dr. Üyesi Şule ÇEKİÇ	Üye	
Assoc. Prof. Dr. Nural ERZURUM ALİM	Üye	
Assoc. Prof. Dr. Nimetcan Mehmet YAĞMA	Üye	
Assoc. Prof. Dr. Bünyamin ÇILDIR	Üye	
Asst. Prof. Dr. Günsel BİNGÖL	Üye	
Asst. Prof. Dr. Esra Ceren TUĞUTLU	Üye	

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Figure 7.1: Ethical Approval of Ankara Yildirim Beyazit University

Appendix- 4: Permissions from the health actors on the ground

Government of the People's Republic of Bangladesh
Office of the Refugee Relief and Repatriation Commissioner
Cox's Bazar
www.rrrc.gov.bd

No: 51.04.2200.009.16.26.23-3660 Date: 03 October 2023

Sub: Permission to conduct Research work in FDMNs Camp.

Ref: Letter from Mohammed Abdullah Jainul, Masters Student, Institute of Public Health, Ankara Tildirim Beyazit University; Dated:29 August 2023.

In response to the above mentioned letter, this office is pleased to grant your proposal for the permission of Research work titled "Accessibility to Healthcare Services & Treatment for People with Non-Communicable Diseases in the Rohingya Makeshift Camps" in FDMNs Camp-1E, 1W, 2E, 2W, 03, 04, 04 Ext., 05, 06, 07, 8E, 8W, 09, 10, 11,12 , 17, 18, 13, 19, 20, 20 Ext.,14,15 & 16, Cox's Bazar from 05 October , 2023 to 05 November 2023 under the following terms and conditions:

1.You are requested to inform and coordinate with the concerned CiCs (Camp-in-Charge) before commencing the activities;
2. Must follow Govt. Policy, Rules and Laws;
3. You are not allowed to enter the Camps during Government Holidays;
4.You must leave the Camps before 3.30 pm;
5.The content/report must be submitted to RRRC Office as well as to CiC Office, before publishing.

03.10.2023
Sadhana Tripura
Senior Assistant Secretary
Phone:
Email:

Mohammed Abdullah Jainul
Masters Student, Institute of Public Health
Ankara Tildirim Beyazit University

Copy for Information and necessary action:

01. Additional Refugee Relief and Repatriation Commissioner, Cox's Bazar
02. Camp-in-Charge; Camp-1E, 1W, 2E, 2W, 03, 04, 04 Ext., 05, 06, 07, 8E, 8W, 09, 10, 11,12 , 17, 18, 13, 19, 20, 20 Ext.,14,15 & 16, Cox's Bzar.
03. PS to RRRC (For kind information of RRRC)
04. Office Copy

Figure 7.2: Permission from RRRC

Appendix 5. Curriculum Vitae

Mohammed Abdullah Jainul

Contact details

Education

Master of Health Policies and Global Health (with thesis) **October 2022-**

Public Health Institute, Ankara Yildirim Beyazit University *Ankara, Turkey*

Master's thesis: "Accessibility to healthcare services and treatment for people with noncommunicable diseases in Rohingya refugee camps in Bangladesh" (Supervisor: Assoc. Prof. Nimetcan Mehmet Orhun)

Current CGPA: 3.85; Expected completion date: July 2024

Master of Health Sciences (with thesis) **2018**

International Islamic University Malaysia *Pahang, Malaysia*

Bachelor of Pharmacy (with honors) **2013**

International Islamic University Chittagong *Chittagong, Bangladesh*

Professional experience

Research Service Contract **Jul. 2023- Feb. 2024**

National University of Singapore (Research Lead: Elliott Prasse-Freeman) *Remote*

- Co-coordination of a research data collection
- Development of population-based questionnaire
- Review of the transcripts
- Assist the lead researcher in data analysis and report writing

Co-Consultant **Jul. 2022- Jan. 2023**

Legal Action Worldwide (LAW) *Remote*

- Develop research plan, including the research questions, methods, and data collection instruments to conduct research on "Rohingya perception of justice".
- Train a team of field community-based researchers responsible for conducting interviews and collecting data in the field, transcribing and archiving of the data.
- oversee the quality of collected
- conduct several key informants' interviews
- Assist the other consultant in identifying theme, pattern and insights of the collected

data for analysis.

- Assist the other consultant in drafting the report and interpreting the findings in a meaningful way and making recommendations for future research or action.

CwC Field Assistant **Jul. 2019- Apr. 2022**

International Organization for Migration (IOM), Bangladesh office *Cox's Bazar*

- Design and review training modules for qualitative and quantitative research methodology for Rohingya researchers.
- Train Rohingya refugee camp-based researchers on qualitative and quantitative research methodology, consent, code of conduct, key informant's interviews, focus group discussions, accountability etc.
- Assist supervisor in designing and review training curriculum on analytical/ report/ research writing.
- Oversee 30 researchers and weekly data collection. Develop data collection work plans and manage recruitment and orientation.
- Oversee data collection, ethics review, data archiving and transcription. Review transcription and archiving procedures on a regular basis.
- Develop, review and adapt qualitative and quantitative research tools. Participatorily review and adjust tool based on linguistic and cultural dynamics.
- Produce audio outputs for wider sharing of information to Rohingya camp residents.

Research Assistant **Oct. 2018 – Jun. 2019**

IIUM Human Molecular and Cellular Biology Research Cluster (iMoleC) *Pahang, Malaysia*

- Ensure all relevant research documentation is coded and archived for analysis.
- Develop and implement the methodology for the maintenance of research samples.
- Train new undergraduate students on research methods, coordinate workshops, and facilitate learning within team.
- Ensure that data recorded was cleaned for statistical analysis.
- Track PO, prepare stocks, register and maintain inventory, and perform various day-to-day maintenance operations
- Arrange meetings, record minutes of meetings and report to the principal researcher.

Interpreter **Sept. 2000 – Oct. 2001**

United Nations High commission for Refugees (UNHCR), Malaysia *Kuala Lumpur*

- Interpreted mainly for registration unit between the case workers and Rohingya & Bengali beneficiaries.
- Interpreting between the Rohingya civil society in Malaysia and UNHCR as they discuss issues related to services and legal status.
- Supported interpretations for the Rohingya detainee in different detention camps and courts.

Selected Publications

1. M. A. Jainul And N. M. Orhun, "Healthcare Status in The Rohingya Refugees Camps of Cox's Bazar District in Bangladesh," In *Current Public Health Issues in Selected Developing Countries*, YAZ Yayınları, 2024, pp.1-32.
2. Article under peer review: "Access to healthcare services for the Rohingya with Non communicable disease in Rohingya refugee camps of Bangladesh. submitted to: International Journal of Social Determinants of Health and Health Services.
3. Danny Coyle, Abdul Kadar (AK) Rahim, and Mohammed Abdullah Jainul (2020). "Clan, Community, Nation: Belonging Among Rohingya Living in Makeshift Camps." Bangladesh: IOM.
4. Danny Coyle, Marie Sophie Sandberg-Petterson, and Mohammed Abdullah Jainul (2020). "Honour in Transition: changing gender norms among the Rohingya." Bangladesh: IOM & UN Women.
5. Lough, Oliver; Spencer, Alexandra; Coyle, Daniel; Jainul, Abdullah; Barua, Hrithika. "Participation and inclusion in the Rohingya refugee response in Cox's Bazar, Bangladesh: 'We never speak first'", Overseas Development Institute; 2021.
6. ACAPS and IOM. Our Thoughts: Rohingya share their experiences and recommendations. Geneva; 2021
7. Basak, F., Jainul, M.A. & Yusof, A.M. (2019). Cryptosporidium-host Interaction Alters Regulation of OncomiRNAs and Tumor Suppressor miRNA Expression. Journal of Biological Sciences, (4): 272-279.
8. Jainul, M.A., Isa, M.L.M., & Yusof, A.M. (2018). Immunofluorescent staining and miRNA expression of HCT 8 and HT-29 cell lines upon cryptosporidium infection. Malaysian Applied Biology 47(5):101-112
9. Azad, A.K., Jainul, M.A. & Labu, Z.K. (2018). Cytotoxic Activity on Brine Shrimp, MCF-7 Cell Line and Thrombolytic Potential: Seven Different Medicinal Plant Leaves Extract. Journal of Scientific Research, 10(2):175-185
10. Chowdhury A., Azam S., Jainul M.A., Faruq K.O. & Islam A. (2014). In-vitro evaluation of antibacterial activities using disc diffusion method and In-vitro anti-inflammatory (membrane stability) properties of methanolic extracts of Gardenia coronaria leaves. International Journal of Microbiology. Article ID 410935
11. Sayeed, M.A., Jainul, M.A., Azam, S., Babar, Z.M. & Azad, A.K. (2017). In vivo antidiarrheal activity of methanolic extract of Trema oreintalis leaves. Pharmacologyonline, 2: 187-192.
12. Jainul, M. A., Azam, S., Chowdhury, A., Rashid, M. M. U., Mamun, A. A. & Chowdhury, H. Q. (2014). Evaluation of thrombolytic effect of seven different Bangladeshi plants. British Journal of Pharmaceutical Research, 4: 1400-1406.
13. Jainul, M.A., Azam, S., Hossain, M., Rana, M. (2013). In vitro Cytotoxic and Thrombolytic activity of methanolic extract of F. Macrophylla leaves. Asian Journal of Pharmaceutical and Clinical Research, 6 (4): 86-88.

Language Proficiency

English- IELTS Band Score 7.0

Rohingya, Chittagonian, Bengali- Native

Turkish- Beginner