T.C.

ANKARA YILDIRIM BEYAZIT UNIVERSITY

PUBLIC HEALTH INSTITUTE

ACCESSIBILITY TO HEALTHCARE SERVICES AND TREATMENT FOR PEOPLE WITH NONCOMMUNICABLE DISEASES IN NORTHWEST SYRIA

MASTERS'S THESIS

KASSEM BALLOUT

HEALTH POLICY AND GLOBAL HEALTH

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Thesis Advisor

Assoc. Prof. Dr. Nimetcan Mehmet YAĞMA

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I certify that this thesis meets all the requirements for a Master's Degree

PLAGIARISM

I declare here that everything in this thesis is my unique work. I have explicitly referenced Ankara Yildirim Beyazit University guidelines, academic rules, and ethical conduct and I accept full legal responsibility for the academic procedure of my thesis.

May 29. 2023

Kassem BALLOUT

DECLARATION

I declare that this thesis is my original, unpublished work, it has never been presented for a similar reason before and since every other piece of formation from other people's work contained in my thesis is fully acknowledged, it does not violate upon anyone's copyright or breaches any property rights.

May 29. 2023

Kassem BALLOUT

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ABSTRACT

ACCESSIBILITY TO HEALTHCARE SERVICES AND TREATMENT
FOR PEOPLE WITH NONCOMMUNICABLE DISEASES IN NORTHWEST SYRIA

Background: Non-communicable diseases (NCDs) are the leading cause of death and disability globally. After more than eleven years of the worst humanitarian crisis in Syria, the response to NCDs-related needs in Northwest Syria is still a challenge. The aim of this research is to assess the accessibility to healthcare services, and treatment, for people with NCDs in Northwest Syria.

Methods: it is a cross sectional study. It was carried out among people with NCDs. People with one or more of cardiovascular diseases, diabetes, cancer, or chronic obstructive pulmonary diseases were included. People from Aleppo and Idleb governorates, from camps or outside the camps were included. Data were collected from Nov 1 to 30. 2022 through face-to-face interviews.

Results and conclusion: The results were obtained from *674* respondents. The majority *(80.9%)* were from the age group above 45 years old, with a mean *55.6*. Females were *52.8%* of the participants. Among the study group, cardiovascular diseases were the most dominant NCD *(68.2%)*, then diabetes *(45.1%)*, COPD *(11.6%)*, and cancer *(1.8%)*, with *(25.8%)* of the respondents reported more than one NCD. Fixed public health facilities *(60.5%)*, and pharmacies *(18.5%)* were the most common type of the accessible healthcare settings. Our findings indicated that respondents in Idleb were *6.5* times more likely to access healthcare services than Aleppo *(p=0000)*. Though no statistical significance was found between in-camp and outside-camps residents for accessibility to healthcare services, in-camp residents were *1.5 times* more likely to access outreach health services *(p=0.020)*. Employed respondents were *2 times* more likely to access healthcare services compared to unemployed respondents *(p=0.015)*. Respondents whose income equal to or higher than the expenses were *3 times* more likely to access healthcare services compared to respondents whose income less than expenses *(p=0.000)*. Having any of the surveyed NCDs, made the respondents less likely to get the required services (and especially, free medication) with the greatest impact of cancer. Unavailability of the health services themselves *(p=0.000)*, lack of information about the available services *(p=0000)*, distance/ transportation cost to reach the health settings *(p=0.015)*, service/ medications cost *(p=0.000)*, security reasons *(p=0.013)*, and other reasons including mistrust of the health providers, cultural reasons and barrier languages *(p=0.000)* were identified as barriers to accessing healthcare services.

Keywords: noncommunicable diseases, healthcare services, free medications, camps, Northwest Syria.

ÖZET

KUZEYBATI SURİYE'DE BULAŞICI HASTALIKLARI OLAN KİŞİLER İÇİN SAĞLIK HİZMETLERİNE VE TEDAVİYE ERİŞİLEBİLİRLİK

Giriş: Bulaşıcı olmayan hastalıklar (BOH'lar) dünya çapında önde gelen ölüm ve sakatlık nedenidir. Suriye'deki en kotu insani krizden on bir yıldan fazla süre geçmesine rağmen, Kuzeybatı Suriye'de BOH'larla ilgili ihtiyaçlara yanıt verilmesi hâlâ bir sorun teşkil ediyor. Bu araştırmanın amacı, Kuzeybatı Suriye'de bulaşıcı olmayan hastalığı olan kişilerin sağlık hizmetlerine ve tedaviye erişilebilirliğini değerlendirmektir.

Yöntem: Kesitsel bir çalışmadır. BOH'leri olan insanlar arasında gerçekleştirildi. Bir veya daha fazla kardiyovasküler hastalığı, diyabeti, kanseri veya kronik obstrüktif akciğer hastalığı olan kişiler dahil edildi. Halep ve İdlib vilayetlerinden, kamplardan veya kampların dışından insanlar dahil edildi. Veriler, 1-30 Kasım 2022 tarihleri arasında yüz yüze görüşmeler yoluyla toplanmıştır.

Bulgular ve sonuç: Sonuçlar *674* katılımcıdan elde edildi. Çoğunluk (%80,9) 45 yaş üstü, ortalama *55,6* yaş grubundandı. Katılımcıların %*52,8*'i kadındı. Çalışma grubu arasında kardiyovasküler hastalıklar en baskın BOH *(%68,2),* ardından diyabet *(%45,1),* kronik obstrüktif akciğer hastalığı *(%11,6)* ve kanser *(%1,8)* olup, katılımcıların *(%25,8)* birden fazla BOH bildirmiştir. Sabit halk sağlığı tesisleri *(%60,5)* ve eczaneler *(%18,5)* erişilebilir sağlık ortamlarının en yaygın türüydü. Bulgularımız, İdlip'teki katılımcıların sağlık hizmetlerine erişme olasılığının Halep'e kıyasla *6,5 kat* daha fazla olduğunu gösterdi *(p=0000)*. Kamp içi ve kamp dışı sakinler arasında sağlık hizmetlerine erişim açısından istatistiksel bir anlamlılık bulunmamakla birlikte, kamp içi sakinlerin sosyal yardım sağlık hizmetlerine erişim olasılığı *1,5* kat daha fazlaydı *(p=0,020)*. Çalışan katılımcıların sağlık hizmetlerine erişme olasılıkları işsiz katılımcılara göre *2 kat* daha fazlaydı *(p=0.015).* Geliri giderinden *3 kat* daha fazla olan katılımcıların sağlık hizmetlerine erişim oranı, geliri giderinden az olan katılımcılara göre *(p=0,000).* Çalışan katılımcıların sağlık hizmetlerine erişme olasılıkları işsiz katılımcılara göre *2 kat* daha fazlaydı *(p=0.015).* Geliri giderine eşit veya daha fazla olan katılımcıların sağlık hizmetlerine erişim oranı, geliri giderinden az olan katılımcılara göre *3 kat* daha fazladır *(p=0,000)*. Ankete katılan BOH'lardan herhangi birine sahip olmak, yanıtlayanların gerekli hizmetleri (ve özellikle ücretsiz ilaçları) alma olasılığını azalttı, en büyük etki kanserli katılımcılar için oldu. Sağlık hizmetlerinin kendisinin bulunmaması *(p=0,000),* mevcut hizmetler hakkında bilgi eksikliği *(p=0000),* sağlık ortamına ulaşım için mesafe/ulaşım maliyeti *(p=0,015),* hizmet/ilaç maliyeti *(p=0,000),* güvenlik nedenleri *(p=0,013)* ve sağlık hizmeti sunucularına güvensizlik, kültürel nedenler ve engel diller gibi diğer nedenler *(p=0,000)* sağlık hizmetlerine erişimde engel olarak belirlendi.

Anahtar Sözcükler: bulaşıcı olmayan hastalıklar, sağlık hizmetleri. ücretsiz ilaçlar, Kamp, Kuzeybatı Suriye.

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LIST OF ABBREVIATIONS

NCDs: Noncommunicable diseases

IDPs: Internally displaced persons

CVDs: Cardiovascular diseases

COPD: Chronic respiratory diseases

PEN: Package of essential noncommunicable diseases

PHC: Primary Healthcare

WHO: World Health Organization

COVID-19: Coronavirus disease 2019

TBAF: Turkish-backed Armed Forces

SNA: Syrian National Army

HTS: Hayat Tahrir Al-Sham

GoS: Government of Syria

ISIL: Islamic State of Iraq and the Levant

SDF: Syrian Democratic Forces

CFR: Case fatality rate

OCHA: Office for Coordination of Humanitarian Affairs

UN: United Nations

ICESCR: International Covenant on Economic, Social and Cultural Rights

SPSS: Statistical Package for the Social Science

1. INTRODUCTION

1.1. Background

Noncommunicable diseases (NCDs) are the leading causes of morbidity and mortality globally[1]. According to WHO, noncommunicable diseases (NCDs) kill 41 million people each year, which is contributed to 71% of all deaths globally (more than three quarters of all NCDs deaths are in low- and middle-income countries). Out of them 15 million premature deaths (between the ages of 30 and 69 years); 85% of them occur in low- and middle-income countries[2].

The main types of NCDs are cardiovascular diseases (CVDs like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease – COPD and asthma), and diabetes. Cardiovascular diseases account for most NCD deaths, or 17.9 million people annually, followed by cancers (9.3 million), respiratory diseases (4.1 million), and diabetes (1.5 million). These four groups of diseases account for over 80% of all premature NCD deaths[3].

NCDs also known as chronic diseases, with a slow progression during a long period of time. They are permanent, affect the people's quality of life, and might lead to a residual disability that requires special rehabilitation training. NCDs are not infectious diseases that can be transmitted from one person, vector, or contaminated objects to other people[4]. NCDs are the result of the combination of risk factors like genetic, lifestyle, metabolic factors, and environmental hazards. Poverty, often associated with internally displaced persons (IDPs) status, especially in conflict areas, can contribute to the worsening of NCDs. Additionally, NCDs often result in decreased earning potential, impacted negatively the quality of life, increased morbidity and mortality, and a perpetuation of the poverty cycle[2].

On the other hand, with the right treatment, care, frequent follow-up, and long-term observation, people with NCDs can live a healthy life and have less risk to get any of the complications. In another word, multidisciplinary approach is necessary for the management of NCDs, allowing more time to examine patients' requirements, concerns, and comprehension of their disease[5].

According to the global action plan for noncommunicable diseases, ensuring the availability of NCDs- related services is part of the overall health system strengthening including prevention and control measures and the underlying social factors through people-centered primary healthcare and universal health coverage[6]. This implies that everyone should have free access to the full range of high-quality healthcare services they require whenever and wherever they need them. It covers the entire spectrum of necessary healthcare services, from health promotion to prevention, treatment, rehabilitation, and palliative care[7,8].

In a conflict situation, which is associated with forced displacement, loss of access to medication or devices, and interruption of care due to the destruction of health infrastructures or shortage in human resources or medical supplies, the probability of getting injured, as well as non-functionality of infrastructures like electricity, water, sanitation or even housing, people with NCDs are more vulnerable due to their needs to continuous care over a long time and regular treatment. This might associate with acute complications and require additional interventions, and necessitate coordination of care providers and follow-up. What worsens the situation is outbreaks of infectious diseases which are always a risk in conflict contexts; the COVID-19 pandemic as an example, which added additional pressure on the already stretched health systems and led to disruption of NCDs services including treatment and screening in addition to the direct impact of the pandemic, people with NCD have a higher risk of severe COVID-19 disease and are more likely to die from COVID-19[9]. Additionally, any outbreaks of infectious diseases will shift the focus of the health system to the newly emerged outbreak, especially human and financial resources which will be reallocated to respond to the outbreak. This will lead to partial or complete disruption of the NCDs care, and due to the limited resources in low-income countries, they will be the most affected. This as well will be reflected in the recovery phase after the outbreak in terms of the high burden of NCDs to deal with[10,11].

1.2. Problem statement

In Syria and during the 12 years of the conflict, and according to the Institute of Health Metrics, the diseases burden was extremely unusual, with conflict-related variables jumping from the 19th place to the first position between 2005 and 2015 as the leading cause of death and disability[12], but this does not mean that the NCDs related issues were not there, they were there but not visible and underestimated[13]. During the conflict, the top five changes

up of causes of death between 2009 and 2019 were conflict and terror events (21,485%), diabetes (38%), ischemic heart disease (29%), chronic kidney diseases (28.7%), and stroke (24.8%)[14].

As far as my knowledge is concerned, no data was published revealed the prevalence of the NCDs in Northwest Syria. It is estimated that 45% of all deaths were related to NCDs in Syria[15], this comprised cardiovascular diseases (28%), cancer (10%), chronic respiratory disorders (2%), and diabetes (1%). According to the 2016 WHO Country Profile, the prevalence of NCD risk factors is likewise high: 27.8% of adults are obese and 61.4% of adults are overweight. Of those, 24.5% have high blood pressure and 14.6% have high blood sugar[16]. While one of the recent studies during the conflict mentioned that 27% of all deaths were related to NCDs (almost 49.9% of all non-violent related deaths were due to NCDs including cancer) considering the absence of a system that generates death certificates verifying the precise cause of death[15].

The prolonged crisis in Syria which started in 2011 is considered one of the most severe and complicated crisis after the second world war because of the ongoing hostilities, mass displacement and multi – sectoral collapse.

Syria is presently divided mainly into six general spheres of influence controlled by mutually hostile forces, as shown in the Figure 1 below[17]; 1) The Syrian Regime: most of the country, including the capital, Damascus, major cities of Aleppo, Hama and Homs, Coastal governorates in addition to the majority of the crossing points with the neighbor countries; Jordan, Lebanon and Iraq, 2) Turkish-backed Armed Forces (TBAF) that are operating under the umbrella of the Syrian National Army (SNA), and controlling areas in northern Aleppo in addition to the area between Tall Abyad (Raqqa governorate) and Ras al Ain (Hasaka governorate), 3) Hayat Tahrir Al-Sham (HTS)which is controlling parts of Idlib governorate, northern Latakia and western Aleppo governorates, it is regarded as the last remaining stronghold of anti-Government of Syria (GoS) armed groups, 4) Islamic State of Iraq and the Levant (ISIL) which doesn't have any physical existence on the ground, but they still conduct attacks the extreme eastern part of the Syrian Desert in Deir ez-Zor, Homs, Raqqa and Hama governorates, 5) Syrian Democratic Forces (SDF) control mainly north-east of the Euphrates; most of Raqqa and Hasaka governorates, and parts of Deir Ez-Zor governorate, in addition to parts of Aleppo governorate around Manbij and Kobane, and the area around Tal Rifat, 6) The Tanf border crossing, close to the tri-border area between Syria,

Iraq and Jordan, has been controlled by the US and allied forces from the Global Coalition Against ISIL since 2016[18,19].

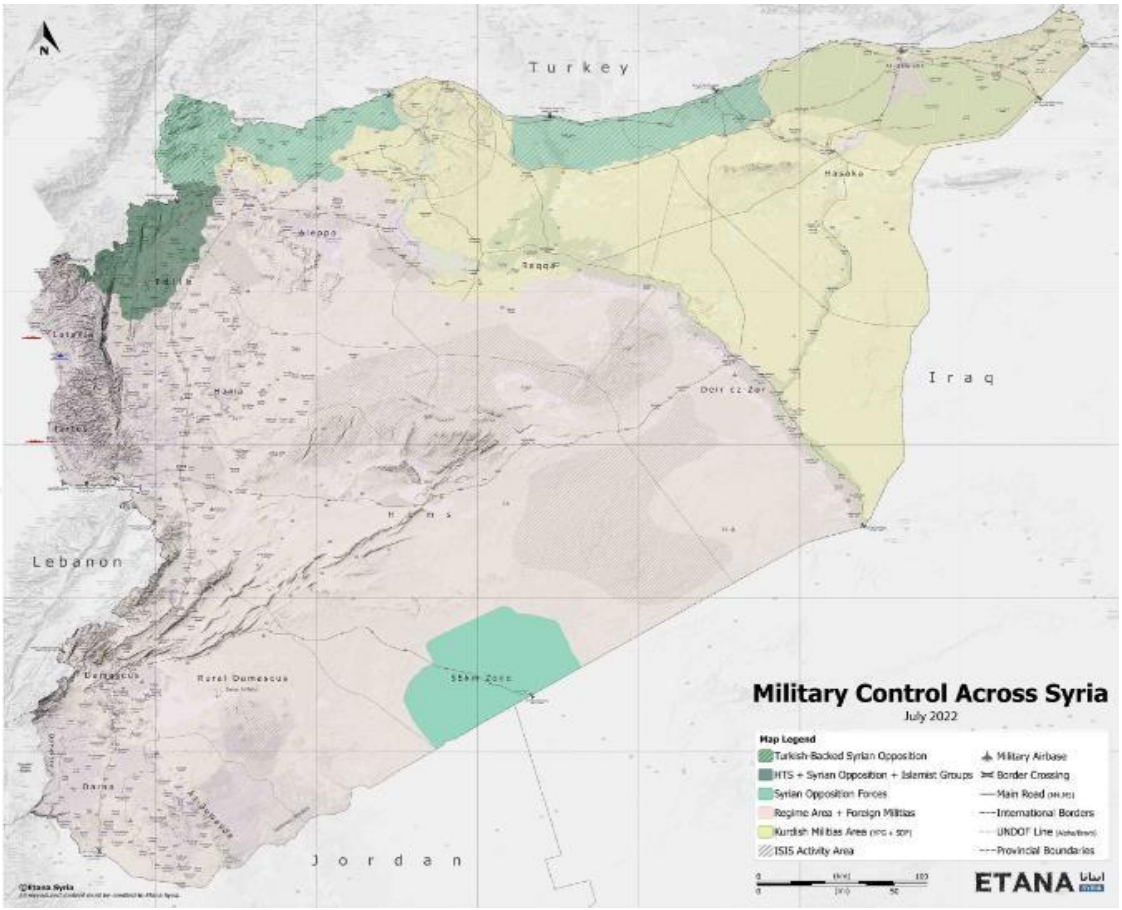


Figure 1: Military control across Syria - July 2022. Breakdown of military control in Syria by various conflict actors, displaying key locations and areas of interest

The number of Syrians in need of humanitarian aid has increased by 9% because of the crisis's effects on people, services, and access, from 13.4 million to 14.6 million in 2021[20], and 15.3 million in 2023[21]. In Northwest Syria (NWS), UN Security Council Resolution 2642/2022 which has renewed in Jul 2022 for six months ensures the continuity of delivering cross-border humanitarian assistance including health from Turkey. Northwest Syria is hosting about 4.4 million people with almost 3.5 million are people in need of humanitarian assistance. With an increase of five percent since 2020, more than 2M people are currently living in planned camps and unplanned settlements[20].

Moreover, and as a result of the conflict, there is a limited number of fully functional health facilities. In Northwest Syria, only 58% (316) were reported as fully functioning and providing a full package of essential services, while 10% (56) were partially functioning[22]. Additionally, up to 70 percent of the health workforce has left the country[23].

Furthermore, the already weak health system in the Syrian Arab Republic is overburdened by the COVID-19 pandemic and the cholera outbreak, which have a direct impact on vulnerable populations and patients by raising morbidities and mortality. As a result, the already weak health system is made even weaker and fragile. By July 2022, the total number of confirmed COVID-19 cases all over Syria reached 197,973 cases and 7,228 related deaths, out of them 103,004 (52.03%) confirmed cases in Northwest Syria and 2,500 (34.59%) deaths. Taking into consideration the low vaccination coverage 13% whole of Syria and 11% in Northwest Syria of the total population who got at least one dose of COVID-19 vaccines[16, 24], this means that COVID-19 infection will stay there, and its effect will stay longer. Knowing that the severity of COVID-19 increases with age, and in presence of any NCD. This is because those who have NCDs have a higher risk of developing a serious illness from the virus, and the interruption of health services is particularly challenging for those who have NCDs and require regular medical care[25]. While on September 10, 2022, the Syrian Ministry of Health declared a cholera outbreak in Aleppo with 15 cases confirmed by lab tests[26], while the confirmation of the first cholera case in Northwest Syria was Sep 19[27]. Up to Dec 17th, the total number of suspected cholera cases was 61,671 with 1,868 positive cases in the whole of Syria's 14 affected governorates with 0.2% case fatality (CFR). Idleb and Aleppo were from the most affected governorates with 25,607 suspected cases and 500 positive ones and 0.06% case fatality (CFR)[26,27].

What makes the situation devastating is the economic decay and deviation of the local currency, which fed into higher domestic prices, causing high inflation. After depreciating by 224 percent in 2020, the market exchange rate of the Syrian pound against the US dollar declined by 26% in 2021[28], while the prices increase by more than 800% in the last two years alone, 90% of the population now lives below the poverty line[29]. Millions of vulnerable families across the country are now forced to make difficult decisions to set their coping mechanism. They have to decide if they have to buy medicines for their sick relatives or cover the expenses of putting food on the table, and sending their children to school[30]. One study from Ukraine, that sadly, recently went through a humanitarian crisis like the one in Syria, made clear that the reported worsening of cardiovascular disease, diabetes, and high cholesterol was strongly connected with interruptions in access to medication. Being displaced, going through severe psychological distress, having medication disruptions, and

not being able to see a doctor at any point since the conflict began were the factors most frequently linked to the perceived worsening of the NCDs[31].

For the above-mentioned situation, continuity of care for people with NCDs is greatly impacted. This research aims to assess the accessibility to healthcare services and treatment for people with NCDs in Northwest Syria such as cardiovascular diseases, diabetes, cancer, and chronic obstructive pulmonary diseases (COPD). This includes all meanings of accessibility as clarified above; physical accessibility, accessibility to services, accessibility to medications, and accessibility to outreach health services including preventive awareness messages. The research as well will assess the effect of socioeconomic determinants on this accessibility. The research as well will compare those who are living in the camps and resident places and identify the most obstacles to accessing healthcare services and treatment. The findings can provide a basis for future research and translation into policy and practice.

1.3. Justification of the study

According to WHO, Syria is facing a 40 percent increase in noncommunicable disease-related deaths when compared to 2011[32]. On the other side, continued civilian casualties and forced displacement as a result of ongoing hostilities, reduced access to already deficient basic health services, discontinuity of care, distribution of resources, skilled staff turnover, lack of leadership, limited and inadequate housing and shelter options, as well as COVID-19 disruptions and related worsened economic conditions, mortality and morbidity rates related to noncommunicable diseases will further aggravate and continue to peak. Accordingly, and to prevent and control NCDs as well as the behavioral risk factors, it is necessary to determine the most practical measures within the complex Syrian context.

This study will aid to highlight the barriers that people with noncommunicable diseases are facing in Northwest Syria in accessing healthcare services and treatment, and how these barriers may be eliminated. It aims as well open the door for future researchers in making further assessments to guide the available funds to cover the gaps and set the appropriate interventions to tackle all the barriers as part of rebuilding the health system in Northwest Syria.

1.4. Objectives

1.4.1. General objectives

Assess the accessibility to healthcare services and treatment for people with noncommunicable diseases in Northwest Syria.

1.4.2. Specific objectives

- To determine the most common NCDs among the participants.
- To determine the types of the accessible healthcare settings.
- To assess the accessibility to healthcare services and treatment for people with the identified NCDs in Northwest Syria by region; Aleppo and Idleb.
- To assess the accessibility to healthcare services and treatment for people with the identified NCDs in Northwest Syria in camps and outside the camps.
- To assess the accessibility to healthcare services and treatment per type of the identified NCDs.
- To assess the effect of the socioeconomic determinants on accessibility to healthcare services and treatment for people with the identified NCDs in Northwest Syria.
- To explore barriers affecting access to healthcare services and treatment for people with the identified NCDs in Northwest Syria.
- 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**: Fixed public health settings are the dominant type of the accessible healthcare settings for people with noncommunicable diseases.
- **H3**: The accessibility to healthcare services and treatment for people with the identified NCDs in Northwest Syria is different between regions; Aleppo and Idleb.
- **H4**: The accessibility to healthcare services and treatment for people with the identified NCDs in Northwest Syria is different between in-camp and outside-camp residents.
- **H5**: Respondent with cancer are the most affected ones to access healthcare services and treatment among other types of the identified NCDs.
- **H6**: Socioeconomic determinants impacts the people’s accessibility to healthcare services and treatment in Northwest Syria.

- **H7**: 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 in Northwest Syria.
- **H8**: People who do not have access to the required healthcare services will switch health facilities to get the required healthcare services.

2. GENERAL INFORMATION

2.1. Introduction

NCDs present a threat towards the 2030 Agenda for Sustainable Development, which includes a goal to reduce by one-third by 2030 the probability of dying from any of the four major NCDs between the ages of 30 and 70.

In low-resource settings, healthcare costs for NCDs - related needs quickly drain household resources. The excessive costs of NCDs, including treatment, which often for a long time, combined with the loss of income, push millions of people into poverty every year. What makes them more vulnerable is that poor people are at greater risk of being exposed to harmful products, such as tobacco, or unhealthy dietary practices, and have limited access to health services[33].

The 2030 Agenda for Sustainable Development recognizes NCDs as a barrier. As NCDs are the single greatest cause of preventable illness[34], reducing the NCDs related risk factors is one of the most important ways to control them. Furthermore, management of NCDs includes provision of detection, screening and treating services and availability of palliative care for people in need, requires a comprehensive approach with multiple sectors included; health, finance, transport, education, agriculture, and others[33].

Moreover, access to treatment, continuity of care, including referral pathways, patient education/patient self-management, community participation, and health promotion are considered crucial elements of the response to NCD-related needs in any humanitarian crisis[35].

2.2. Healthcare system in Syria and the effect of the conflict

The pre-conflict health system was centralized with poor governance that manifested in a lack of transparency, insufficient utilization of capacity, and insufficient coordination between health service providers, which demonstrated a mismatch between the demands/needs of the population and the available services[36]. Moreover, it was increasingly privatized, which was focused in the major urban areas, which increased the inequities in access to healthcare between people living in urban and rural areas. On the other hand, Syria was already experiencing an epidemiological transition from communicable to noncommunicable diseases, with the most recent data indicating that noncommunicable

diseases were responsible for 77% of mortalities[36,37], this was exacerbated during the conflict as the health system became much fragmented.

Since the onset of the conflict, and as the crisis was becoming deeper, the health response moved from local committees within each community to respond to the injuries and trauma needs to mobilize resources, at the early stage, to different-level health facilities and variance of health partners/actors involved in the response such as International NGOs and UN agencies while more and more areas became out the central government control[38]. Various geopolitical, financial, and humanitarian factors as well as the withdrawal of the ministry of health from regions controlled by the opposition have led to the emergence of at least four health systems; the two-thirds of the country that are under the control of the Syrian government and fall under the responsibility of the Ministry of Health; areas in the northeast, which are under the Autonomous Administration of North and East Syria and include Al-Hasakeh, Raqqa, Deir Ezzor, and parts of the Aleppo governorate; northwest Syria, which is under opposition control and includes the northern Idlib governorate, as well as parts of Aleppo; and area of the northern Aleppo governorate along the Turkish border, which is under Turkish control. These sub-national health systems differ about funding, governance, key stakeholders, models of health-service delivery, and degrees of destruction to health facilities and related infrastructures[39,40].

Later, the international community mobilized its agencies and resources to respond to the humanitarian crisis that emerged from the military conflict. The UN Security Council has already issued a resolution – to be renewed annually then every 6 months by voting amongst state members – permitting humanitarian access into opposition-held areas through a cross-border mechanism which allowed the establishment of the Office for Coordination of Humanitarian Affairs (OCHA) based in each of Turkey, Lebanon, and Jordan as hubs for logistical facilitation and inter-cluster coordination.

There is a lack of coordination or collaboration across these health systems, which resulted in risks to the population's health. This lack of cooperation already has contributed to outbreaks of communicable diseases-for example, a polio outbreak in northeast Syria in 2017-2018[41], and has led to challenges coordinating the COVID-19 pandemic, which has exposed existing fractures within the health system and overwhelmed health system capacity across all areas[42].

2.3. Northwest Syria and healthcare system

Between December 2019 and February 2020, Syrian government forces and their Russian allies conducted an escalation that includes airstrikes and a ground offensive, and gain more areas from the opposites in northwest Syria which resulted in almost one million civilians being internally displaced[43]. By Aug 2020, Northwest Syria, which is a 6,000 square kilometer area of northern Idlib governorate, as well as parts of Aleppo; and an 8,835 square kilometer area of the northern Aleppo governorate along the Turkish border[39,43], became the home of an estimated 4.1 million people, of whom 2.7 million were IDPs; more than 76 percent of the population were women and children as one of the last areas under the opposition control, and Bab Al-Hawa border crossing became the only point can be utilized for transshipments to Northwest Syria[44], with no guarantee that the UN Security Council will renew its cross-border resolution regularly, given the increasing threat of a veto from China and Russia.

The healthcare humanitarian response for Northwest Syria has led by WHO from Gaziantep in Turkey. WHO is the leading agency of the Health Cluster and its related technical working groups to mainly coordinate the response and actions of all national and international nongovernmental organizations in the opposition-controlled areas in Northwest Syria[45]. It as well holds technical power on decision makers for healthcare services in Northwest Syria and leads the early response on priority communicable diseases. Moreover, the cluster provides lifesaving medical commodities including equipment, and medical training to the healthcare workers as part of the efforts to resort to the disrupted healthcare system in Northwest Syria[46]. Worth mentioning that the private sector is outside this structure and plays the role of an isolated service provider.

2.3.1. Governance

In Idleb province, there is the Ministry of Health (MOH) of the Syrian Salvation Government (SSG) which is very poor in terms of professional human resources and has very limited influence on the ground but is backed by Hayat Tahrir Al-Sham (HTS) dominating SSG, which again increasingly politicized climate for health[39]. That MOH does not have an executive Health Directorate (HD). In reality, there is Idleb Health Directorate, but as an independent body.

In North Aleppo, which is under the Turkish-Backed Armed Forces, and where the Syrian Interim Governorate (SIG) is operating, there is the Ministry of Health (MOH) with the executive Health Directorate (HD) of Aleppo province. On the other hand, there are the health offices of the local councils that are hugely influenced by the Turkish authorities. Those health offices expanded under Turkish coverage to call themselves Districts Health Directorates (e.g., Afrin HD, Azaz HD, Al-Bab HD …) as rival directorates with Aleppo HD. Moreover, the activities of all national and international NGOs are directed by the Turkish authorities and the health actors have to obtain approval from the respected health directorates in Kilis, Hatay, or Gaziantep pre-operating their proposed health facilities.

In presence of multiple health bodies on the ground with different in different geopolitical areas and various financial, and humanitarian drivers, and in absence of a central body to set guidelines and standards, an important challenge emerged which is the poor coordination between all these health authorities. This consequently led to a lack of availability, accessibility, acceptability, and quality of healthcare which has greatly impacted population health[47]. Furthermore, all actors are still far from the functions of governance as WHO stated and the most important function is accountability. Additionally, other functions, such as regulating actors and developing national plans and policies, are performed poorly and require more effort from all players[48].

2.3.2. Infrastructures

Deliberate attacks on healthcare facilities contributed to devastating Syria's health system, which has come under strain due to attacks, the compelled departure of medical professionals, and the rise in the country's population's health needs[49]. The regime used attacks against healthcare to 'compel civilian people to submit [in opposition-held areas] and undermine their fortitude'[50]. According to the Physicians for Human Rights report, there were 492 attacks on 330 separate health settings between March 2011 and the end of December 2017[51]. Moreover, as of June 2021, 600 attacks on 350 health settings, most committed by the Government of Syria (GoS) and its allies, had been recorded[52].

On the other side, absence of a central authority to set the guidelines and standards, and a lack of funds that can be directed for major rehabilitations or building dedicated facilities for healthcare services – since the majority of the funds are directed for emergency response and lifesaving services - are on the list of reasons for inadequate WASH, and

insufficient specialized services for example, maternal and child health, oncology, and dialysis to meet the population's needs and national and international standards. This was clear during the COVID-19 outbreak response in northwest Syria; poor physical conditions in the locations where healthcare services are provided, unregulated movement of the crowded population, the failure to comply with the isolation protocols, and a shortage of healthcare workers may have contributed to the high infection rate among the healthcare workers[53].

In North Aleppo, the Turkish health directorates of Kilis, Gaziantep, and Hatay have contributed to the establishment of six new hospitals in line with Turkish standards elsewhere in Turkey in Afrin, Azaz, Albab, Maare, Alrai, and Jarablus communities, in addition to numerous primary healthcare centers. The Turkish Ministry of Health in Ankara finance all these health services. They are managed by Turkish nationals, while health staff (medical doctors and nurses) are predominantly Syrian. The quality of care is reported to be good within these services and is provided without discrimination to both Arab and Kurdish populations[39].

Now, in Northwest Syria, almost half of the health facilities are fully functioning, only 58% (316) were as reported fully functioning and providing a full package of essential services, while 10% (56) were partially functioning[22].

2.3.3. Health workers

The local healthcare professionals were the backbone of the health system during all levels of the crisis, without them, the health system would collapse[54]. On the other side, deliberate targeting the health settings by mainly the Syrian Governorate and its alliances forced most of them to leave the country, it is the stark reality of these statistics and the life healthcare workers live in these conditions which by the end of 2015, 15,000 of Syria's 30,000 doctors had left the country[55]. Furthermore, it is estimated by the end of 2015 that 782 medical professionals had been killed during this time with doctors accounting for 32% of total deaths in the five years[56,57].

According to the Health Resources and Services Availability Monitoring System HeRAMS report of the third quarter of 2022, none of the districts in Northwest Syria has reached the benchmark of the number of health workers (medical doctors, nurses, and

midwives) for 10,000 population which is 22, or even the benchmark of the number of the community health workers per 10,000 population which is 10[58].

The protracted conflict also hurts healthcare workers' personal and professional life through disruptions in their workload, training and resources, barriers, and risks faced, and mental health and security issues[59]. What worsens the situation is an outbreak of high risk some of which already happened like COVID-19 which negatively affected health workers' professional commitment, professional satisfaction, and quality of their professional life[60]. On the same side, well organized medical education is crucial to ensure availability of the well qualified health providers. The priorities of the Syrian crisis respondents did not include medical education and many challenges were there; lack of local healthcare leadership and governance, lack of coordination and collaboration amongst stakeholders, and competition between them, and insufficient funding. In addition to a lack of accreditation or recognition of qualifications, improper physical space for teaching. Moreover, healthcare system-related barriers like the politicization of healthcare system, changing healthcare needs of the population, and continuous attacks on healthcare were on the list of barriers to having an acceptable level of medical education[61,62].

Although some initiatives to reform the healthcare system have already been made, but until today, little has really changed[49], the use of common medical services, like antenatal care and outpatient consultations, was significantly impacted by the conflict incidents[52], and the opposition-controlled territories have few and difficult-to-access healthcare facilities. In another word, Northwest Syria's humanitarian-style health system, like those in other non-governmental-held areas, is unprepared to deal with problems like mental health or specialized cancer and other noncommunicable disease care. Therefore, to encourage these innovative initiatives, more sustainable solutions are required. While preserving lives has been the primary goal of the international medical response in Syria, there should be a greater emphasis on health outcomes that are associated to early recovery[40,63].

2.4. Literature review

2.4.1. Universal Healthcare coverage

The International Conference on Primary Healthcare held in Alma-Ata in 1978 remains at the heart of discussions on public health, health policy, and human development.

The Declaration expresses the idea of what Universal Healthcare could achieve, which is the attainment of the highest possible level of health as a fundamental human right by all peoples of the world, and primary healthcare is essential to achieve universal health[64].

The most authoritative interpretation of the right to health is outlined in Article 12 of the International Covenant on Economic, Social and Cultural Rights (ICESCR), which set out four standards by which to evaluate the right to health[65]:

- Availability: healthcare services and products are available in the healthcare system of a country with sufficient quantity.
- Accessibility: no barriers stopping patients from accessing healthcare in terms of no discrimination, physically accessible, access to information and without causing not cause financial hardship (affordability).
- Acceptability: healthcare is culturally appropriate, i.e., respectful of the culture of individuals, minorities, peoples, and communities, sensitive to gender and life-cycle requirements, and satisfies the needs of various groups of the population.
- Quality: Services and goods must be significantly and medically appropriate and of good quality.

2.4.2. Definition of access to healthcare in general

Access to healthcare is a major health policy concern and it varies by community and country[66]. It starts from the physical existence of healthcare infrastructures, type of services, availability of human resources, and availability of functional equipment and commodities. Coverage of the health settings and services, geographical location of the beneficiaries, distance from the health settings, availability of the resources, and knowledge about the services are all interfered with the accessibility definition[67]. Socioeconomic characteristics of the beneficiaries and cost of the healthcare are affecting the accessibility to healthcare services[68]. Finally, the quality of the services and if they are provided in a proper environment to the beneficiaries.

2.4.3. Integration of NCD care into Primary Healthcare

In 2010, WHO initiated and developed the Package of essential noncommunicable (PEN) disease interventions for primary healthcare in low-income countries. The aim of the initiative is the integration of NCD into PHC. It offers NCDs protocols as well as tools to

improve the country's capacity to include and scale up NCD care in primary healthcare. The initiative includes training local trainers – health workers, providing NCD kits, and delivering remote monitoring[69].

However, providing NCD care requires not only understanding of the burden and technical guidelines, but it is necessary to have access to qualified healthcare professionals, specialized equipment, a consistent supply of affordable pharmaceuticals[70]. Moreover, NCD care depends on the affordability, physical accessibility, and acceptability of the available services in terms of physical existence of the all required health services to meet the patients' needs, health services should be provided in an accepted cultural and social manner, meet the needs of all groups in the population and without causing hardship to the patient[71,72].

2.4.4. NCD care plans by 2025

The global action plan includes following targets to be achieved by 2025: 1) At least 50% of people who qualify undergo drug therapy and counselling (including glycemic control) to prevent heart attacks and strokes. 2) an 80% availability of the inexpensive fundamental technology and necessary medications, including generics, required to treat major noncommunicable diseases in both public and private facilities. 3) a 25% relative reduction in the prevalence of raised blood pressure or contain the prevalence of raised blood pressure, according to local conditions[6].

3. MATERIAL AND METHOD

3.1. Study design

It was a cross-sectional study. It depended on face-to-face interviews and self-reported diseases by the participants at the community level.

3.2. Study location

In Northwest Syria, there are 9 districts and 35 sub-districts. Most last resort sites of the Syrian IDPs were in Idleb (63%) and Aleppo (23 %) Governorates. Three sub-districts; Dana, Maaret Tamsrin in Idleb, and Azaz in Aleppo, alone hosting around 70% of all IDPs in last resort sites[20].

The location of the study was in 4 sub-districts – green colored in Figure 2 below: 2 were in Idleb (Dana and Maaret Msrin sub-districts), and 2 were in Aleppo (Afrin and Azaz sub-districts). These locations had been chosen due to their accessibility (they are near the Turkish border and crossing points). Additionally, the identified sub-districts had the highest number of camps in Idleb and Aleppo respectively[73], and this was more beneficial to the aim of the research to compare access between in-camp residents and outside-camp residents.

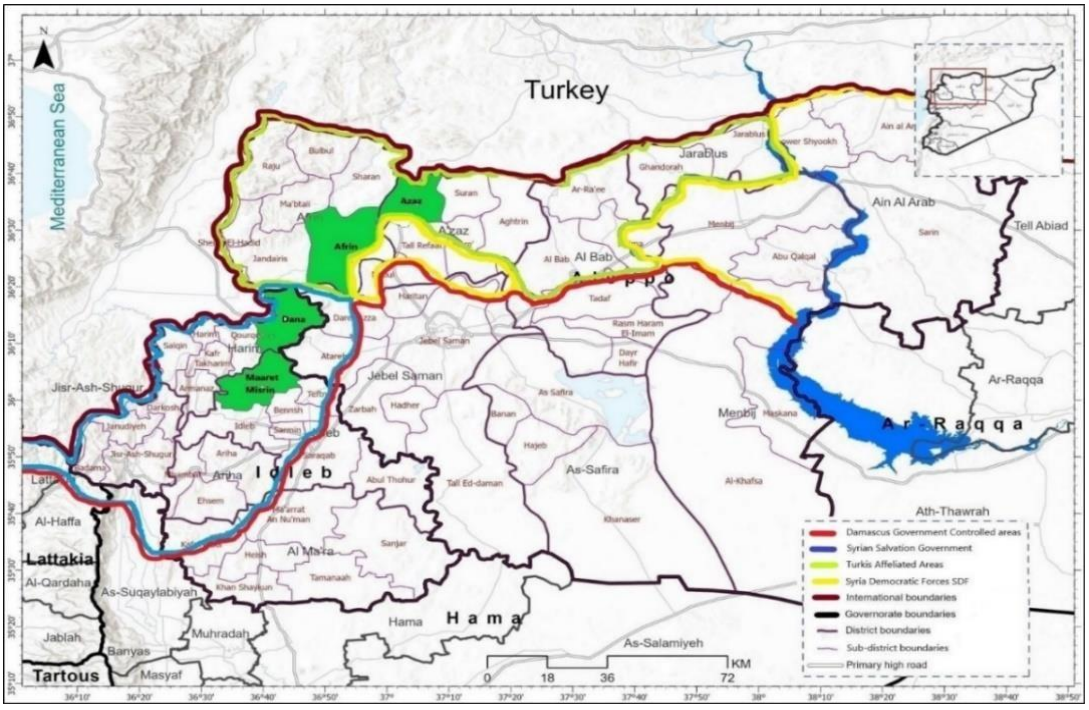


Figure 2: Study Location (green colored) and the control across Northwest Syria

3.3. Study population

The study population included patients with any of the four major types of noncommunicable diseases, cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes, who were reached by the community health workers in the identified areas of study.

3.4. Sample size determination

The sample size was calculated using the following formula: $n=z^2\ p(1-p)/d^2$ where: 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 Northwest Syria. Which was estimated 50%. Therefore, n = 3.8416 * 0.50 * (1 - 0.50) / 0.0025 = 385. We added 20% of the total sample size in case some patients would not like to participate, then the total sample size was (385*0.20) +385 = 462 which was the minimum sample size we could choose from the study population.

3.5. Sampling techniques

The participants (patients who had any type of the four major types of the noncommunicable diseases) was selected randomly using a stratified random sampling method to ensure the representative of the study population in the selected sample, it is illustrated as follows in Table 1:

The average number of the participants was set according to the percentage of people living in the camps out of the total population in the sub-district[20].

Table 1: Study sample by governorate, sub-district, and place of residency.

Gov	Sub-district	Total population	Informal settlements/ camps population (percentage %)	Total standard study sample (calculated)	Study sample (Collected)		
					Total	camps	outside the camps
Idleb	Dana	1,126,535	911,703 (81)	267	364	274	90
Idleb	Maaret Tamsrin	330,657	231,059 (70)	78	138	61	77
Aleppo	Azaz	301,296	154,675 (51)	71	95	47	48
Aleppo	Afrin	194,055	33,698 (17)	46	77	18	59
Total		1,952,543	1,331,135	462	674		

3.6. Inclusion and exclusion criteria

3.6.1. Inclusion criteria

Patients who have any type of the four major noncommunicable diseases and;

- Reachable by the community health workers in the identified areas.
- Who are willing to participate will be included in the study.
- Above 18 years old.

People from the identified subdistricts; in-camp and outside-camp residents as well as who were living in Idleb and Aleppo were included in our study.

3.6.2. Exclusion criteria

People who were not willing to participate, or patients with severe condition, or cannot answer the questions were excluded. Moreover, people who were living outside the identified subdistricts, or visitors to the identified areas were excluded.

3.7. The questionnaire and pre-testing

A questionnaire of two pages was filled out for all the study participants, in Appendix 2. The first part is about the demographical characteristic, age, sex, profession, place of residence, marital status, employment, educational status, economic status, type of the chronic disease, and personal and family history of chronic diseases and treatment. The second part is the research – developed questionnaire to assess the accessibility to different type of services; access to health settings, access to medical diagnostic services (lab, imaging services, specialized doctors), access to treatment (primary and more), access to medications and free medication, and access to outreach health services.

The questionnaire was built based on the Syrian context to meet the aim of the study. Similar questionnaires were used by different NGOs working in Northwest Syria while conducting multi sectors needs assessment. The questionnaire was shared with monitoring and evaluation coordinators and doctors inside Northwest Syria to get their feedback and modify accordingly if needed. Then, the questionnaire was tested first and 20 forms were filled out; 10 of them from Idleb and 10 were from Aleppo. After that, the primarily collected data was analyzed to ensure that all parts of the study were covered.

The questionnaire was prepared in Arabic since it is the native language for majority of people in Northwest Syria.

3.8. Variables

3.8.1. Independent variables

Age: 18-45, 46-65 and 65+ age groups, sex: male or female, profession, and employment: employment or unemployment, and if employment; what is the profession. Place of residence: in the camp or outside the camp. Marital status: married, single, widowed, or divorced. Economic status: income is higher than spending, income is lower than spending, or income equals spending. Educational status: uneducated (illiterate), primary school, junior secondary school, senior secondary school, or postsecondary education, and type of the NCD: cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes.

3.8.2. Dependent variables

Accessibility to the healthcare services and treatment. This includes all meanings of accessibility; physical accessibility, accessibility to services, accessibility to medications, and accessibility to outreach health services including mobile medical services and preventive awareness/education messages.

3.9. Data collection method

The researcher contacted the community health workers on the ground after obtaining the required approvals from the health actors and explained to them the purpose of the study, participants selection criteria. The community health workers in the identified areas of study extended that to the participants while collecting the data. All participants were informed about the procedure and scope of the study, and informed consent was obtained. The data collected between Nov 1. to Nov 30. 2022 through face-to-face interviews.

The questionnaire was reflected on KOBO toolbox and a link of the survey was created and shared with the data collectors – community health workers - in the identified areas. The collected information was sent to the researcher account on KOBO. Only the researcher can access this information. During data collection, the researcher was in daily contact with the community health workers on the ground to guide them and advise them to make sure that

the data is collected according to the above mention criteria. At the end of the data collection period, the data was exported in excel and was ready to start analyzing.

3.10. Statistics analysis

Total 674 responses from the four identified subdistricts in Aleppo and Idleb were entered into Statistical Package for Social Sciences (SPSS) version 26 for analysis. Results were described in terms of frequencies, using descriptive statistics. Bivariate analysis chi-square test was used to identify a possible association between the dependent and independent variables. Then, multivariant logistic regression analysis was performed to identify the potential predictors from the independent variables in accessibility to healthcare services and treatment for people with noncommunicable diseases. Odd ratio significance was assessed considering 95% confidence interval level. p values < 0.05 will be considered statistically significant.

3.11. Strength and limitation

3.11.1. Strength

As far as my knowledge is concerned, this research was the first of its kind to analyze accessibility to treatment and healthcare services for people with noncommunicable diseases and its barriers in Northwest Syria. Additionally, it assesses the availability of the basic healthcare services in the respected health facilities.

3.11.2. Limitation

As every research done has a limitation this research was not an exception. Collecting the data was the main challenges and to get approval from the health actors on the ground in the study location. Participants were randomly selected from the communities until the target sample size was reached. We used a stratified method of sampling, but since the healthcare situation is widely vary between regions, the results might not be representative of the entire counties of Northwest Syria.

3.12. Ethical consideration

To allow the researcher to undertake this research, written approval was sought from Ankara Yildirim Beyazit University's health committee (Appendix 3) with the approval

code: 2022-1084, as well as authorization/permissions from the NGOs (Appendix 4) that are operating in the identified areas to coordinate with the community health workers and the relevant employees to interview people and fill out the prepared online questionnaire as clarified in Appendix 2.

The consent of the respondents was also obtained, and a question at the beginning of the questionnaire was added to conform people participation in the study. They were informed of the research's goal and rationale. The data collected from the respondents was coded to protect their identity and privacy and in this way the respondent were not personally identified or harmed in any way, they were informed that all information would be kept confidential and that they could opt out at any time, or they can stop filling the questionnaire whenever they want. The interviewers were responsible for maintaining the dignity and welfare of all participants and for any harm that may be inherent during the research procedure.

4. RESULTS

4.1. Descriptive statistics

The aim of this research is to assess the accessibility to healthcare services and treatment for people with noncommunicable diseases in Northwest Syria in Aleppo and Idleb Governorates, and the effect of the socioeconomic determinants on this accessibility. The research as well compared those who are living in the camps and those residents outside the camps, and identify the most obstacles to accessing healthcare services and treatment. 674 respondents from 4 sub-districts; 2 in Aleppo and 2 in Idleb in Northwest Syria participated in the research and the results will be presented in this chapter.

4.1.1. Socio-Demographic Characteristics of Respondents

The results were obtained from 674 respondents, all of them have at least one of the four main noncommunicable diseases. As presented in Table 2 below, the majority (80.9%) were from the age group above 45 years old. Moreover, the mean age of the respondents was 55.6, std=12.9581. The minimum and maximum ages were 18 and 100. Females were 52.8 % of the participants. Out of overall participants, 76.4 % were married.

More than 80% of the study group were unemployed (86.1%). On the same side 78.8% of the respondents had income less than the needed expenditures. Considering the education attainments, 39.6% of the participants were illiterate, while 90.1% reached the junior secondary school. Only 3.4% had a postsecondary level of education.

Regarding the residency of the respondents, as clarified in the Table 2 below; the majority of the participants were from Idleb (74.5%) while only 25.5% of the participants were from Aleppo. Additionally, more than half of the overall participants (59.3%) were living in camps.

Table 2: Socio-Demographic Characteristics of Respondents (N=674) (continued)….

Variable	Category	Frequency	Percentage %
Age group	18 – 45 years	129	19.1
	46 – 65 years	414	61.4
	65 + years	131	19.4
Sex	Male	318	47.2
	Female	356	52.8
Marital Status	Single	159	23.6
	Married	515	76.4

Employment Status		Employed	94	13.9
		Unemployed	580	86.1
Economic Status		Income is lower than expenses	531	78.8
		Income equals or higher than expenses.	143	21.2
Educational attainments		Uneducated/ illiterate	267	39.6
		Primary School	201	29.8
		Junior Secondary School	139	20.6
		Senior Secondary School	44	6.5
		Postsecondary Education	23	3.4
Governorate/ subdistrict	Aleppo	Afrin	77	11.4
		Azaz	95	14.1
	Idleb	Dana	364	54.0
		Maaret Misrin	138	20.5
Place of residency		In the camp	400	59.3
		Outside the camp	274	40.7

4.1.2. History of the chronic diseases

All the respondents 674 had at least one of the four main types of noncommunicable diseases. As shown in Table 3, almost a quarter of the respondents (25.8%) had more than one of the four identified NCDs. On the same side, only 30.6% of the participants mentioned that there was at least one more member of their family in the same household with at least one NCD as well. Worth mentioning that most of the respondents (87.1%) had been more than one year diagnosed before the survey.

Table 3: Personal and family history of NCDs (N=674)

Variable	Category	Frequency	Percentage %
When the disease has been diagnosed	Less than one year	87	12.9
	From 1 to 5 years	283	42.0
	More than 5 years	304	45.1
How many types of NCDs	Only one	500	74.2
	More than one	174	25.8
Family History of NCDs in the same household	Yes	206	30.6
	No	468	69.4

4.1.3. The most common NCDs among the study group

Regarding the proportion of the NCD types among the study group (people have one or more of the four major types of NCDs), as shown in Figure 3, cardiovascular diseases were the most common NCD (68.2%) among the participants, then diabetes with 45.1% of

the respondents while people with COPD and cancer came later with 11.6% and 1.8% respectively.

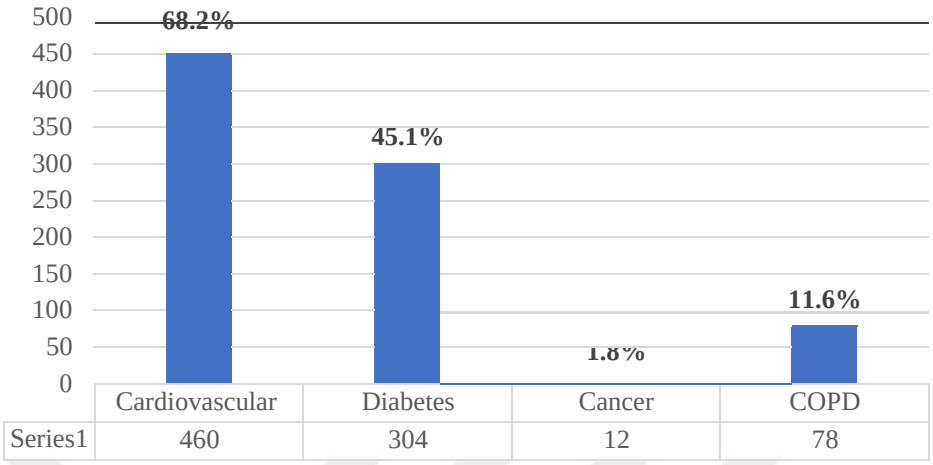


Figure 3: The most common NCDs among the respondents (n=674)

4.1.4. Types of the accessible healthcare settings

Regardless of the level of the facility, as shown in the Figure 4 below, fixed health facilities were identified at the top of the accessible health setting types list in Northwest Syria with 60.5% among all-surveyed options. Pharmacies came in the second position of the accessible health settings with 18.5%. In the third position was mobile clinics with 7.3% as one of the accessible health settings. Local doctor was there as well with 13.4% of the accessible health settings. Finally, traditional medicine was mentioned as one of the ways/ settings to get served by the people with NCDs in Northwest Syria with 0.3%.

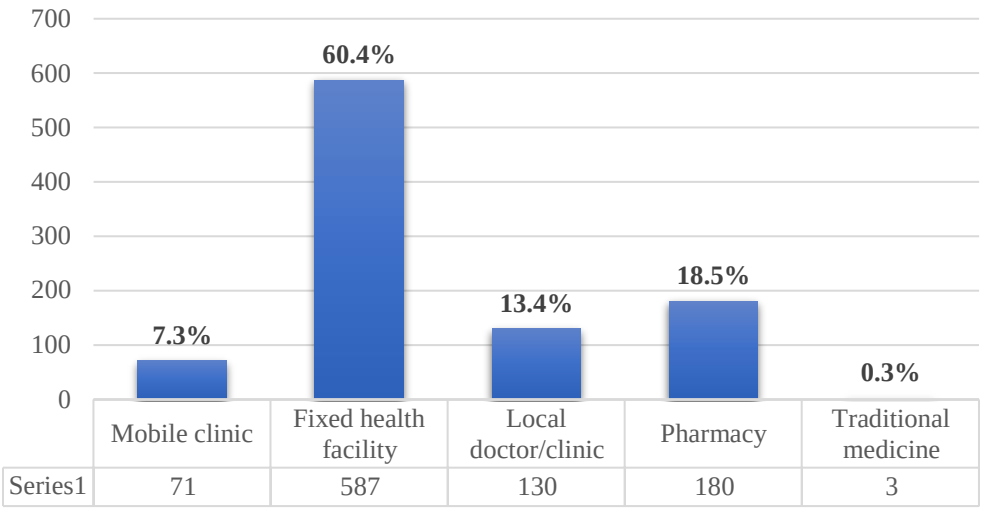


Figure 4: Types of the accessible healthcare settings

4.1.5. Means used to access healthcare settings

As clarified in Figure 5 below, walking to get healthcare services was the dominant mean with 46.3% of the overall used means. Using private vehicles came after with 30.4%, this includes the respondents' private cars or motorcycles or their relatives or neighbors' private vehicles which can help them access healthcare services. Although public transportation is not well organized in Northwest Syria, it was on the list of the used means with 23.3% out of overall means.

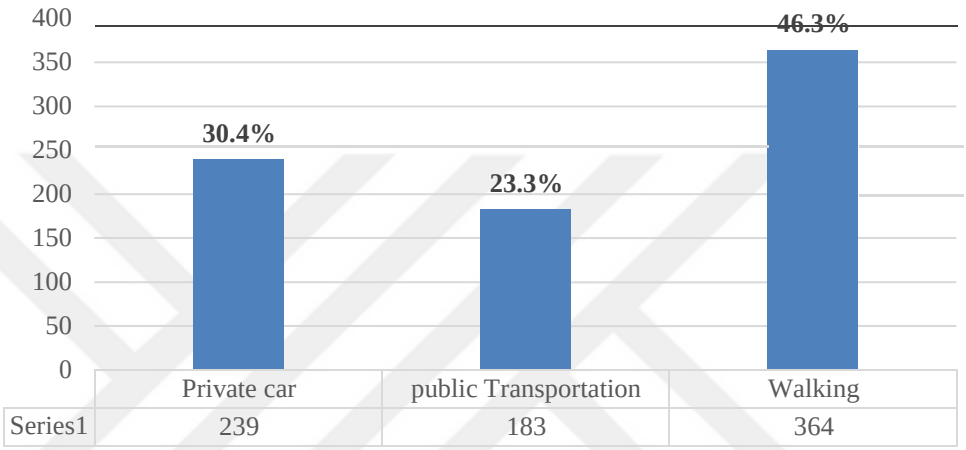


Figure 5: Means to access healthcare settings

4.1.6. Distance and maximum time to access healthcare settings

According to the poor infrastructure in Northwest Syria, the distance to the nearest health settings was considered one of the variables to assess the accessibility to healthcare services and treatment. As presented in the Table 4 below, however, more than half of the respondents (59.8%) were living less than 2 km to the accessible health settings, 17.5% were living more than 3 km far from the accessible health settings.

On the same side and for the time required to reach the health settings, most of the respondents – regardless of the mean that they were using to access healthcare services - stated that it took less than 30 minutes (77%), a perceived group of respondents (20.2%) mentioned that it took between 30 and 60 minutes to reach the nearest health setting. Still, one group of respondents (2.8%) mentioned the longest time required to reach the nearest health setting.

Table 4: Types of the accessible healthcare settings by residency (N=674)

Variable	Category	Frequency	Percentage %
Distance to the accessible health settings	2-3 km	153	22.7
	less than 2 km	403	59.3
	more than 3 km	118	17.5
Maximum time to reach the accessible health settings (minute)	Less than 30 minutes	519	77
	30-60 minutes	136	20.2
	More than 60 minutes	19	2.8

4.1.7. Accessibility to healthcare services

As shown in Tables 5 and 6 below, 42.1% of the respondents mentioned that they did not get all the required services in the accessible health settings. Majority of them as clarified in the Table 5 below were outside-camp residents.

Table 5: Accessibility to healthcare services by place of residency (N=674)

Variable	Category	Frequency		Total
		Camp N=400	Outside the camp N=274	
		Respondents n (%)		
Access to the required healthcare services	**Yes**	242 (60.5)	148 (54)	390 (57.9)
	No	158 (39.5)	126 (46)	284 (42.1)

While by governorate, the majority of those who didn't get all the required health services were living in Aleppo governorate.

Table 6: Accessibility to healthcare services by Governorate (N=674)

Variable	Category	Frequency		Total
		Idleb N=502	Aleppo N=172	
		Respondents n (%)		
Access to the required healthcare services	Yes	343 (68.3)	47 (27.3)	390 (57.9)
	No	159 (31.7)	125 (72.7)	284 (42.1)

Regarding types of NCDs, respondents with at least cardiovascular disease as one of the NCDs were more among respondents who got the required services in the accessible health settings, while those who had cancer were more among respondents who did not get the required services, as presented in Table 7.

Table 7: Accessibility to healthcare services by type of the NCDs (N=674)

Variable	Category	Frequency				Total
		Cardiovascular N=460	Diabetes N=304	Cancer N=12	COPD N=78	
		Respondents n (%)				
Accessibility to healthcare services	Yes	257 (55.8)	175 (57.6)	2 (16.7)	33 (42.3)	390 (57.9)
	No	203 (44.1)	129 (42.4)	10 (83.3)	45 (57.7)	284 (42.1)

4.1.8. Missing services in the accessible health settings

As presented in Figure 6, the availability of the medications was at the top of the missing services list in the accessible health setting with 35.5% of the overall missing services. While lab tests and specialized doctors' services came after with 22.5% and 19.5% of the missing services respectively. Imaging services and complication treatment services were identified as missed services in the accessible health settings by 14.8% and 7.7% accordingly.

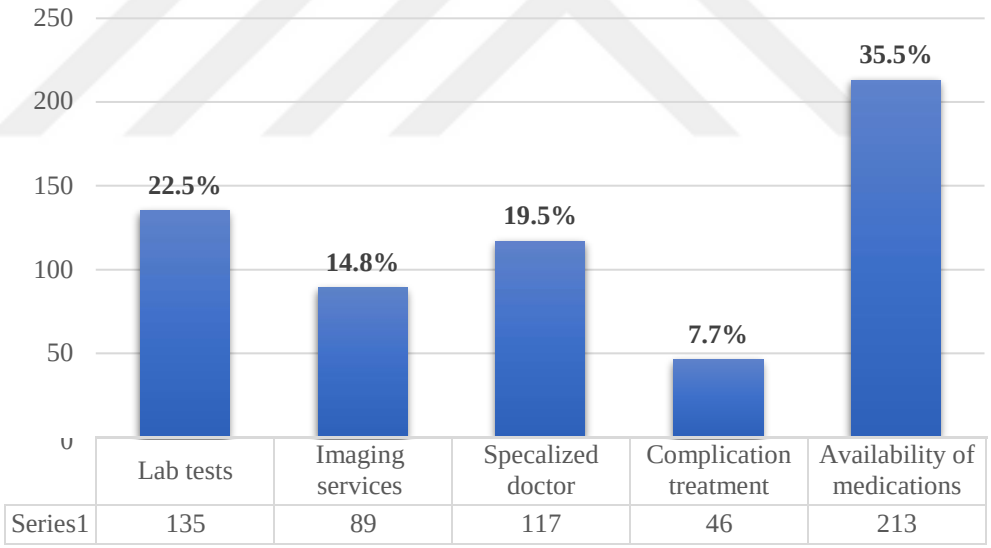


Figure 6: Missing services in the accessible health settings

4.1.9. Accessibility to outreach health services

As outreach health services are considered part of the required services for people with NCDs as mentioned in the introduction, the participants were assessed if they had been approached by any type of the outreach health services, including medical mobile teams and awareness raising and education sessions.

As elaborated in Tables 8 and 9; the majority of the respondents (69.1%) mentioned that they had been approached by outreach health services, either medical services or awareness raising/ education sessions.

Only one third of the respondents (34.7%) attended at least one of the health awareness/education messages. However, the majority of the overall respondents declared that they had been approached by a mobile medical team.

Table 8 below presents a clear disparity between in-camp participants and outside-camp participants regarding accessible to outreach health services for both mobile medical services (64.3% for in-camp residents compared to 49.3% for outside-camp residents), and awareness raising/ education sessions (36.8% for in-camp residents compared to 31.8% for outside-camp residents).

Table 8: Accessibility to outreach healthcare services by place of residency (N=674)

Variable	Category	Frequency		Total
		Camp N=400	Outside the camp N=274	
		Respondents n (%)		
Outreach health services	No	116 (29)	107 (39.1)	223 (33.1)
	Yes	284 (71)	167 (60.9)	451 (69.1)
Attending any health education/awareness message	No	219 (54.8)	165 (60.2)	384 (57)
	Not sure	34 (8.5)	22 (8)	56 (8.3)
	Yes	147 (36.8)	87 (31.8)	234 (34.7)
Have you been visited by a mobile medical team	Yes	257 (64.3)	135 (49.3)	392 (58.2)
	No	143 (35.8)	139 (50.7)	282 (41.8)

Table 9 presents a perceived difference between Idleb and Aleppo regarding being approached by a mobile medical team; 62.9% in Idleb while it was 44.2% in Aleppo. On contrary, respondents living in Aleppo had been approached by awareness raising messages (55.2%) more than Idleb residents (27.7%).

Table 9: Accessibility to outreach healthcare services by Governorate (N=674) (continued)….

Variable	Category	Frequency		Total
		Idleb N=502	Aleppo N=172	
		Respondents n (%)		
Outreach health services	No	158 (31.5)	65 (37.8)	223 (33.1)
	Yes	344 (68.5)	107 (62.2)	451 (69.1)

Attending any health education/awareness message	No	309 (61.6)	75 (43.6)	384 (57)
	Not sure	54 (10.8)	2 (1.2)	56 (8.3)
	Yes	139 (27.7)	95 (55.2)	234 (34.7)
Have you been visited by a mobile medical team	Yes	316 (62.9)	76 (44.2)	392 (58.2)
	No	186 (37.1)	96 (55.8)	282 (41.8)

4.1.10. Source of the required medications

Access to medications for people with noncommunicable diseases is critical to ensure continuity of treatment either in controlling the disease or in preventing complication developments. As clarified in the Figure 7, majority of the respondents (65.7%) identified that NGO supported health facilities were the dominant source for obtaining medications, while about one-third of the respondents (30.9%) replied that private facilities or pharmacies were the main source of their medications. Worth mentioning that 3.1% of the respondents stated that they had never access medications.

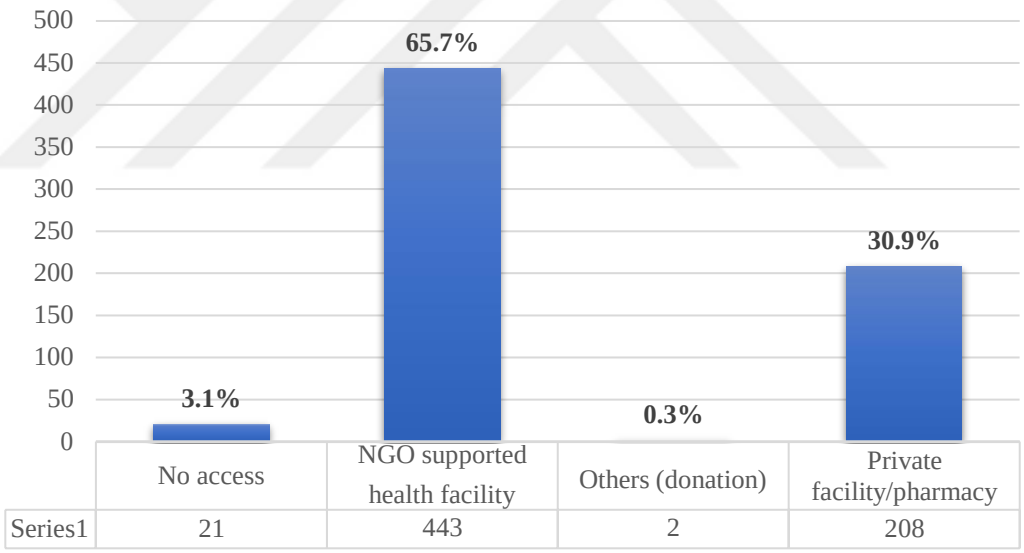


Figure 7: Source of the required medications

4.1.11. Accessibility to free medications

Regardless of the source of medications, as presented in Tables 10 and 11 below, only 22.7% of the respondents responded that they have regular access to all required medications, and they got them for free. While the rest, which is the majority, paid either partial or total cost of their medications from their pocket. Out of those patients who totally

or partially paid from their pocket to cover the cost of their medications; the majority of them (71.2%) paid more than 100 TL/month to get all the prescribed medications.

Table 10 below shows that respondents who never got all their required medications for free were more in camps (35.8%) compared to those living outside the camps (31.8%). Moreover, 53.6% of the outside-camp residents paid more than 100TL/month, compared to 56% of the in-camp residents.

Table 10: Accessibility to medications by place of residency (N=674)

Variable	Category	Frequency		Total
		Camp N=400	Outside camp N=274	
		Respondents n (%)		
Free medications	Not at all.	143 (35.8)	87 (31.8)	230 (34.1)
	Yes, but not all the time	169 (42.3)	122 (44.5)	291 (43.2)
	Yes, all the time	88 (22)	65 (23.7)	153 (22.7)
How much do you pay for medications (monthly)	Free medications	88 (22)	65 (23.7)	153 (22.7)
	Up to 100 TL	88 (22)	62 (22.6)	150 (22.2)
	More than 100 TL	224 (56)	147 (53.6)	371 (55)

Furthermore, as shown in Table 11 below, respondents in Idleb (37.5%) were more compared to Aleppo respondents (24.4%) who never obtained all their required medications for free. Moreover, 58.1% of Aleppo residents paid more than 100TL/month compared to 54 % of Idleb residents.

Table 11: Accessibility to medications by Governorate (N=674)

Variable	Category	Frequency		Total
		Idleb N=502	Aleppo N=172	
		Respondents n (%)		
Free medications	Not at all.	188 (37.5)	42 (24.4)	230 (34.1)
	Yes, but not all the time	180 (35.9)	111 (64.5)	291 (43.2)
	Yes, all the time	134 (26.7)	19 (11)	153 (22.7)
How much do you pay for medications (monthly)	Free medications	134 (26.7)	19 (11)	153 (22.7)
	Up to 100 TL	97 (19.3)	53 (30.9)	150 (22.2)
	More than 100 TL	271 (54)	100 (58.1)	371 (55)

Respondents with cancer had the highest percentage among those who had never obtained their medication for free, as shown in Table 12 below. Similarly, respondents with cancer had the highest percentage of how much they paid to get their medications and 91.7% of the overall cancer patients paid more than 100TL on monthly basis to obtain their required medications.

Table 12: Accessibility to medications by type of NCDs (N=674)

Variable	Category	Frequency				Total
		Cardiovascular N=460	Diabetes N=304	Cancer N=12	COPD N=78	
		Respondents n (%)				
Free medications	Not at all.	161 (35)	89 (29.3)	10 (83.3)	36 (46.2)	230 (34.1)
	Yes, but not all the time	208 (45.2)	142 (46.7)	2 (16.7)	33 (42.3)	291 (43.2)
	Yes, all the time	91 (19.8)	73 (24)	0	9 (11.5)	153 (22.7)
How much do you pay for medications (monthly)	Free medications	91 (19.8)	73 (24)	0	9 (11.5)	153 (18.3)
	Up to 100TL	106 (23)	66 (21.7)	1 (8.3)	13 (16.7)	186 (22.3)
	More than 100TL	263 (57.2)	165 (54.2)	11 (91.7)	56 (71.8)	495 (59.4)

4.1.12. Barriers to accessing healthcare services

As clarified in Figure 8 below, all the respondents had been surveyed about the most barriers to accessing health services in their areas of residence. The most common response was lack of specialized services (31.3%). While service/ medications costs and distance/ transportation costs came at the second and third positions of the barriers list with (23.6%), and (19.2%) respectively. Lack of information about the available services is still there at (13.7%). Moreover, and as expected, security reasons were on the list as well with (2.2%) of the overall barriers. Others which include mistrust of the existing health service provider, language barrier, and cultural reasons were there with (4.1%) of the all barriers.

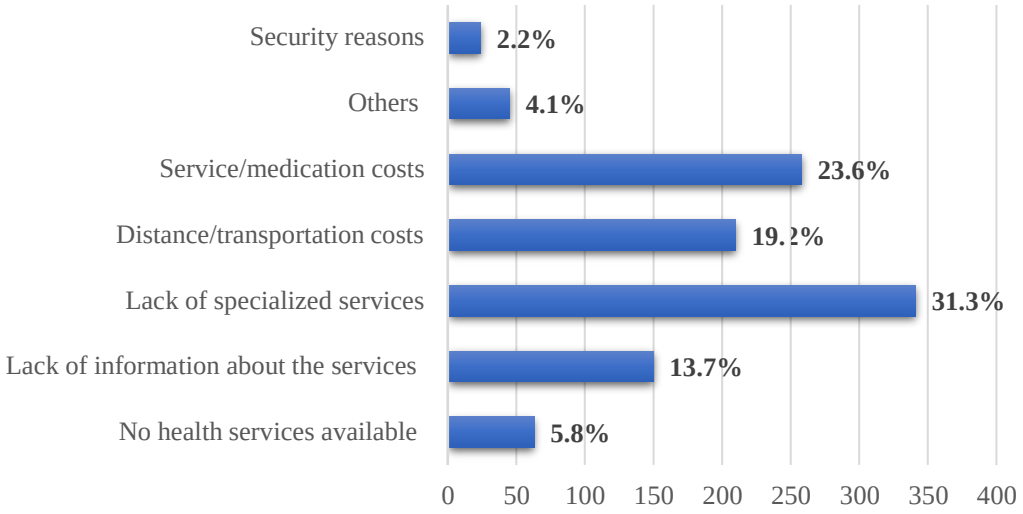


Figure 8: Barriers to access healthcare services

4.1.13. NCD care – seeking behavior

As elaborated in Table 13 below, for the services that are not available, almost half of the respondents (46.5%) replied that they will not access the services. However, 47.9% mentioned that they would travel a long distance to get served, others would visit private facilities (5.3%), or other public health facilities (0.4%) to obtain the needed services.

Table 13: NCD care – seeking behavior (N=284)

Variable	Category	Frequency	Percentage
NCD care-seeking behavior for the services that are not available.	Do not access	132	46.5%
	Travel to get access – long distance	136	47.9%
	Others (Other public health facilities)	1	0.4%
	Others (Private health facility/pharmacy)	15	5.3%

4.2. Bivariate analysis

Correlation Pearson chi-square test was used to identify the association between the dependent variable (accessibility to healthcare services and treatment for people with NCDs) and the independent variables. *p-value < 0.05* is considered statistically significant.

According to the Chi-square, analysis results presented below in Table 14, there was a significant difference between Aleppo and Idleb governorates' accessibility to healthcare

services *(p=0.000)*, but there was no statistical significance found between the place of residence and accessibility to healthcare services. There was correlation found between employment status and accessibility to healthcare services, and there was statistically significant between employment and unemployment respondents (*p=0.001*). Similarly, the difference between respondents who has income equal to or higher than expenses and respondents who have income less than expenses was statistically significant *(p=0.000)*. additionally, there was no association found between age, sex, marital status, and educational attainment with the accessibility to healthcare services and there was no statistical significance found.

Table 14: The association between socioeconomic variables and Accessibility to healthcare services (N=674) (continued)….

Variable	**Categories**	**Accessing healthcare services**		**Total**	**Chi - square**	***p - value***
		No N= 284	Yes N=390			
		Respondents n (%)				
Governorate	Aleppo	125 (44)	27 (12.1)	172 (25.5)	88.328	0.000*
	Idleb	159 (56)	343 (87.9)	502 (74.5)		
Residency	Camp	158 (55.6)	242 (62.1)	400 (59.3)	2.805	0.094
	Outside camp	126 (44.4)	148 (37.9)	274 (40.7)		
Sex	Male	145(51.1)	173 (44.4)	318 (47.2)	2.958	0.085
	Female	139(48.9)	217 (55.6)	356 (52.8)		
Age	18 – 45 years	54 (19)	75 (19.2)	129 (19.1)	0.450	0.799
	46 – 65 years	178 (62.7)	236 (60.5)	414 (61.4)		
	65 + years	52 (18.3)	79 (20.3)	131 (19.4)		
Marital Status	Single	73 (25.7)	86 (22.1)	159 (23.6)	1.217	0.270
	Married	211(74.3)	304 (77.9)	515 (76.4)		
Employment Status	Employed	54 (19)	40 (10.3)	94 (13.9)	10.502	0.001*
	Unemployed	230 (81)	350 (89.7)	580 (86.1)		
Economic Status	Income is lower than spending	243 (85.6)	288 (73.8)	531 (78.8)	13.498	0.000*
	Income equals or higher than spending	41(14.4)	102 (26.2)	143 (21.2)		

Educational	Uneducated/ illiterate	104 (36.6)	163 (41.8)	267 (39.6)	6.567	0.161
Attainments	Primary School	91 (32)	110 (28.2)	201 (29.8)		
	Junior secondary school	53 (18.7)	86 (22.1)	139 (20.6)		
	Senior secondary School	24 (8.5)	20 (5.1)	44 (6.5)		
	Postsecondary Education	12 (4.2)	11 (2.8)	23 (3.4)		

*Significant relationship, *p < 0.05.*

Regarding the types of NCDs and accessibility to healthcare services, as presented in Table 15, having COPD or Cancer was statistically significant in accessing the required services in the accessible health settings with *(p=0.003)* for both, which is not the case for cardiovascular diseases and diabetes.

Table 15: The association between type of NCDs and accessibility to healthcare services (N=674)

Variable	Categories	Dependent Variable		Total	Chi - square	*p – value*
		Accessing healthcare services				
		No N=284	Yes N=390			
		Respondents n (%)				
Type of NCDs	Cardiovascular	203 (71.5)	257 (65.9)	460(68.2)	2.362	0.124
	Diabetes	129 (45.4)	175 (44.9)	304 (45.1)	0.020	0.887
	COPD	45 (15.8)	33 (8.5)	78 (11.6)	8.754	0.003*
	Cancer	10 (3.5)	2 (0.5)	12 (1.8)	8.812	0.003*

*Significant relationship, *p < 0.05.*

For the accessibility to outreach health services which considered part of the required services to be extended to people with NCDs, we assessed accessibility to them as well in our research in both locations; in the community and inside the health settings. They include health education and awareness-raising messages. Correlation Pearson chi-square test was used to identify the association between the accessibility to outreach health services as the dependent variable and the socioeconomic variables as independent ones. *p-value < 0.05* is considered statistically significant. Table 16 below.

Place of residency has a significant statistical association with the accessibility to outreach health services *(p=0.006),* which is contrary to the governorate variable. The association was statistically significant between sex, marital status, employment status, and economic status as independent variables with accessibility to outreach health services with *p-value* as follows respectively; *(p=0.006), (p=0.009), (p=0.035), and (p=0.000).* No

correlation was found between Age categories, or educational attainments and accessibility to outreach health services.

Table 16: The association between socioeconomic variables and accessibility to outreach health services (N=674)

Variable	Categories	Accessing outreach health services		Total	Chi-square	*p – value*
		No N=223	Yes N=451			
		Respondents n (%)				
Governorate	Aleppo	65 (29.1)	107 (23.7)	172 (25.5)	2.309	0.129
	Idleb	158 (70.9)	344 (76.3)	502 (74.5)		
Residency	Camp	116 (52)	284 (63)	400 (59.3)	7.420	0.006*
	Outside the camp	107 (48)	167 (37)	274 (40.7)		
Sex	Male	122 (54.7)	196 (43.5)	318 (47.2)	7.578	0.006*
	Female	101 (45.3)	255 (56.5)	356 (52.8)		
Age	18 – 45 years	42 (18.8)	87 (19.3)	129 (19.1)	0.031	0.985
	46 – 65 years	137 (61.4)	277 (61.4)	414 (61.4)		
	65 + years	44 (19.7)	87 (19.3)	131 (19.4)		
Marital Status	Single	39 (17.5)	120 (26.6)	159 (23.6)	6.883	0.009*
	Married	184 (82.5)	331 (73.4)	515 (76.4)		
Employment Status	Employed	40 (17.9)	54 (12)	94 (13.9)	4.422	0.035*
	Unemployed	183 (82.1)	397 (88)	580 (86.1)		
Economic Status	Income is lower than spending	155 (69.5)	376 (83.4)	531 (78.8)	17.158	0.000*
	Income equals or higher than spending	68 (30.5)	75 (16.6)	143 (21.2)		
Educational Attainments	Uneducated/ illiterate	96 (43)	171 (37.9)	267 (39.6)	8.709	0.069
	Primary School	67 (30)	134 (29.7)	201 (29.8)		
	Junior secondary School	37 (16.6)	102 (22.6)	139 (20.6)		
	Senior secondary School	11 (4.9)	33 (7.3)	44 (6.5)		
	Postsecondary Education	12 (5.4)	11 (2.4)	23 (3.4)		

*Significant relationship, $p < 0.05$.

Furthermore, the accessibility to free medication (as a particular service) was assessed per place of residency, governorate and for all types of the surveyed NCDs. The correlation Pearson chi-square test was used, and *p-value < 0.05* was considered statistically significant.

Table 17 below shows similarity to the accessibility to the overall services. There was a significant difference between Aleppo and Idleb governorates' accessibility to free medications *(p=0.002),* but there was no statistical significance found between the place of residence and accessibility to free medication.

Table 17: The association between place of residency and governorate and accessibility to free medications (N=674)

Variable	**Categories**	**Accessing free medications**		**Total**	**Chi-square**	***p* - *value***
		No N=223	Yes N=451			
		Respondents n (%)				
Governorate	Aleppo	42 (18.3)	130 (29.3)	172 (25.5)	9.678	0.002*
	Idleb	188 (81.7)	314 (70.7)	502 (74.5)		
Residency	Camp	143 (62.2)	157 (57.9)	400 (59.3)	1.156	0.282
	Outside the camp	87 (37.8)	187 (42.1)	274 (40.7)		

*Significant relationship, $p < 0.05$.

Regarding types of NCDs and as presented in Table 18 below, a significant statistical association was found between accessibility to free medication and having cancer, COPD, or diabetes with *(p=0.000), (p=0.017), and (p=0.016)* respectively, however, having cardiovascular diseases showed no statistical significance regarding accessibility to free medications.

Table 18: The association between type of NCDs and accessibility to free medications (N=674)

Variable	Categories	Dependent Variable		Total	Chi - square	*p – value*
		Accessibility to free medications				
		No N=230	Yes N=444			
		Respondents n (%)				
Type of NCDs	Cardiovascular diseases	161 (70)	299 (67.3)	460(68.2)	0.494	0.482
	Diabetes	89 (38.7)	215 (48.4)	304 (45.1)	5.791	0.016*
	COPD	36 (15.7)	42 (9.5)	78 (11.6)	5.678	0.017*
	Cancer	10 (4.3)	2 (0.5)	12 (1.8)	12.594	0.000*

*Significant relationship, $p < 0.05$.

Considering the barriers to accessing the healthcare settings and services, as clarified in Table 19 below, most of them were statistically significant. Unavailability of the health services themselves *(p=0.000),* lack of information about the available services, and lack of

the specialized services *(p=0.000)* were statistically significant as well *(p=0000).* Moreover, distance/ transportation cost to reach the health settings and Service/ medications cost were statistical significance with *(p=0.015),* and *(p=0.000)* respectively. As expected, there was correlation between security reasons and accessibility to healthcare services *(p=0.013).* The correlation between other reasons, including mistrust of the health providers, cultural reasons and barrier languages, and accessibility to healthcare settings and services, was found to be statistically significant *(p=0.000).*

Table 19: Association between accessibility to healthcare setting and surveyed barriers.

Variable	Categories	Accessing healthcare services		Total	Chi - square	*p - value*
		No N=284	Yes N=390			
		Respondents n (%)				
Barriers to access healthcare services	Unavailability of health services	48(19.6)	15 (3.8)	63 (9.3)	33.055	0.000*
	Lack of information on services	41 (14.4)	109 (27.9)	150 (22.3)	17.341	0.000*
	Distance/ transportation cost	74 (26.1)	136 (34.9)	210 (31.2)	5.954	0.015*
	Service/ medications cost	138 (48.6)	120 (30.8)	258 (38.3)	22.093	0.000*
	Lack of specialized services	171 (60.2)	170 (43.6)	341 (50.6)	18.163	0.000*
	Security reasons	16 (5.6)	8 (2.1)	24 (3.6)	6.142	0.013*
	Others**	35 (12.3)	10 (2.6)	45 (6.7)	25.123	0.000*

*Significant relationship, $p < 0.05$.

**Others include mistrust in the existing health service provider, language barriers and cultural reasons.

4.3. Multivariant analysis

Binary logistic regression analysis was performed, and variables that were identified as potential predictors of accessibility to healthcare services and met the statistical criteria were chosen for the regression analysis. *p-value < 0.05* was considered statistically significant.

It was found, as presented in Table 20 below, that respondents in Idleb were 6.5 times more likely to access healthcare services compared to those who were living in Aleppo *(AOR=6.495, CI: 4.253-9.918, p=0.000).* Worth mentioning that no difference was found between respondents living in camps compared to those living outside the camps regarding accessibility to healthcare services. Considering the age, sex and marital status of the

respondents, there was no difference between the age groups, or between males and females, or between single and married respondents in accessing healthcare services.

The employed respondents were 2 times more likely to access healthcare services compared to unemployed respondents *(AOR=2.012, CI=1.147-3.520, p=0.015).* Similarly, respondent got income equal to or higher than the expenses the accessibility were 3 times more likely to access healthcare services compared to the ones that income less than the expenses *(AOR=3.086, CI=1.891-5.037, p=0.000).*

Table 20: Multivariant analysis of the association between socioeconomic variables and accessibility to healthcare services (N=674)

Variable	Categories	AOR***	95% CI **		*p* - value
			Lower	Upper	
Governorate	Aleppo		Reference	Reference	
	Idleb	6.495	4.253	9.918	0.000*
Residency	Camp	0.893	0.619	1.288	0.544
	Outside the camp		Reference	Reference	
Sex	Male		Reference	Reference	
	Female	1.400	0.934	2.101	0.104
Age	18 – 45 years		Reference	Reference	
	46 – 65 years	0.825	0.518	1.313	0.418
	65 + years	0.999	0.538	1.856	0.998
Marital Status	Single	0.660	0.423	1.028	0.066
	Married		Reference	Reference	
Employment Status	Employed	2.012	1.147	3.530	0.015*
	Unemployed		Reference	Reference	
Economic Status	Income is lower than spending		Reference	Reference	
	Income equals or higher than spending	3.086	1.891	5.037	0.000*
Educational Attainments	Uneducated/ illiterate		Reference	Reference	
	Primary School	0.890	0.570	1.389	0.608
	Junior secondary School	1.013	0.607	1.690	0.962
	Senior secondary School	0.499	0.251	1.677	0.069
	Postsecondary Education	0.648	0.236	1.054	0.372

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

Furthermore, regarding getting the required services per type of the surveyed NCDs, Table 21 below shows that having any of the four assessed NCDs will be reflected in fewer odds of getting the required services in the accessible health settings.

Having cardiovascular diseases, respondents were 62% less likely to get the required services in health settings *(AOR=0.380, CI=0.247-0.584, p=0.000).* Diabetic participants were 46.2% less likely to get served than those respondents without diabetes *(AOR=0.538, CI=0.369-0.783, p=0.000).* Similarly, COPD patients were 76.3% less likely to get served compared with being without COPD *(AOR=0.237, CI=0.131-0.426, p=0.000).* Lastly, having cancer had the greatest impact on accessibility to the required services, respondents with cancer were 95.3% less likely to get the required services compared to those who did not have cancer *(AOR=0.047, CI=0.010-0.233, p=0.001).*

Table 21: 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	
Cardiovascular Diseases	Yes	0.380	0.247	0.584	0.000*
	No		Reference	Reference	
Diabetes	Yes	0.538	0.369	0.783	0.000*
	No		Reference	Reference	
COPD	Yes	0.237	0.131	0.426	0.000*
	No		Reference	Reference	
Cancer	Yes	0.047	0.010	0.233	0.001*
	No		Reference	Reference	

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

Regarding the accessibility to outreach health services which include mobile medical services in addition to preventive services like awareness raising and health education sessions. As elaborated in Table 22 below, considering the place of residency, participants living in camps had 1.515 times the odds of those living outside the camps of accessing outreach health services *(AOR=1.515, CI=1.066-2.154, p=0.020).* Unexpectedly, females were 1.60 times more likely to be approached by outreach health services compared to males *(AOR=1.601, CI=1.090-2.350, p=0.016).* Furthermore, respondents who had income equal to or higher than the expenses were 53.5% less likely to access outreach health activities than respondents who had income lower than expenses *(AOR=0.465, CI=0.309-0.700, p=0.000).*

In terms of educational attainments, only respondents who reached junior and senior secondary school education levels had an association with the accessibility to outreach services, and they were 2.25 and 2.926 times more likely than uneducated/illiterate respondents to access outreach health services *(AOR=2.250, CI=1.377-3.676, p=0.001),* and *(AOR=2.926, CI=1.331-6.429, p=0.008) respectively.*

Table 22: Multivariant analysis of the association between socioeconomic variables and accessibility to outreach health services (N=674)

Variable	Categories	AOR***	95% CI**		*p – value*
			Lower	Upper	
Governorate	Aleppo	0.857	0.577	1.272	0.444
	Idleb		Reference	Reference	
Residency	Camp	1.515	1.066	2.154	0.020*
	Outside the camp		Reference	Reference	
Sex	Male		Reference	Reference	
	Female	1.601	1.090	2.350	0.016*
Marital Status	Single	1.493	0.955	2.336	0.79
	Married		Reference	Reference	
Employment Status	Employed		Reference	Reference	
	Unemployed	1.114	0.656	1.892	0.689
Economic Status	Income is lower than spending		Reference	Reference	
	Income equals or higher than spending	0.465	0.309	0.700	0.000*
Educational Attainments	Uneducated/illiterate		Reference	Reference	
	primary school	1.426	0.943	2.158	0.093
	Junior secondary school	2.250	1.377	3.676	0.001*
	Senior secondary school	2.926	1.331	6.429	0.008*
	postsecondary education	0.857	0.342	2.147	0.741

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

For accessibility to free medications as one of the most important services for people with NCDs, as clarified in Table 23, respondents living in Aleppo were 1.83 more odds to access free medications than respondents living in Idleb governorate. While there was no difference between in-camp and outside -camp residents in terms of accessibility to free medications.

Table 23: Multivariant analysis of accessibility to free medications by place of residency and governorate (N=674)

Variable	Categories	AOR***	95% CI**		*p – value*
			Lower	Upper	
Governorate	Aleppo	1.827	1.220	2.736	0.003*
	Idleb		Reference	Reference	
Residency	Camp	0.951	0.678	1.335	0.773
	Outside the camp		Reference	Reference	

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

For the accessibility to free medications (in particular) per type of NCDs, Table 24 below reveals that among the surveyed NCDs, respondents with cancer were 93.1% less likely to get access to free medications *(AOR=0.069, CI=0.14-0.337, p= 0.001)* than those did not have cancer, like respondents with COPD as they were 54.5% less likely to get access to free medications than those did not have COPD *(AOR=0.455, CI=0.260-0.797, p=0.006).*

Table 24: Multivariant analysis of accessibility to free medications per type of the surveyed NCDs (N=674)

Variable (Type of NCDs)	Categories	AOR***	95% CI**		*p - value*
			Lower	Upper	
Cardiovascular Diseases	Yes	0.654	0.422	1.014	.058
	No		Reference	Reference	
Diabetes	Yes	1.087	0.743	1.592	.667
	No		Reference	Reference	
COPD	Yes	0.455	0.260	0.797	.006*
	No		Reference	Reference	
Cancer	Yes	0.069	0.014	0.337	.001*
	No		Reference	Reference	

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

5. DISCUSSION

In our study, we assessed the NCD patients' access to healthcare services in Northwest Syria, taking into consideration the different explained meanings of access to healthcare which includes structure accessibility, accessibility to services, accessibility to treatment, and to preventive measures including awareness raising and health education sessions. The study assessed the relationship between socioeconomic characteristics and healthcare access. Moreover, the study identified the most common barriers to getting access to healthcare for people with NCDs in Northwest Syria, as well as the missing services in the accessible ones, which by its unavailability, patients then have to seek them in other health settings which might have the same situation and challenges, and they might not be able to get the required services. The results of the study were reported in the previous chapter. In this chapter, the study findings were discussed comparing with that of the other studies regarding the study objectives.

The proportion of NCD types among the study group (people have one or more of the four major types of NCDs) revealed that cardiovascular diseases including hypertension were the most dominant (68.2%), then diabetes (45.1%), COPD (11.6%), and cancer (1.8%), with (25.8%) of the respondents reported more than one NCD. A study conducted in North Jordan about the prevalence of noncommunicable diseases among Syrian refugees showed a similar order of the types; cardiovascular diseases including hypertension (60.2%), followed by diabetes type I/II (28.1%), then chronic respiratory conditions (9.8%), and cancer (1.8%)[74]. More proportion of cardiovascular diseases and diabetes were found in our research. Worth mentioning that we depended on a people self-reporting way to identify the type of the NCDs. This highlights the need for more research about the prevalence of NCDs, as well as the importance to know to what extent the capacity of the health system in Northwest Syria can deal with such a burden.

The study identified that the most common type of the accessible healthcare settings was fixed public healthcare facilities (60.5%), pharmacies (18.5%), the local doctor (13.4%), and mobile clinics (7.3%). This is compatible with another study in Nepal, where the health system is still focusing on managing communicable diseases, and suffering from a lack of screening programs and a lack of consultants, and physicians, especially in rural areas. The study clarified that primary health points, primary health centers, and private pharmacies were the first points of care for many patients with NCDs[75]. Furthermore, a scoping review

article about the models of care for non-communicable diseases for displaced populations in Iraq which is a conflict-affected zone like Syria revealed that camp-based populations received NCD care in camp-based PHCCs, public hospitals, and private clinics or pharmacies while in some settings, mobile clinics were deployed, with the aim of improving access and increasing flexibility, and for the non-camp-based populations, the majority of authors described a primary care centered approach for delivering NCD care[76].

However, 42.1% of the respondents stated that they did not have access to the required health services, there was a significant difference between Aleppo and Idleb governorates in accessibility to healthcare services whereas the respondents in Idleb were 6.5 times more likely to access healthcare services compared to those who were living in Aleppo *(AOR=6.495, CI: 4.253-9.918, p=0.000).* On contrary, respondents living in Aleppo were 1.83 more odds to access free medications than respondents living in Idleb governorate *(AOR=1.827, CI=1.220-2.736, p= 0.003).* This inequality in access to healthcare within the governorate was in Syria even before the Syrian crisis. It even was at subdistricts and regions levels. This was revealed in an article published in May 2022 about healthcare accessibility in pre-conflict Syria, before the impacts of attacks on health facilities, with a focus on hospital care. Before 2011, regarding the hospital bed density per population, Aleppo governorate had a higher hospital bed capacity compared to Idleb (5.6 to 4.6) beds per 10,000 people[77]. Regarding accessibility, it was around the national mean in areas of 2 km by 2 km while at the 60 km catchment, 72% of the country area is under the national mean and 30% has no accessibility. Even at 125 km catchment, 65% of the country area is still below the national arithmetic mean and 11% has no accessibility. Our results can be explained in different ways. As mentioned above Idleb region is smaller than Aleppo one with higher population and higher number of healthcare facilities. This makes the focus of the NGOs on Idleb. Moreover, due to political issues NGOs especially European ones do not prefer to support health facilities in North Aleppo which is under the management of the Turkish backed armed forces. On the same side the restrictions, from the Turkish authorities' side to support any health facility without full coordination with the Turkish health directorates of Kilis, Gaziantep, and Hatay, add more regarding accessibility to healthcare services in North Aleppo. However, Turkish health directorates operate many health facilities, the low salary scale and poor management obliged doctors to seek other facilities to work in.

In our research, participants living in camps had 1.515 times the odds of those living outside the camps of accessing outreach health services *(AOR=1.515, CI=1.066-2.154, p=0.020),* including mobile medical services and health awareness/education sessions, though there was no statistical significance found between the place of residence and there were no differences between in-camp respondents and outside-camp respondents in accessibility to healthcare services including accessibility to free medications. Our results were not compatible with another study in Turkey which stated that Syrian refugees living outside camps have inadequate access to healthcare and the primary reason for poor access to healthcare is the language barrier[78]. Moreover, a study in makeshift settlements in Baghdad, Karbala, and Kirkuk in Iraq identified that access to health services was difficult[79]. In another study about the accessibility to healthcare and medications among Yazidis and other minority groups displaced by ISIL residing in camps in the Kurdistan Region of Iraq, the data showed that in the majority of cases, care was sought outside camps, either in hospitals or private clinics[80]. This can be explained as most camps in Northwest Syria were informal settlements in rural areas and the outreach health services as a basic level of health contact with the community were the best option for the health actors to respond to the health needs there.

Clearly, our research presented no correlation between the sex of the respondents and accessibility to healthcare settings, and there was no statistically significant between males and females. This was not the same situation in Saudi Arabia, where a study outcome reveals the sex gap in accessing the healthcare system and healthcare compliance[81]. Another study in South Africa identified that NCD care is often unavailable for women or that women are unable to reach health settings or service providers[82]. Additionally, in the UK, women reported worse access to healthcare than men across all categories of disability[83]. On the other side, our research showed that females were 1.60 times more likely to access outreach health services compared to males *(AOR=1.601, CI=1.090-2.350, p=0.016).* This is because men are focusing more on work, and additionally an impact of having female staff among the health actors' outreach health staff.

Considering age as one of the factors affecting access to health settings, the findings show that the majority of respondents were from the age group more than 45 years old, which is compatible with the medical nature of NCDs that they are often associated with older age groups diseases[84,85]. Our research showed that there was no correlation between age

categories and access to healthcare services, including outreach health services. This isn't compatible with other studies revealed that older adults had difficulties accessing medicine and receiving routine medical care during the pandemic[86], explaining that older people are more fragile and vulnerable, and they usually have more morbidities than younger people and this requires using more medications, as a consequence, more need to visit health facilities, to control the morbidities, and medication dosages to avoid side effects. Our results can be explained in different ways. No, or minimum barriers at health facilities level which does not prevent older people to access the services as well as the role of the caregivers to get them served. Moreover, flexibility of the health settings on the ground to provide at home services in addition to mobile clinics which offer curable and preventable services for elderly people.

Although our findings indicated that no preference between married and single respondents in accessibility to healthcare services including outreach health ones, the results showed that a statistically significant association was found between marital status and access the outreach health services *(p=0.009).* This was not persisted with other studies, which revealed that married people had higher odds of having an outpatient visit than unmarried people[87]. Another research indicated that access to healthcare was one of the benefits of marriage[88]. This can be justified that married people had more resources of income and better economic situation, and fewer functional limitations which support access to healthcare services, but this is not the situation in Northwest Syria where the majority of respondents were poor, and had income less than expenditures.

Regarding the employment status, our research shows that employed respondents were 2 times more likely to access healthcare services compared to unemployed respondents *(AOR=2.012, CI=1.147-3.520, p=0.015).* This can be explained by the effect of the employment status on the income of the respondents. Though no preference was found between employed and unemployed respondents in terms of accessibility to outreach health services, which can be justified by employed people will be at work during working hours and will not be able to attend awareness raising/ educations sessions as well as will not be approached by mobile medical teams. Worth mentioning that being employed will be reflected on the economic situation of the respondents.

However, respondents with income lower than expenses were the majority in our research (78.8%), economic status of the respondents was found statistical significance in

accessibility to healthcare settings and outreach health services. Our research revealed that respondent who got income equal to or higher than the expenses the accessibility were 3 times more likely to access healthcare services compared to the ones that income less than the expenses *(AOR=3.086, CI=1.891-5.037, p=0.000).* Similarly, a study showed that two-thirds of people with diabetes and hypertension have more access to NCD care and treatment in high-income countries such as South Korea and the USA, but coverage is less than 50% in low-income and middle-income countries, and lowest in sub-Saharan[89]. Another study in Haiti revealed lower health facility utilization among the poor, particularly those who live far from the facility[90]. This can be justified that people with high income have enough sources and financial capability to travel, buy medications, and even pay for healthcare services.

On contrary, respondents who had income equal to or higher than the expenses were 53.5% less likely to access outreach health activities than the respondent who had income lower than expenses *(AOR=0.465, CI=0.309-0.700, p=0.000).* This can be clarified that respondents with NCDs, most of them had low income will focus on the usual economic activity instead of attending outreach health services[91].

In terms of educational attainments, though there were no correlations between educational attainments and access to healthcare services, but only respondents who reached junior and senior secondary school education levels were 2.3 and 2.9 times more likely than uneducated/illiterate respondents to access outreach health services *(AOR=2.250, CI=1.377-3.676, p=0.001),* and *(AOR=2.926, CI=1.331-6.429, p=0.008)* respectively. This persisted with a study in Brazil that users with NCD and higher education used services more, compared to the less educated[92].

For the surveyed types of the NCDs, our research found that having any of the NCDs, made the respondents less likely to get the required healthcare services and the greatest impact on accessibility to the required healthcare services was for respondents with cancer, they were 95.3% less likely to get the required services compared to those who did not have cancer *(AOR=0.047, CI=0.010-0.233, p=0.001).* On the same side and for accessibility to free medications in particular, and we found that having COPD or cancer made the respondents less likely to access free medications with the greatest impact on the respondents who had cancer as well, they were 93.1% less likely to get access to free medications *(AOR=0.069, CI=0.14-0.337, p= 0.001)* than those didn't have cancer, but this was not the

situation for diabetes or cardiovascular disease, though having diabetes was statistically significant for accessing free medications *(p=0.016).* The results were compatible with research in Jordan in 2018 on the prevalence of NCDs among non-camp Syrian refugees in northern Jordan, it revealed that percentage of the cancer patients who didn't seek healthcare services when needed was the most ones (33.3%), then COPD (32.1%), cardiovascular diseases (25%), Hypertension (18%), and diabetes (13.4%) and the main reasons for not seeking NCD care was that the costs for the medical care were perceived as too expensive, knowledge about NCD services, and unavailability of NCD services[74].

Regarding the barriers to accessing healthcare settings, our findings identified the following barriers with statistically significant correlation with the accessibility to healthcare services; unavailability of the health services themselves *(p=0.000),* lack of information about the available services *(p=0000),* lack of specialized services *(p=0.000),* distance/ transportation cost to reach the health settings *(p=0.015),* service/ medications cost were statistical significance *(p=0.000),* security reasons and accessibility to healthcare services *(p=0.013),* and other reasons including mistrust of the health providers, cultural reasons and barrier languages *(p=0.000).* Some of these reasons were presented in a qualitative study titled "What influenced the provision of noncommunicable disease healthcare in the Syrian conflict", most participants (humanitarian health workers) felt referral routes for specialist care across borders were problematic, they also expressed frustration at the lack of access to diagnostic tests and treatment[70].

In South India, research about access to medicines for diabetes and hypertension patients was conducted and came up that lack of laboratory facilities and frequent medicine stockouts at PHCs redirected patients to the private sector which 75% of households reported that they could not afford its expenses. In the same research, a shortage of PHC doctors as any of them were expected to manage more than one PHC, and fewer PHCs than required, and only a few of the accessible ones had a functional laboratory equipped to carry out the necessary blood tests well was on the list of barriers[93]. A qualitative study in Zimbabwe about the barriers to the provision of non-communicable disease care illustrated that poor access to medication and functional equipment were identified as cross–cutting barriers[94]. Clearly, medicines represent only a part of the costs associated with the management of an illness. Other costs, such as for diagnostics, physician consultations, transport costs to clinics, lost work time, etc., place an additional burden on household finances in developing

countries[95]. A systematic review of primary care models for non-communicable disease interventions in Sub-Saharan Africa illustrated that when patients were on maximum therapy and their NCD was still not controlled, or there were significant morbidities, they have specialized doctors who would optimize patient management[96].

Moreover, our research was found in consistence with other research in conflict areas regarding security reasons. A study in Iraq showed that access to, availability, affordability, and acceptability of healthcare services for NCDs in Mosul was adversely affected by conflict, siege, and military occupation[97]. In the same study, transportation issues were in the most frequently mentioned access barriers. Furthermore, our results were compatible with another study in Bangladesh, which found the distance from home to hospital had a significant effect *($P < 0.001$)* on hypertensive patients[98]. The same results were found in a systematic review and qualitative Meta-Synthesis research to assess the healthcare access issues faced by patients living in a remote or rural setting; reduced access rates were attributed to the greater distance to the nearest city, worsened by transportation problems[99]. This can be clarified in addition to the low financial capacity of the respondents by the poor infrastructure in Northwest Syria, as well as the inappropriate distribution of health facilities.

Not getting the required healthcare services in the available accessible healthcare settings will force patients to seek healthcare services in other health settings that might have the same situation and challenges, which is in other words the need for multiple visits for consultation and diagnostics. The care-seeking behavior of the patients, who did not get access to the required services due to the all-above-mentioned barriers, is dependable on the barriers and what the patient can overcome. Unfortunately, almost half of the respondents (46.5%) replied that they will not access the services. 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, poor infrastructure, and absence of governance and leadership, the percentage of don’t access option will increase in the future.

6. CONCLUSION AND RECOMMENDATIONS

6.1. Conclusion

It was found that significant respondents did not have access to the healthcare services (42.1%), including outreach health services (30.9%), and free medications (34.1%) in Northwest Syria. Missing services, and barriers that affected access and in the accessible health settings were recognized. Access was impacted by socioeconomic characteristics like geographical location, age, income, educational attainment, distance, and time required to reach the health settings.

The proportion of NCD types among the study group (people who have one or more of the four major types of NCDs) showed a higher proportion of diabetes (45.1%), and cardiovascular diseases (68.2%).

The study identified that pharmacies were the second most common type of the accessible healthcare setting in Northwest Syria (18.5%) after the fixed public health facilities (60.5%). Moreover, mobile clinics (7.3%), local private doctors (13.4%), and traditional medicine (0.3%) were on the list of the accessible health settings as well.

Our findings indicated respondents in Idleb were 6.5 times more likely to access healthcare services than respondents living in Aleppo. On contrary respondents who were living in Aleppo were 1.8 more odds to access free medications than respondents living in Idleb. Regarding the place of residency, there were no differences between in-camp respondents and outside-camp respondents in accessibility to healthcare services, including accessibility to free medications. Though, people who were living in camps were 1.5 times more likely to access outreach health services, including mobile medical services and health awareness sessions than outside camp respondents.

Clearly, our research presented no correlation between the sex of the respondents and accessibility to healthcare services, but showed that females were 1.6 times more likely to access outreach health services compared to males.

The majority of respondents were from the age group of more than 45 years old (80.9%). However, results showed that there was no correlation between age categories and access to healthcare services, including outreach health services. No preference was found

between the married and single respondents in accessibility to healthcare services, including outreach health services.

Considering the employment status, our research shows that employed respondents were 2 times more likely to access healthcare services compared to unemployed respondents. Though no preference was found between employed and unemployed respondents in terms of accessibility to outreach health services.

Similarly, our research revealed that respondent who got income equal to or higher than the expenses the accessibility were 3 times more likely to access healthcare services compared to the respondents whose income was less than the expenses, while it was the opposite for the outreach health services.

In terms of education attainments, there was no correlation between educational attainments and access to healthcare services, but respondents who reached junior and senior secondary school levels were 2.3 and 2.9 times more likely to access outreach health services than illiterate/uneducated respondents.

Having any of the NCDs, made the respondents less likely to get the required services and the greatest impact on accessibility to the required services was for respondents with cancer (95.3% less likely). Similarly, for accessibility to free medications respondents with COPD or cancer were less likely to access free medications with the greatest impact of cancer too (93.1% less likely).

The respondents identified unavailability of the health services themselves (5.8%), lack of information about the available service (13.7%), lack of specialized services (31.3%), distance/ transportation cost to reach the healthcare services (19.2%), service/ medications cost (23.6%), other reasons (4.1%), including mistrust of the health providers, cultural reasons, and barrier languages, and as expected, security reason (2.2%) as barriers to accessing healthcare services.

For the care-seeking behavior of the respondents who did not get access or the required services due to the all-above-mentioned barriers, almost half of the respondents (46.5%) replied that they will not access the services. However, 47.9% mentioned that they would travel a long distance to get served, while the rest (5.7%) might switch health facilities and travel a long distance to get the required services from private or public health settings.

6.2. Recommendation

According to our research findings, we can conclude the recommendations as follows;

- To seek political consensus in Syria and move from the emergency response phase to the recovery phase and start health reform and rebuilding the health system with all components there.
- To share the results with the UN agencies, INGOs, and Ministries of health operating in Northwest Syria.
- Empower the health directorates in Northwest Syria to take their roles in planning, managing, and monitoring the health services in Northwest Syria. As well as develop new strategies needed to provide high-quality NCD management and ensure access to affordable medications. This required strong communication with the donors, health partners, and technical leaders to support this.
- Re-distribution of the health settings in Northwest Syria based on the national and international standards to insure better coverage of the available ones and better access to essential health services.
- To enhance the capacity of the outreach health services to include preventive and basic curative services and to complement to primary healthcare. This includes developing SOPs for mobile clinics clarifying where and when to be deployed, and most important point to link them with higher levels of healthcare to ensure a comprehensive response to the needs. To develop an appropriate healthcare delivery pathway and strategies to maintain essential health services for older people with NCDs, especially in conflict and outbreak contexts.
- To enhance/ develop serviceable referral pathways internally between different types of activities and facilities. This includes coordinating/collaborating with other partners working in the same areas of intervention and setting a service mapping of the available accessible services.
- More medical commodities are needed, including equipment, medical supplies, and medicine for screening, early diagnosis, sustainability, and continuity in treatment.
- To include/ enhance pharmacists, pharma assistants, and nurses in the training programs to screen NCDs, early detection, diagnosis, awareness, education, and even follow-up.

- Further research to assess the high proportion of diabetes and cardiovascular diseases including risk factors, and preventive measures, and assess the capacity of the health system in Northwest Syria to respond to the high burden of diabetic cases there.

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8. APPENDIXES:

8.1. 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 noncommunicable diseases in Northwest Syria" by Dr. Kassem Ballout. 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 people with noncommunicable diseases in Northwest Syria.

b) Content of the Study: A questionnaire will be filled by the people or their relatives with any of the four types of noncommunicable diseases; cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes, who are reachable by the community health workers 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: 508.

f) Location (s) of the Research: Dana and Maaret Msrin sub-districts in Idleb governorate and Azaz and Afrin sub-districts in Aleppo governorate in Northwest Syria.

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 afore mentioned 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: Kassem Ballout.

Signature:

8.2. Appendix – 2: Questionnaire

8.2.1. English copy

The community health worker will explain how to fill out the questionnaire, and if the participants want to ask questions about the research and/or want additional information they can contact the researcher via his contacts mentioned below.

Area/ subdistrict:

a) Afrin b) Azaz c) Dana d) Maaret Misrin

Part 1: Demographical information:

1. Age (patient):
2. Sex (patient):
3. Place of residence (patient): a) camp b) outside the camp
4. Marital status (patient): a) Married b) single c) widowed d) divorced
5. Employment status (patient): a) Employed b) Unemployed
6. If employed (patient), what is it?
7. Economic status (patient): a) Income is higher than spending b) Income is lower than spending c) Income equals spending.
8. Educational attainments (patient): a) Uneducated/illiterate b) Primary school c) junior secondary school d) senior secondary schools e) postsecondary education.
9. Type of chronic disease: a) cardiovascular b) cancer c) chronic respiratory diseases e) diabetes.
10. Where it/they were diagnosed? a) private clinic/doctor b) public health setting c) private health setting e) other, please specify.
11. When has/have it/ they been diagnosed: a) less than on year b) 1 to 5 years c) more than 5 years?
12. Is there person with a chronic disease living in the same household? a) yes b) no
13. If yes selected, which chronic disease/diseases?
    a) cardiovascular
    b) cancer
    c) chronic respiratory diseases
    d) Diabetes
    e) Other-please specify ……

14. 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)
15. 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 noncommunicable diseases:

1. Do you have access to health settings in your areas?

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 (clinic/ hospital)
    c) Local doctor
    d) Pharmacy
    e) Traditional doctor
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 the required services in the accessible health settings?
    a) Yes, b) no
7. If no, what are the major health needs that you are not able to get in the accessible healthcare settings 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 you pay to get medicines. How much do you pay monthly?
    Open question

13. What are the main reasons if the healthcare services are not accessible? 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) Cultural reasons
    h) Security reasons
    i) Language barrier
    j) Other- please specify
14. For all the healthcare services that are not available, what do you do for?
    a) Do not access
    b) Travel to get access – long distance.
    c) Other, please specify
15. Have you even been visited by a mobile medical team – home visit?
    a) yes b) no
16. Have you ever participated in any session of health awareness/ education?
    a) Yes

b) No

c) Not sure

17. If yes, where were they?

a) In the health facility

b) In the community

c) At home

18. 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:

8.2.2. Arabic copy

سيشرح عامل الصحة المجتمعية كيفية ملء الاستبيان ، وإذا أراد المشاركون طرح أسئلة حول البحث أو / و يريدون معلومات إضافية ، يمكنهم الاتصال بالباحث عبر معلومات الاتصال المذكورة أدناه.

المنطقة: عفرين, إعزاز, دانا, معرة مصرين.

الجزء الأول: المعلومات الديموغرافية:

1. العمر)المريض(:

2 .الجنس)المريض(:

3 .محل إقامة)المريض(: أ(المخيم ب(خارج المخيم4

.الحالة الاجتماعية)المريض(: أ(متزوج ب(أعزب ج(أرمل د(مطلق

5 .الحالة الوظيفية)المريض(: أ(عامل ب(عاطل عن العمل

6 .إذا كان يعمل)مريض(، ما هو العمل؟

7 .الوضع الاقتصادي)المريض(: أ(الدخل أعلى من الإنفاق ب(الدخل أقل من الإنفاق ج(الدخل يساوي الإنفاق

8 .التحصيل العلمي)المريض(: أ(غير متعلم ب(المرحلة الابتدائية ج(المدرسة المتوسطة)الإعدادية(د(المرحلة الثانوية هـ(الجامعة)معهد أو جامعة(

9 .نوع المرض المزمن: أ(القلب والأوعية الدموية ب(الشطان ج(أمراض الجهاز التنفس المزمنة هـ(مرض السكري

10 .أين تم تشخيص المرض المزمن / الأمراض المزمنة أ(عيادة أو طبيب خاص ب(منشأة صحية عامة ج(منشات صحية خاصة هـ(أخرى ، يرجى التحديد.

11 .متى تم تشخيص المرض المزمن / الأمراض المزمنة: أ(أقل من سنة ب(من 1 إلى 5 سنوات ج(أكثر من 5 سنوات.

12 .هل يوجد شخص مصاب بمرض مزمن يعيش نفس المنزل؟ أ(نعم ب(لا

13 .إذا كان الجواب نعم ، ما هو المرض أو الأمراض المزمنة: أ(القلب والأوعية الدموية ب(الشطان ج(أمراض الجهاز التنفس المزمنة د(مرض السكري هـ(غير ذلك - يرجى التحديد

14 .إذا كنت تتناول العالج للمرض المزمن, فكم مرة يجب أن تحصل على العالج (ُنَ وَ ِمن العالج(؟ أ(كل شهرين ب(كل شهر ج(كل ثالثة أشهر ه(أخرى, يرجى التحديد

15 .متى تلقيت)حصلت(على العالج اخر مرة)قبل اال ن(؟ أ(الشهر الما ض ي ب(قبل شهرين ج(قبل ثالثة أشهر ه(أكثر من ثالثة أشهر

الجزء الثاني: الوصول إلى خدمات الرعاية الصحية لألمراض غير المعدية:

1 .هل لديك إمكانية الوصول إلى المنشات الصحية في منطقتك؟ أ(نعم ، طوال الوقت ب(نعم ، ولكن ليس طوال الوقت ج(ال ، ال على اإلطالق

2 .إذا كانت اإلجابة بنعم)الوصول موجود(، يرجى تحديد المنشأة الصحية؟ ضع عالمة على كل ما ينطبق

أ(فريق / عيادة متنقلة ب(منشأة صحية)عيادة أو مستشفى(ج(طبيب محلى د(الصيدلية ه(طبيب تقليدي

3 .كم تبعد المنشات الصحية عن مكان إقامتك؟ أ(أقل من 2 كم ب(2-3 كم ج(أكثر من 3 كم.

4 .بأي وسيلة تفضل بتم الوصول للمنشأة الصحية؟ أ(سيارة خاصة ب(مواصالت عامة د(سيا)المشي(ج(أخرى)يرجى التحديد(

5 .ما هي المدة التي يستغرقها الوصول إلى المنشأة الصحية - لكل نوع من وسائل النقل المحددة أعاله؟ أ(أقل من 30 دقيقة ب(30-60 دقيقة ج(أكثر من 60 دقيقة.

6 .هل تحصل على الخدمات المطلوبة المنشات الصحية التي تستطيع الوصول اليها ؟ أ(نعم ، ب(ال في

7 .إذا كانت اإلجابة "ال" ، ما هي اإلحتياجات الصحية الرئيسية التي يمكنك الحصول عليها؟ - ضع عالمة على كل ما ينطبق: أ(الفحوصات المخبرية ب(خدمات التصوير ج(طبيب مختص د(عالج المضاعفات ه(عدم توفر الدوية)بعضها أو جميعها(

8 .هل تستطيع الحصول على الدوية الالزمة للعالج)المرض المزمن(؟ أ(نعم ، في كل وقت ب(نعم ، ولكن ليس طوال الوقت ج(ال

9 .إذا كانت اإلجابة بنعم)أي من اإلثنتين:نعم في كل وقت أو نعم ولكن ليس طوال الوقت(أعاله ، فما هو مصدر الدوية؟ أ(مرفق صحي تدعمه المنظمات غير الحكومية ب(منشأة خاصة ج(صيدلية خاصة د(أخرى ، يرجى التحديد.

10 .إذا كانت اإلجابة بنعم)أي من االثنتين:نعم في كل وقت أو نعم ولكن ليس طوال الوقت(أعاله ، فهل هذه الدوية

لع الجك مناحة لك مجانا / بدون تكلفة؟ أ(نعم ، يف كل وقت ب(نعم ، ولكن لبس طوال الوقت ج(ال

11 .إذاكانت الإجابة بنعم ، ولكن ليس طوال الوقت أو ال ، فما مقدار الفقد من العالج)االدوية االلزم الحصول عليها لعالج المرض المزمن(؟ أ(أقل من 50٪ ب(أكثر من 50٪

12 .إذاكنت تدفع مقابل الحصول على االدوية. كم تدفع شهريا؟ سؤال مفتوح

13 .ما هي االسباب الرئيسية لعدم الحصول على الخدمات الصحية المطلوبة؟ - ضع عالمة على كل ما ينطبق: أ(ال توجد خدمات صحية متاحة ب(نقص المعلومات عن الخدمات المقدمة ج(نقص الخدمات اإلختصاصية د(عدم الوصول إلى الخدمات الصحية بسبب المسافة أو تكاليف النقل هـ(عدم الوصول بسبب تكاليف الخدمة أو الدواء و(عدم الثقة بمقدم الخدمة الصحية الحالي ح(أسباب ثقافية ط(أسباب أمنية ي(حاجز اللغة ك(أخرى, يرجى التحديد

14 .بالنسبة للخدمات غير المتوفرة ، ماذا تفعل؟ أ(ال أحصل عليها ب(السفر للحصول عليها - مسافة طويلة ج(أخرى, يرجى التحديد

.هل تمت زيارتك من قبل فريق متنقل - زيارة مجتمعية؟ أ(نعم ب(ال

16 .هل سبق لك أن شاركت في أي جلسة إلي صال رسائل التثقيف أو التعليم الصحي؟ أ(نعم ب(ال ج(لست متأكدا

17 .إذاكانت اإلجابة نعم ، أين؟ أ(في المنشأة الصحية ب(في المجتمع ج(في المنزل

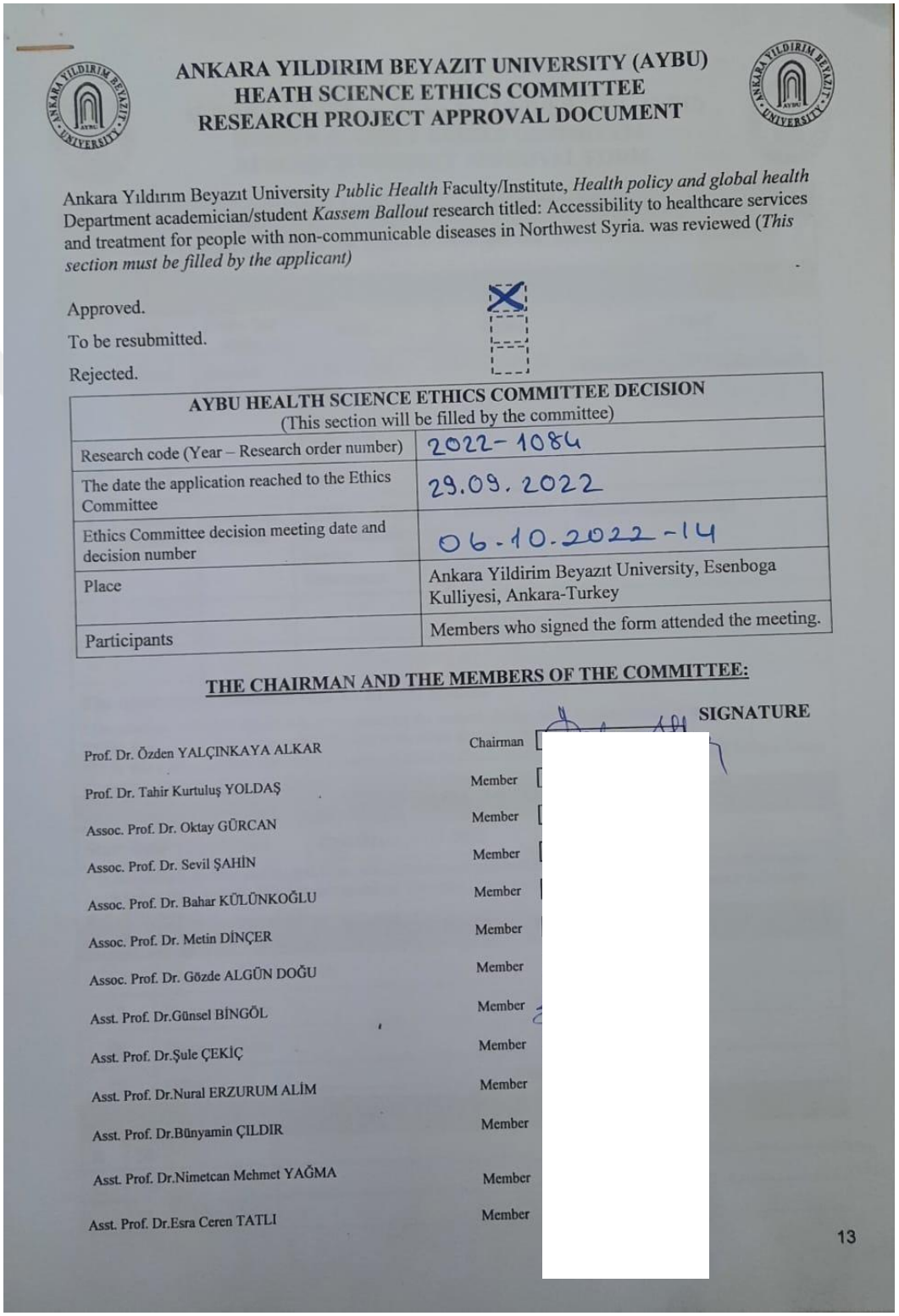
18 .إذاكانت اإلجابة بنعم أعاله ، هل يمكنك تذكر الرسائل)العناوين(التي تم إيصالها خالل جلسة التثقيف الصحي)الجلسات(؟ أ(نعم ، يرجى التحديد ب(ال

معلومات االتصال مع الباحث:

العنوان والواتساب: 20 01 829 535 90+

البريد اإللكتروني: kassemballout1984@gmail.com

8.3. Appendix 3: Ethical Approval of Ankara Yildirim Beyazit University



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

Ankara Yıldırım Beyazıt University *Public Health* Faculty/Institute, *Health policy and global health* Department academician/student *Kassem Ballout* research titled: Accessibility to healthcare services and treatment for people with non-communicable diseases in Northwest Syria. was reviewed (*This section must be filled by the applicant)*

Approved. [X]
To be resubmitted. [ ]
Rejected. [ ]

AYBU HEALTH SCIENCE ETHICS COMMITTEE DECISION (This section will be filled by the committee)	
Research code (Year – Research order number)	2022-1084
The date the application reached to the Ethics Committee	29.09.2022
Ethics Committee decision meeting date and decision number	06.10.2022-14
Place	Ankara Yildirim Beyazıt University, Esenboga Kulliyesi, Ankara-Turkey
Participants	Members who signed the form attended the meeting.

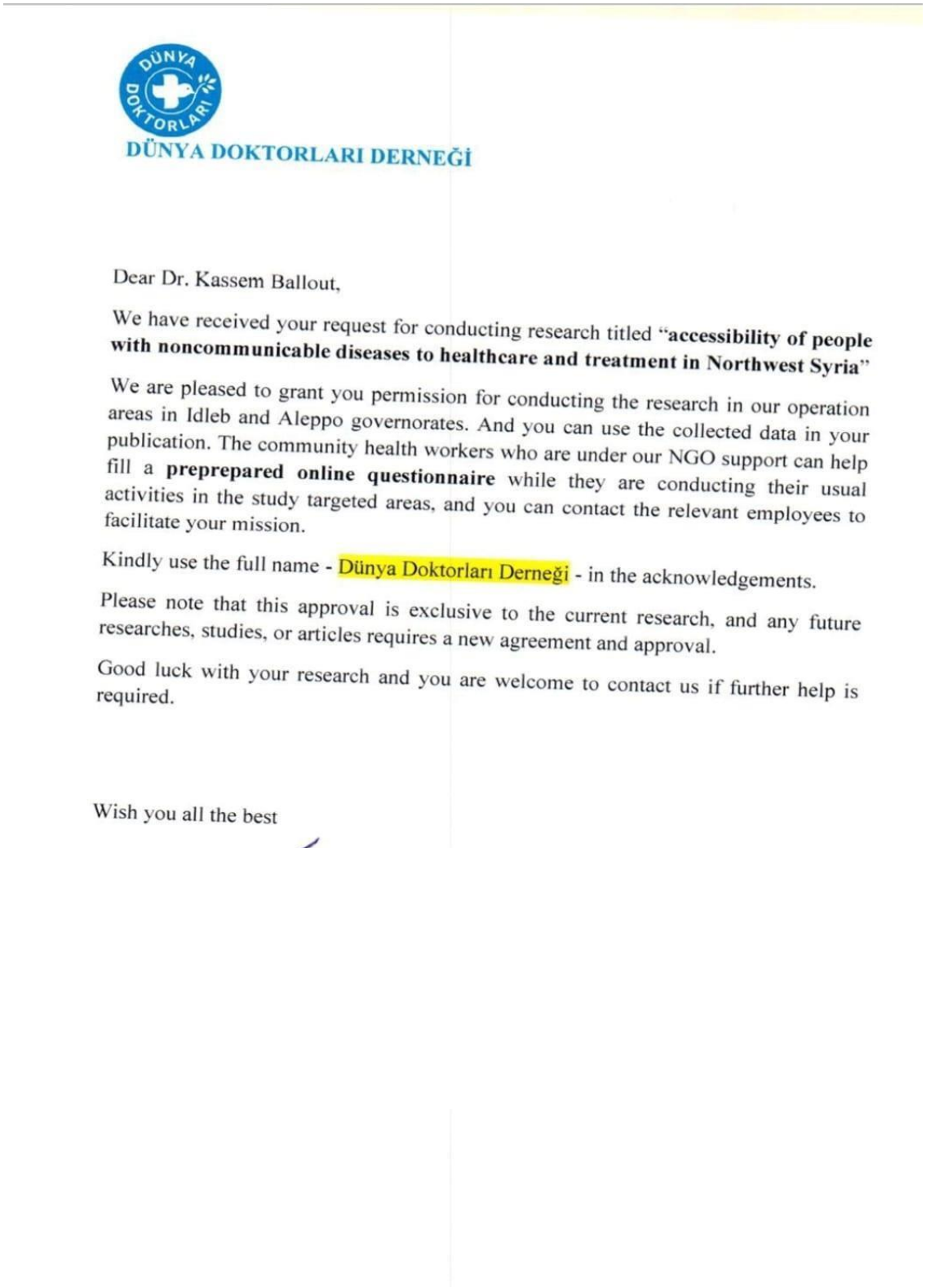
THE CHAIRMAN AND THE MEMBERS OF THE COMMITTEE:

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

13

Figure 9: Ethical Approval of Ankara Yildirim Beyazit University

8.4. Appendix 4: Permissions from the health actors on the ground



DÜNYA DOKTORLARI DERNEĞİ

Dear Dr. Kassem Ballout,

We have received your request for conducting research titled "**accessibility of people with noncommunicable diseases to healthcare and treatment in Northwest Syria**"

We are pleased to grant you permission for conducting the research in our operation areas in Idleb and Aleppo governorates. And you can use the collected data in your publication. The community health workers who are under our NGO support can help fill a **preprepared online questionnaire** while they are conducting their usual activities in the study targeted areas, and you can contact the relevant employees to facilitate your mission.

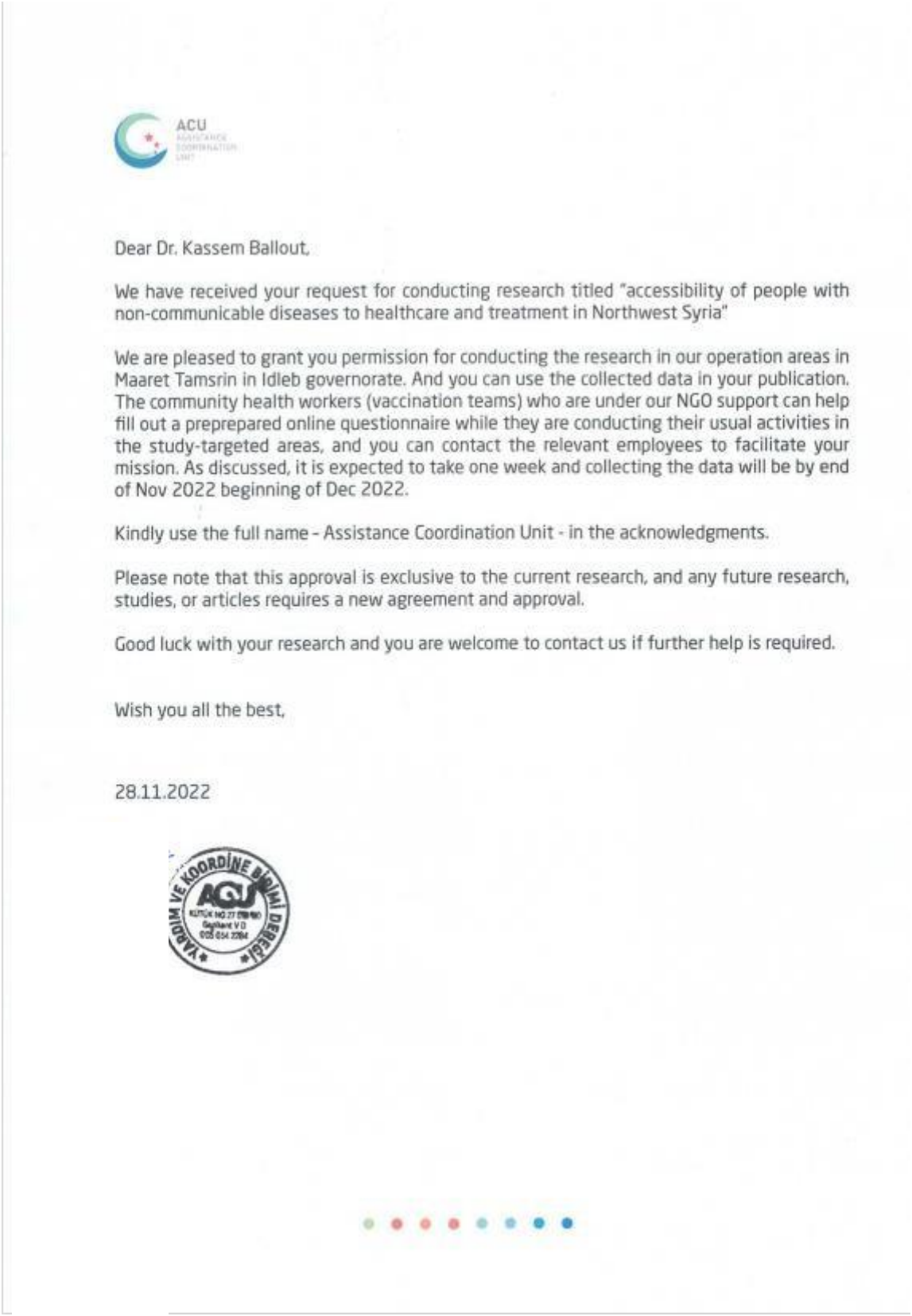
Kindly use the full name - Dünya Doktorları Derneği - in the acknowledgements.

Please note that this approval is exclusive to the current research, and any future researches, studies, or articles requires a new agreement and approval.

Good luck with your research and you are welcome to contact us if further help is required.

Wish you all the best

Figure 10: Permission from Dünya Doktorları Derneği


ACU

Dear Dr. Kassem Ballout,

We have received your request for conducting research titled "accessibility of people with non-communicable diseases to healthcare and treatment in Northwest Syria"

We are pleased to grant you permission for conducting the research in our operation areas in Maaret Tamsrin in Idleb governorate. And you can use the collected data in your publication. The community health workers (vaccination teams) who are under our NGO support can help fill out a preprepared online questionnaire while they are conducting their usual activities in the study-targeted areas, and you can contact the relevant employees to facilitate your mission. As discussed, it is expected to take one week and collecting the data will be by end of Nov 2022 beginning of Dec 2022.

Kindly use the full name - Assistance Coordination Unit - in the acknowledgments.

Please note that this approval is exclusive to the current research, and any future research, studies, or articles requires a new agreement and approval.

Good luck with your research and you are welcome to contact us if further help is required.

Wish you all the best,

28.11.2022

YARDIM VE KOORDİNE BİRİMİ DERNEĞİ
ACU

Figure 11: Permission from Assistance Coordination Unit

8.5. Appendix 5. Curriculum Vitae

Kassem Nasser Ballout

Email:

Phone: Call/ WhatsApp:

Address: Turkey – Istanbul. Nationality: Syrian.

Turkish residency: Valid.

WORK EXPERIENCE:

Doctors of the world (MDM) – Turkey Sep -2021 – Jul 2022

Istanbul - Turkey

Medical Coordinator

- Provide technical oversight to ensure integration of health activities with other sectors.
- Contributing to providing technical inputs within project proposals, budgets, work plan, procurement plan, and staffing plan.
- Monitor the healthcare situation, participate in health need assessments, as requested, and contribute to the development/review/upgrade of the medical activities according to the needs and ensure that the different components of the program are consistent and in line with the health needs of the population.
- In conjunction with the MEAL team, adapt tools for data collection, analysis, and reporting; develop quantitative and qualitative reports of health project activities for different grants, take lead in interpreting collected data in health and corrective action.
- In collaboration with MEAL team develop the needs assessment starting from the questionnaire and end by the report of the final findings and recommendations.
- Developing SOPs and tools related to program activities and staff support in the field and translating the identified health needs into a medical strategic vision and project activities.
- Ensuring preparation of all medical orders in collaboration with the Logistics Department and the submission of all medical purchases.
- Coaching and technically supporting program and medical teams in the implementation of the medical activities.

Syrian Expatriates Medical Association: April 2021 – Aug 2021

Gaziantep – Turkey

Health & Nutrition Program Manager:

- Plan the delivery of the overall Health portfolio and its activities in accordance with the vision and goals of SEMA, comply with donors' legislation and professional and humanitarian standards and under the supervision and coordination with programs director.
- Provide guidance and direction to the programs team on achieving agreed targets and long-term strategic objectives.
- Oversee the preparation and submission of technical and programs reports as per grants and donor agreement.
- In coordination and collaboration with the MEAL Department, develop a programs evaluation system to assess the strengths of each program and to identify and implement action plans regarding areas for improvement.
- Prepare in coordination with the program team all elements required to ensure quality implementation of the projects regarding the annual employment plan for the health programs department as well as the annual health program budget and operating plan to support the programs, coordinating closely with all other key departments including finance, HR, and supply chain.
- Building capacity of health programs' teams using: orienting, training, coaching, counselling, communicating job expectations, planning, and monitoring.
- Accomplish human resource objectives by developing job descriptions, selecting, assigning, scheduling, and appraising/disciplining employees, and reviewing job contributions, and reviewing compensation actions.
- Prepare a bi-weekly written report to the senior management on all aspects of the programs, activities and challenges, threats, or risks.

Independent Doctors Association: Nov 2020 – Jan 2021

Gaziantep – Turkey

Health Program Coordinator

- Monitoring implementation of health projects (including master support budget and coordinating input for donor proposals and reports) in north Syria in coordinating with

grant manager, in compliance with contractual commitments (i.e., quality, synergies, timeliness, use of resources) under the supervision of program coordinator.

- Ensure all health projects are managed according to donor guidance, especially in relation to implementation, budget management, and procurement and close out, coordinating with financial, grant, and logistic managers.
- Ensure optimal use of resources within the allocated project budgets and main strategies coordinating with financial manager.
- Manage data collection, cleaning, validation, and analysis of health systems readiness gaps, including the harmonization with existing health systems and data systems in collaboration with M&E manager.
- Support programming staff to incorporate participatory methods into community level M&E systems and tools.
- Lead project monitoring and evaluation design initiatives including developing the Monitoring & Evaluation plan under the supervision of program coordinator.
- Ensure that beneficiaries' feedback is adequately documented, addressed, analyzed, and utilized by program teams.
- Prepare mandated and key program/project reports for donors and other partners to keep them informed of program progress.
- Provides technical guidance in the development and dissemination of tools, protocols and interventions for psychosocial support and maintain full readiness in crisis response.

Relief International - Amman Dec-2019 – Jun 2020.

WoS Health Specialist

- Strategic direction and overall technical supervision towards successful implementation of the RI health program.
- In collaboration with WoS MEAL specialist, provide technical guidance and support to effectively integrate findings and recommendations to improve program quality.
- Development/review and update work plans and support health/program team in budget management according to health sector outputs and results.
- Provide day to day technical support to the health program teams and routinely evaluate activity progress, conduct on track/off track assessments, and determine necessary actions to course correct for each hub where RI implements health program.

- Contribute from a technical perspective in the design of the health contingency plan, assessments planning and tools and analysis of information and findings to support the decision-making process.
- Provide technical guidance and support and review on all medical commodities related functions (providing proper tools for Pharma management, including the identifying and reporting of pharmaceutical needs of health facilities, consumption and tracking, review purchase request to ensure the requested quantity and quality of items are in line with the standard needs and specifications, and RI and donor regulations).
- Under guidance from the supervisor, and in coordination with the hub teams, lead the development of Health concept notes and proposal development process in line with RI strategy, and based on current standards and donor guidelines.
- Provide technical direction and support to RI teams during outbreaks of disease or other health emergencies to ensure a rapid response.
- Support in consolidating/review all health-related progress reports (internal and external reports including donors' reports) ensuring compliance to RI and donor reporting requirements.
- Assess the status of the current health program, structure, functions, and standards and devise a health program quality improvement plan in close coordination with health, M&E and program staff (WoS and hubs levels).
- Individual capacity assessment for RI national health/program staff based on project management approach.
- Develop and apply a capacity building plan focused on health technical aspects.
- At RI Global Support Office:
    - Lead the coordination/provide technical support in coordination with RI global advisor to RI country offices for technical preparations for COVID-19 internal preparation and response from technical perspective and planning perspectives.

Doctors without borders - Amman Feb-2019 – Dec 10th – 2019.

<u>Medical Activity Manager:</u>

- Assess the health situation inside Syria; functioning facilities and services mapping depending on partners regular updates and key people on the ground and prepare health needs assessment reports accordingly.

- Identify the humanitarian needs and work with the team to address the gaps and the best potential interventions.
- Work with the project coordinator to write the concept note of the project proposal, fill in the medical inputs in terms of the medical strategy, and set the indicators as well.
- In collaboration with PC – Support, monitor the security situation inside Syria and update the team upon any
- changes or effects on the medical activities and interventions.
- Prepare Monthly Medical Report and Medical Sitrep on monthly basis with the detailed medical activities conducted and followed up and the plans for the next month and submit them to the coordination team.
- Maintain a comprehensive communication network with key people on the ground.

Doctors of the world (MDM) – Amman Mar-2018 – Jan-2019

Medical Program Advisor:

- Direct support of South Syria and North West Syria medical operations.
- Contribute to the project proposals development in terms of implementation of activities by providing medical inputs based on health needs assessment and the analysis of the medical data collected of the supported health facility in NWS and Collect data, indicators, surveys, and assessments according to the mission's needs, provide input and contribute to analysis.
- Perform health need assessments, as requested and with the support of the medical/ PSS teams and contribute to the development/review/upgrade of the medical/ PSS activities according to the needs and be responsible to ensure at the filed level that medical/ clinical services are implemented in a good quality and according MDM protocols.
- Manage, monitor, and supervise all project MDM medical team (PHC Manager, Medical Supervisor, MHPSS Supervisor, CME Manager and Pharmacist manager) and delegate tasks when needed, in addition to support and directly manage MDM medical team in the management of the project activities/pharmacy/partners. On the same side, evaluate the competency of the staff under my direct supervision; build their capacity accordingly with the support of the Medical Coordinator.
- Receive morbidity data of implemented services and monthly reports from the medical/ PSS team under my Supervision on weekly/monthly basis; review; analyze and prepare

monthly report, detailing activities done, supervision, training given, assessments undertaken etc. and submit to medical coordination team.

- Technical advisor for all Syria mission such as:
    - Conducting NCD training.
    - NCD focused PHC support: Support the selected PHCC/hub where MDM is already running or planning to setup the NCD quality care program.

Doctors without Borders – Amman Sep-2017 – Mar-2018

Medical Activity Manager:

- Identify humanitarian needs and monitor the health system in South Syria and work closely with the teams inside to assess the health system in South Syria especially any emergency medical situations and prepare reports upon that.
- Analyze and assess the medical health structures, in Dara'a supported by MSFF to understand the situation well, identify the gaps and act to the needs accordingly.
- Participate actively in the definition, planning, implementation, and continuous evaluation of all medical activities in the supported facilities, including emergency response.
- Identify training and implementation priorities, organizing training material, monitoring tools and training sessions of the MLO, evaluating training outcomes and following implementation plan.
- Promotion of good medical practices with medical staff (through focal points) working in the health facilities, providing protocols, and giving technical support for improvement.
- Collecting of demographic, mortality, and morbidity data within the areas of intervention, special attention paid to communicable and epidemic-prone diseases and provide monthly Sitrep.
- Provide regular reporting to Project Coordinator and Medical Coordinator.
- Prepare medical orders and shipments in close collaboration with the pharmacist.
- Build a network/health structure map and contact list, and maintain a good relationship with teams inside.
- Collect any context updates and prepare reports according to the situation.
- Represent the organization in medical meetings with other NGOs or partners.

Syrian American Medical Society: Apr-2015 — Aug-2017

Jordan-Regional Office

Information Management Unit Manager:

- Provide IM services for key decision-making including; data collection, collation, analysis, and information dissemination in addition to developing, maintaining and continuously updating IM products.
- In collaboration with the Field Coordinators, and the senior M/E officer, follow up in preparing the M&E plan for on-going programs and new programs, including timeframe of activities, data collection methodology, tools to be used and expected delivery.
- Work with M&E officers in producing Assessment for all inside Syria facilities and review all these assessments arrange them in an easy, well-understood method.
- Analyzing the medical information and producing the Monthly Medical Reports and orders for health facilities supported by our partners inside Syria, and related to projects.
- Identifying the needs of medications and consumables for around 79 health projects supported by SAMS inside Syria.
- Prepare lists of chronic medications and dialysis commodities for SAMS projects in South Syria. As well as be involved in the preparedness plan put and prepare lists of the needed medications and consumables to operate more than 500 major surgeries in Dara'a.
- Managing two campaigns of polio vaccination in Southern Syria including planning, training, coordinating implementation, and monitoring the fieldwork. The beneficiaries of each campaign were more than 100K children.
- Managing a survey to get the count of the total population, pregnant women, and the disabled people in some remote areas in Dara'a, Al Quneitra, and Eastern Ghouta.
- Maintain regular contact with health facilities in south of Syria to determine needs and to discuss challenges.
- Maintain regular contact via Skype, email, and phone with SAMS medical staff (Syria medical office and coordinators) to review the situation and share all updates regarding to the supported facilities, projects status, needs, and challenges.

- Attend regular meetings with our donors and partners in Jordan to deal with challenges, discuss the latest field updates inside Syria and our mutual projects as well as Health Cluster regular meetings.

Akilah Hospital – Amman Sep - 2015 — Sep – 2017

Medical Doctor:

- As a volunteer doctor, I was responsible on treating and following up Syrian patients who had internal diseases especially rheumatology ones.

Al Bayader Hospital - Amman Apr - 2014 — Aug - 2015

Medical Doctor:

- As a volunteer doctor, I was responsible on war wounded Syrian patients who were referred from Ramtha hospital to Amman hospitals because of the severity of the cases.
- Following up those cases from reaching ER department to admission either to the ICU or to the floor, and provide them with all urgent needs.
- Continue following them up in the floor and ICU.
- Coordinating with specialist surgeons to conduct urgent surgeries for those patients.
- Responsibility on 10 patients in the floor and 3 ones in the ICU.
- Following patients in the internist clinic in the hospital.

Al Jazeera Hospital - Amman Mar - 2013 — Feb - 2014

Medical Doctor:

- As a volunteer doctor, I was responsible on war wounded Syrian patients who were referred from Ramtha hospital to Amman hospitals because of the severity of the cases.
- Following up those cases from reaching ER department to admission either to the ICU or to the floor, and provide them with all urgent needs.
- Continue following them up in the floor and ICU.
- Coordinating with specialist surgeons to conduct urgent surgeries for those patients.
- Responsibility on 35 patients in the floor and 6 ones in the ICU.

EDUCATION

Medicine certificate equivalency in Turkey Aug 2022 – Mar 2023
Çapa hospital – Istanbul University – Istanbul – Turkey

Master in Global health and Health Policy. 2021 – Present
Ankara Yildirim Beyazit University – Ankara - Turkey
(Second year – working on the thesis)

Diploma of General Management of International and Local NGOs. 2018
German Jordanian University

High Studies in Internal medicine and Rheumatology 2008 —2012
Damascus University - Al Assad and Al Mouwasat University Hospitals

The normal System is five years (two years in general internal medicine and 3 years in rheumatology). I had not finished the fifth year of high studies, because I left Syria in Nov-2012.

Bachelor Degree in Medicine 2002 — 2008
Damascus University

Step one of Arab Board 2008 — 2010
Damascus University

TRAINING

NCD workshop Nov - 2017

Noncommunicable diseases Workshop

I was a trainer of NCD. This workshop was held in Amman with collaboration with WHO and MdM to train medical staff from PHC facilities in South Syria.

FMT – 1 Oct– 2017

Field Management Training -1:

It was held in Amman by MSF. Many topics were included related to HR, communication skills and managing teams.

NCD Training Mar - 2017

Noncommunicable diseases Training

- It was a five days Training of Trainers (ToT), held by WHO for the Noncommunicable Diseases (NCD) prevention and control component of the Essential PHC package of services.
- The main aim is to promote good practices in NCD provision of care among doctors and nurses and in promoting good management of the WHO NCD Emergency Kit.
- It also included clinical management of each NCD (asthma, COPD, hypertension, ischemic heart disease, stroke, and atrial fibrillation) plus epilepsy, clinical examination skills, communication /consulting skills, remote training/supervising techniques, discuss assessment and monitoring of quality of care (correct use of kits).

POSE Nov - 2016

Polio Outbreak Simulation Exercise:

- It was a workshop of two full days to update the polio Outbreak Preparedness and Response Plan and inform the responsible government officials and Global Polio Eradication Initiative (GPEI) partners with the most recent guidelines. It was held by EMRO.

Project Management Program Dec – 2015

It was held by International Group of Training.

Communication skills Nov – 2015

It was held by International Group of Training.

Time Management Workshop Sep – 2015

It was held by International Group of Training.

LANGUAGE

Arabic: Mother Tongue.

English: Excellent.

Turkish: B1.