HACETTEPE UNIVERSITY
INSTITUTE OF POPULATION STUDIES

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Mevlüde Gül MENET

Department of Demography

Master's Thesis

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ABSTRACT

Turkey is the host to the highest number of refugees hosted by a country. This huge number of refugee population, fleeing from ongoing conflict in their country of origin to Turkey, brought together the concern for humanitarian emergency crisis requiring action on provision of basic and most urgent health needs which put burden on health systems.

Noncommunicable diseases are an integral part of the health service provision and must be inserted into the service delivery package for refugees. This study aims to shed light on Noncommunicable diseases risk factor status of Syrian refuges registered in Turkey by extending the analysis to Turkish host community to see the differences and similarities between the two groups. Multivariate analysis was used to evaluate the change in risk factors by gender, age range, marital status, employment and the level of education. Binary logistic regression was also used to see the effect of demographic characteristics on the risk for Noncommunicable diseases.

The study suggests that even though there are differences in the overall distribution of risk factors, both groups are under major risk of developing Noncommunicable diseases. Insufficient intake of fruit and vegetable appeared to be the most concerning risk factor for Syrians, whereas the level of physical inactivity among Turkish host community is alarming.

Even though, the Government of Turkey has implemented very broad policies for universal health coverage considering health equality and equity, these policies must be strengthened in the light of cultural sensitivities and needs.

Strengthened enforcement of tobacco control policies, stronger public awareness campaigns for physical activity and healthy eating behaviour, regular monitoring of blood pressure, and more clear definition on the role of primary, secondary and tertiary care in tackling Noncommunicable diseases can be listed as the recommended intervention areas based on the findings of this study.

Key words: Noncommunicable diseases, risk factor, refugees, Syrians

ÖZET

Dünyada en fazla sayıda mülteciye ev sahipliği yapan ülke Türkiye'dir. Ülkelerinde devam eden çatışmalardan kaçarak Türkiye'ye sığınan bu çok sayıda mültecinin gelişiyle birlikte ortaya çıkan insani acil krizi beraberinde sağlık sistemlerine ilave bir yük yüklenerek, bu insanların temel ve acil sağlık hizmetlerinin karşılanması kaygısını doğurmuştur.

Bulaşıcı olmayan hastalıklar, mültecilere sunulacak hizmetlerin ayrılmaz bir parçasıdır ve hizmet paketine dahil edilmesi gerekmektedir. Bu çalışma, Türkiye'de geçici koruma altındaki Suriyelilerin vee v sahibi Türklerin bulaşıcı olmayan hastalık risk faktörlerine yönelik resmini çekmeyi ve her iki grubun benzerlik ve farklılıklarını göstermeyi amaçlamaktadır. Risk faktörlerinde cinsiyete, yaşa, mdeni durum, istihdam ve eğitim düzeine göre farklışamayı anlamak amacıyla çok değişkenli analiz kullanılmıştır. Demografik özelliklerin bulaşıcı olmayan risk faktörlerine etkisini anlamak için ise ikili lojistik regresyon analizi kullanılmıştır.

Bu çalışma, risk faktörlerinde farklılıklar olsa da, genel olarak her iki grup için de bulaşıcı olmayan hastalıklara yakalanma riskinin oldukça yüksek olduğuna işaret etmektedir. Suriyelilerde yetersiz sebze ve meyve tüketimi endişe verici düzeylerde bulunurken, Türklerde ise fiziksel hareketsizlik oldukça yüksek oranda bulunmuştur.

Eşit ve hakkaniyetli sağlık hizmeti içn sağlıkta evrensel kapsayıcılık hususunda Türkiye Cumhuriyeti Hükümeti önemli adımlar atmış olsa da bu politikalar Türkiye'de yaşayan mültecilerin ve diğer grupların kültürel hassasiyetleri ve ihtiyaçları da göz önüne alınarak güçlendirilmelidir.

Bu çalışma ışığında önerilen müdahale alanları arasında tütün kontrolünün güçlendirilmesi, fiziksel aktivite ve sağlıklı beslenme alışkanlığı için etkili farkındalık kampanyalarının geliştirilmesi, kan basıncının düzenli ölçülmesi ve birinci basamak, ikinci basamak ve üçüncü basamak sağlık hizmetlerinin bulaşıcı olmayan hastalıklarla baş etmedeki rolünün net bir şekilde tanımlanması ihtiyacı listelenebilir.

Anahtar kelimeler: Bulaşıcı olmayan hastalıklar, risk faktörü, mülteci, Suriyeli

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ABBREVIATIONS

AFAD	Disaster and Emergency Management Presidency, Ministry of Interior of Turkey
CAPI	Computer Assisted Personal Interview
CDC	Centers for Disease Prevention and Control
CVD	Cardiovascular Diseases
DBP	Diastolic Blood Pressure
DGMM	Directorate General for Migration Management
GATS	Global Adult Tobacco Survey
HLC	Healthy Living Centres
HTP	Health Transformation Programme
METs	Metabolic Equivalents
MHC	Migrant Health Center
MHTC	Migrant Health Training Center
NCDs	Noncommunicable Diseases
NUTS	Nomenclature of Territorial Units for Statistics
PAPI	Paper Assisted Personal Interviews
PSU	Primary Sampling Units
SBP	Systolic Blood Pressure
SMHC	Strengthened Migrant Health Centers
SSU	Secondary Sampling Units
STEPS	WHO STEPwise approach to Noncommunicable disease risk factor surveillance
STEPS Syrians	Health Status Survey of Syrian Refugees in Turkey "Noncommunicable Disease Risk Factors Surveillance among Syrian Refugees Living in Turkey"
STEPS Turkey	National Household Health Survey in Turkey "Prevalence of Noncommunicable Disease Risk Factors"
TurkStat	Turkish Statistical Institute
UNHCR	United Nations High Commissioner on Refugees
UNGA	United Nations General Assembly
WHO	World Health Organization

CHAPTER 1. INTRODUCTION

Many people around the world are changing their place of residence willingly or forcibly and we are experiencing the highest level of movement that has been recorded so far. “Nearly 1 person is forcibly displaced every two seconds as a result of conflict or persecution” (UNHCR, 2018a). 57% of refugees worldwide are coming from three countries; “South Sudan” (2.4m), “Afghanistan” (2.4) and “Syria” (6.3m) (UNHCR, 2018a).

Turkey is the host to the highest number of refugees hosted by a country with 3.6m Syrians registered along with many other nationalities (UNHCR, 2018b). This huge number of refugee population, fleeing from ongoing conflict in their country of origin to Turkey, brought together the concern for humanitarian emergency crisis requiring action on provision of basic and most urgent health needs which put burden on health systems.

Turkish Government granted “temporary protection” to registered “Syrians in Turkey”. “Under the temporary protection” regime; registered Syrians have right to receive primary, secondary and tertiary care services at public and private hospitals, university hospitals, health centres inside the camps and at other health service provision settings with the premiums paid by the Government of Turkey via Governor’s Office in the relevant Province (Ministry of Health, 2014).

Current health service provision system established for “Syrians under temporary protection in Turkey” is functioning well and covering most of the basic needs of the population in question. However, this population needs more structured and well planned health service provision considering that noncommunicable diseases require ongoing management and treatment, people with NCDs suffer during emergencies. As a result, NCD related deaths are increasing in low and middle income countries and at are that are more likely to experience disasters (Slim Slama, et al., 2016).

Another study (Spiegel et al., 2010) showed that NCD burden increases among refugees whereas while traditional humanitarian priorities remain the same. In 2011, NCDs accounted for 77% of total deaths in Syria of which %44 were due to cardiovascular diseases (CVD). It was demonstrated that 50.3% of Syrian refugee households, living in Jordan, had a member with an NCD (Doocy et al., 2015) The number of Syrian refugees in Jordan with NCDs was estimated to be above 90,000 (Doocy, et al., 2015). In addition to this, Rehr et al (2018) reported that in Northern Jordan, one in every five Syrian refugees have at least one NCD. 14.0% of these Syrians have hypertension and 9.2% reported having diabetes (Rehr et al., 2018).

Kontsevaya et al. explained the economic burden of NCDs in Turkey as:

"Noncommunicable diseases are an increasing public health and development problem in Turkey. An economic burden analysis shows that economic losses from NCDs are equivalent to 3.6% of gross domestic product" (Kontsevaya et al., 2018)".

1.1. Motivation and aims of the thesis

This research seeks the answers to the following questions:

1. What is the NCD risk factor profile of Turkish host community?
2. What is the NCD risk status of registered Syrian refugees in Turkey?
3. What are the varying risk factors for NCDs among Turkish host community and Syrians refugees in Turkey?
4. What are the common risk factors for Turkish host community and Syrian refugees in Turkey?

The thesis will focus on four main NCDs; "diabetes", "cancer", "chronic respiratory diseases", and "cardiovascular diseases".

The main motivation of this thesis is to find out and present NCD risk factor status of Syrians in Turkey and Turkish population to generate evidence for future health planning and organization of health service provision.

For this purpose, data from two surveys, conducted by World Health Organization Country Office in Turkey using the same standard STEPwise approach of WHO, will be used in the analysis. The first survey conducted by WHO Turkey in 2016 is "Health Status Survey of Syrian Refugees in Turkey: Noncommunicable Disease Risk Factors Surveillance among Syrian Refugees Living in Turkey" (hereinafter will be after to as STEPS Syrian). This is the first ever STEPS survey conducted among a refugee population.

The second survey conducted by WHO Turkey in 2017 is "National Household Health Survey in Turkey: Prevalence of Noncommunicable Disease Risk Factors" (hereinafter will be referred to as STEPS Turkey) which shows the Noncommunicable disease status among the host Turkish community.

Against this backdrop, using data from the STEPS Turkey and STEPS Syria surveys, I will use multivariate comparative analysis to describe the NCD risk factor status among the two community.

Based on the findings of multivariate analysis, I will try to answer the following questions:

1. What are the proposed intervention areas for NCD prevention among Turkish host community?
2. What are the proposed intervention areas for NCD prevention among Syrian refugees in Turkey?
3. What are the proposed intervention areas for prevention of common NCD risk factors between both populations?

1.2. Organization of the thesis

This thesis is comprised of five chapters. The first chapter is the Introduction chapter providing introductory information on NCDs worldwide including brief summary of aims, motivation and the methodology of the study.

In the second chapter, I elaborated on the scope of NCDs reviewing the available literature by first focusing on global NCD trends and then focusing on the

situation in Turkey and Syria. The chapter also includes a brief description of how Syrian Humanitarian Crisis evolved including the increasing number of Syrians in Turkey since the beginning of the conflict.

The second chapter continues with a review Migration legislation and health service provision to Syrians in Turkey. I included a brief overview of refugees in Turkey depending on different types defined according to reviewed legislation.

In the third chapter, I explain the methodology of my study that includes the detail of fieldwork for both surveys as well as the analysis process.

In the fourth chapter, I present the results of both STEPS Syrian and STEPS Turkey surveys. The chapter includes comparison tables elaborating “tobacco use”, “alcohol consumption”, “physical activity” and “overweight” between both communities.

In the final chapter of the thesis, I try to propose health policies in line with the evidence generated from two database for informed decision and policy making considering the current burden of analysed diseases and their risk factors.

CHAPTER 2. CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

In this chapter, following areas are reviewed and compiled with an aim to better understand the conceptual framework as well as the background of Noncommunicable Diseases among refugees with a special focus on Syrians in Tukey as well as the host communities in particular Turkey:

1) Noncommunicable Diseases in the World
2) Noncommunicable Diseases among Refugees
3) Noncommunicable Diseases in Turkey
4) Noncommunicable Diseases in Syria
5) Syrian Humanitarian Crisis
6) Migration Legislation in Turkey
7) Demographics of Refugees in Turkey with a focus on Syrians

2.1. Noncommunicable Diseases in the World

Noncommunicable diseases (NCDs) also known as “chronic diseases” are diseases or medical conditions that last for a long period of time and are not passed from one person to another.

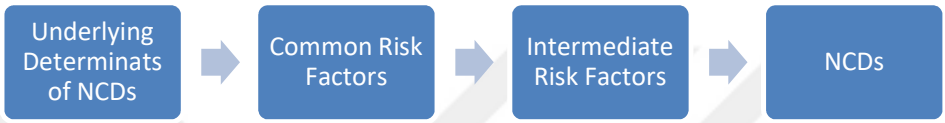
Noncommunicable Diseases have been reviewed and studied by many scientists and scholars with an aim to better understand the pathway of causation. There are many underlying determinants of NCDs mainly governed by globalization, urbanization, social determinants and aging.

Underlying risk factors are more harmful when combined with common risk factors for NCDs. They include “tobacco use”, “harmful use of alcohol”, “unhealthy diet”, “physical inactivity”, “air pollution” and “age”.

Existence of underlying and common risk factors trigger intermediate risk factors that generally result in the development of NCDs. Intermediate risk factors can be listed as “raised blood pressure”, “raised blood sugar”, “abnormal blood lipids”, “overweight and obesity”, and “abnormal lung function”.

NCDs include “cardiovascular diseases” (CVD) (such as heart attacks and strokes), “cancers”, “respiratory diseases” (such as chronic obstructive pulmonary diseases and asthma), “diabetes”, “Alzheimer’s”, “chronic kidney disease”, “chronic lung disease”, etc. (see Figure 2.1.).

Figure 2.1. Pathway of Causation for NCDs



NCDs are the main cause of death worldwide. In 2016, 41 million (71%) of 57 million deaths are caused by NCDs globally.

Premature (early) mortality (between the ages of 30-69) from NCDs has a higher share in total global deaths with 75% (WHO, 2016). Studies have shown a clear relationship between country income levels and premature noncommunicable mortality. According to WHO, 3 out of 4 NCD deaths and 4 out of 5 premature deaths occur in low and middle income countries (WHO, 2018a).

The four main NCDs are “cardiovascular diseases”, “cancers”, “diabetes” and “chronic respiratory diseases” which are associated with behavioural risk factors such as “tobacco use”, “physical inactivity”, “the harmful use of alcohol” and “unhealthy diet” (WHO, 2018b).

The leading cause of death worldwide is cardiovascular diseases which caused 31% of all deaths globally in 2016, and heart attack and stroke cause 85% of these deaths (WHO, 2018c). One in every four deaths in United States are caused by heart diseases (Centers for Disease Control and Prevention (CDC), 2017). CVD related deaths are followed by cancers with an estimated 9.6 million deaths in 2018 which is the second leading cause of death globally (WHO, 2018d).

Diabetes and respiratory diseases also cause a big toll of mortality worldwide. 3.9 million deaths were estimated to be caused by respiratory diseases (WHO, 2018a).

1.6 million deaths were estimated to be caused directly by diabetes in 2016, but the most striking figure is the number of people with diabetes which quadrupled between 1980 and 2014 from 108 million to 422 million (WHO, 2018e).

2.1.1. Tobacco Use

Tobacco use is one of the main modifiable risk factors for NCDs. Tobacco use is the leading cause of preventable diseases, disability and mortality in the United States (CDC, 2019).

According to WHO, tobacco use is one of the biggest epidemic posing threat to public health. Annually, around 8 million people die worldwide due to tobacco use; 7 million of which is caused by direct consumption while 1.2 million are the result of second hand smoking (WHO, 2019a).

Governments implement various campaigns to ensure smokers are encouraged to quit smoking. Effective campaigns include pictorial health warnings, bans on tobacco, and increased taxes on tobacco products.

2.1.2. Harmful Use of Alcohol

Harmful use of alcohol is another key factor for premature NCD deaths. It has a major impact on public health.

The definition of harmful use of alcohol varies by volume of drinking at one time, regular drinking, occasional drinking, etc. Damage of alcohol may also vary depending on the quality of consumed alcohol.

Harmful use of alcohol contributes to multiple diseases and conditions, and it has a direct impact on quality of life.

The most striking cause of harmful use of alcohol is the development of cardiovascular diseases. According to WHO (2009), 1 in every 5 deaths caused by harmful use of alcohol is due to cardiovascular diseases.

2.1.3. Unhealthy Diet

Unhealthy diet is directly linked with the development of obesity. It is another main modifiable risk factor for NCDs. Unhealthy diet is known to cause a range of Noncommunicable diseases.

Consuming healthy food throughout life is an important preventive measure to all forms of malnutrition. It is becoming more and more difficult every day to keep up to a healthy diet with the increasing amount of processed food.

Increasing consumption of food high in sugar, high in salt, high in fat, etc. and decreasing consumption of vegetables and fruits, and food high in fibre have a negative impact on quality of diet.

WHO has recommendations for children and adults to ensure healthy diet. Recommendations include consumption of more vegetables, fruits, nuts, grains, unsaturated fat as opposed to processed food and trans fats.

2.1.4. Physical Inactivity

As a result of transition from agrarian societies to industrial societies, urbanization, modernization and advancement in transportation, people became less physically active.

Insufficient physical activity is one of the main key factors causing cardiovascular diseases, diabetes, and cancers.

According to WHO (2018f), 25% of adults are physically inactive worldwide. In addition, 80% of adolescents are not physically active.

In the light of above given figures showing the size of the threat posed by noncommunicable diseases citizens of the world, in particular to displaced population, this thesis will aim to analyse noncommunicable disease risk factors among Syrian refugees living in Turkey using the data from Health Status Survey of Syrian Refugees in Turkey "Noncommunicable Disease Risk Factors Surveillance among Syrian Refugees Living in Turkey" (2016) and also noncommunicable disease risk factors

among host country population using data from National Household Health Survey in Turkey "Prevalence of Noncommunicable Disease Risk Factors (2017)".

2.2. Noncommunicable Diseases among Refugees

Noncommunicable Diseases has been on the rise all over the world among especially low and middle-income countries. With the increasing number of people moving from rural to urban areas in search for better living and working conditions which bring together a more sedentary lifestyles, noncommunicable diseases have started to increase among urban population. In addition, epidemiologic transition of mortality and morbidity which used to be dominated by communicable diseases but now, with the advancement in medicine, dominated by noncommunicable diseases. Increased life expectancy shifted causes of death from communicable diseases to noncommunicable diseases (Rehm and Probst, 2018).

The rising urbanisation and increased burden of noncommunicable diseases trend among refugees is the same. More and more refugees are now living in urban settings than camp settings (Park, 2015).

> According to WHO (WHO 2019b):
> *"Although prevalence of NCDs among refugees and migrants depends, among other things, on the specific diseases under observation, refugees and migrants in the region are often seen to have higher rates of certain NCDs, for example some CVDs and diabetes, which are attributable to both migration-specific factors and the socioeconomic status of individuals*".

Evidence also show that on arrival, prevalence of overall Noncommunicable diseases rates are lower among refugee populations compared to host populations. However, the rates seem to increase with the longer duration of stay in particular for overweight and obesity.

WHO report on NCD prevalence among refugees and migrants in Europe, show that diabetes prevalence, incidence and mortality are higher among refugees and migrants compared to host community (WHO, 2018g).

There are many factors affecting the incidence of type II diabetes incidence among this population. These factors are dominated by social determinants of health. Social determinants of health include the environment people are surrounded from their birth until their death. The determinants include food supply, transportation, education, and social relationships that play an important role in determining one's quality of life.

A recent longitudinal case study show that refugees and migrants have significantly high diabetes partially due to educational status (Berkowitz et al., 2016).

Another study by Ruiz-Alejos et al. (2018) revealed that exposure to urban living together with migration significantly increases the risk of type II diabetes.

Overweight and obesity are known to be the main key factors for cardiovascular diseases and diabetes.

Development of overweight and obesity is affected from multiple factors varying from country of origin to country of destination, education, dietary habits, duration of stay, etc.

Childhood obesity is also an important health problem for consideration especially among migrants and refugees. WHO has improved that available data on childhood obesity with the help of a data collection tool "WHO European Childhood Obesity Surveillance Initiative". Evidence generated with the use of data tool informs the policies for prevention of childhood obesity in the relevant countries.

However, findings of the studies show that overweight and obesity are higher among refugee and migrant children in Europe (Gualdi-Russo et al., 2014) and (Zhou Y. et al., 2018).

2.3. Noncommunicable Diseases in Turkey

Prevention of communicable diseases and increases in level of education contributed to the achievement of increased life expectancy worldwide. According to Turkish Statistical Institute (TurkStat, 2019) life expectancy at birth was 71.0 in 2000 while it is estimated to increase to 79.6 by 2025. With the increase in life expectancy

all around the world including but not limited to Turkey, NCDs have also started to increase due to increasing number of elderly population. 65 year and above population increased by 16% between 2014 and 2018 (TurkStat, 2018).

Noncommunicable Diseases Country Profiles released by WHO (2014) show that in 2016, 89% of total deaths in Turkey were due to NCDs. The same profile indicates that the most common cause of death is cardiovascular diseases which accounts for 34% of total deaths which is followed by cancers with 23%, chronic respiratory diseases with 7%, and diabetes with 5%. Premature mortality (dying before the age of 70) is caused by four main NCDs (cardiovascular diseases, cancers, diabetes, respiratory diseases) is 16%.

In addition to causing premature mortality, NCDs are the main cause of morbidity in Turkey. Looking at the most common risk factor for NCDs, 53.9% of total population is overweight or obese in Turkey (TurkStat, 2016) and this figure is more striking for females who have an obesity rate of 23.9%.

2.4. Noncommunicable Diseases in Syria

The Syrian Arab Republic has been experiencing a protracted humanitarian emergency crisis since 2011. Health service provision is disrupted or halted due to the ongoing conflict.

World Health Organization (2018h) stressed the health tragedy:

> "*More than half of the country's public hospitals and healthcare centres are closed or only partially functioning and more than 11.3 million people need health assistance, including 3 million living with injuries and disabilities*."

Health status of all ages is affected from deteriorating health service provision in the country and noncommunicable diseases are no exception. The NCDs picture of the country was already alarming before the start of the conflict. Maziak et al. (2007) found Cardiovascular Diseases causing 45% of all deaths in Aleppo between 2000—2004. 2008 estimates of the World Health Organization (WHO, 2011) showed that 77% of total deaths in Syrian Arab Republic are caused by NCDs. The profile is

updated in 2014 and 2018 but due to ongoing conflict in the region, figures are affected with the increasing proportional mortality due to injuries. According to 2011 NCD Country profile of WHO, injuries were estimated to cause 10% of total deaths while this figure increased to 48% and 50% in 2014 and 2018 respectively (WHO, 2014, 2018i).

2.5. Syrian Humanitarian Crisis

In March 2011, an internal conflict erupted in Syria following the arrest of some teenagers in city of Deera which led to nationwide protests against the Government. The conflict built into a civil war and led to displacement of millions of people.

Since the beginning of the conflict, over 6.7 million people have fled from Syria (UNHCR, 2019). Majority of Syrians seek refuge at the neighbouring countries in particular in Turkey, Lebanon and Jordan.

Syria Regional Refugee Response data from UNHCR (2019a) also show that Turkey is hosting the highest number of Syrian refugees with 3.7 million registered Syrians, which is followed by Lebanon with 919 587; and Jordan with 654 955 Syrian refugees.

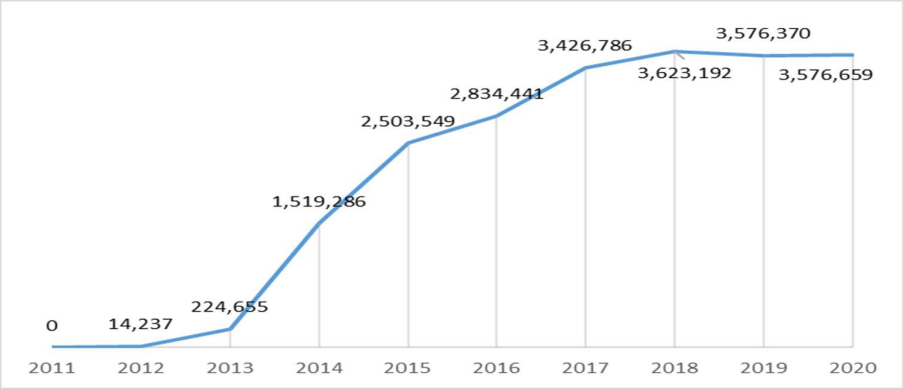
Syrian humanitarian emergency has been the biggest emergency that led to displacement of masses since the World War II. Millions of people have been affected from the conflict in the area and majority of them moved to another place with an aim to survive.

According to UNHCR (2019b), there are 6.6 million internally displaced persons and 13.1 million people in need in Syria. In addition, 2.98 million people in hard-to-reach and besieged areas.

After the start of the crisis in 2011, Turkey became one of the first countries to accept Syrians. With the prolonged humanitarian crisis, the number of Syrians arriving in Turkey has increased gradually.

At the end of the first year of the crisis, the arrivers in Turkey were recorded as 14 237, which increased by 15 times and reached to 224 655 by the end of 2013 (DGMM, 2020). The increase stopped in 2019 with the peace-keeping efforts of Turkey in Northern Syria which ensured safe return of some 46,722 Syrians back to Syria (Figure 2.1.).

Figure 2.2. Syrians under temporary protection in Turkey by years as of 9 January 2020



2.6. Migration Legislation and Health Service Provision to Syrians in Turkey

Even though migration of people has a deep history in almost all cultures, lands and nations; the terms and conditions of refugee, migrant and asylum seeker were not regulated until very recently. With the introduction of more clear and protected borders between countries following the World War I, and with many eastern European fleeing due to World War II, there was a clear need to regulate the terms.

The first step was taken with the adoption of UN Declaration on Human Rights which stressed the "right to seek and to enjoy in other countries asylum from persecution" (United Nations General Assembly (UNGA), 1948). The term refugee and the right to asylum have been defined in more details in UN 1951 Refugee Convention (UNGA, 1951).

When we look at the migration legislation in Turkey, it has a similar history with international regulations despite the land of Anatolia has been a crossing point from the beginning of human movement. However, the available regulations differ

from the international law with a geographic reservation of Turkey to Geneva Convention (1951) on asylum seekers which should be originated from Europe to be legally accepted.

With the lessons learnt from 1989 and 1991 migration movements toward Turkey, EU accession process and influx of Syrians to Turkey as a result of Syrian civil war, there was a need to regulate the service provision and coordination and management of high number of Syrians in Turkey, which led to the adoption of Law on Foreigners and International Protection (Republic of Turkey, 2013) aiming to regulate procedures and principles of foreigners' entry and stay in Turkey as well as define establishment and working principles of Directorate General for Migration Management (DGMM) under Ministry of Interior. The Law 6458 is adopted and published in April 2013 which was followed by a detailed Regulation (Republic of Turkey, 2014) on "temporary protection status" granted to those "who were forced to leave their countries and are unable to return to the countries they left and arrived at or crossed our borders in masses to seek urgent and temporary protection and whose international protection requests cannot be taken under individual assessment".

For regulation and coordination of all services under the same umbrella law numbered 2018/11208 and dated 26/12/2017 amended law on Foreigners and International Protection. With the amendment, article 26 paragraph 4 reads as "Provision of services by the relevant ministries and public institutions and organisations under this Regulation shall be carried out in coordination with Directorate General for Migration Management."

As of 16 October 2019, there are 3,676,288 Syrians (DGMM, 2019a) under temporary protection of Government of Turkey while 99,643 Syrians were granted residence permit in 2018 (DGMM, 2019b).

In order to encourage registration among Syrians in Turkey, the Government of Turkey provides free of charge health services at primary, secondary and tertiary care level for people under temporary protection.

Health services to be provided to people under temporary protection are defined and regulated in more details with a Directive (Disaster and Emergency Management Presidency (AFAD), 2014) on "Principles of health services to be provided to people under Temporary Protection" dated 22.10.2014.

There has been a transition in the provision and scope of health services for Syrians under temporary protection. With the adoption of Directive on Disaster and Emergency Management Centres (Republic of Turkey, 2011) in 29 April 2011, Disaster and Emergency Management Presidency (AFAD) is assigned as the coordinator of the basic needs and services to be provided to Syrians in Hatay as the first entry point. In this regard, health expenditure of Syrians are also listed under the responsibility of AFAD.

Circular numbered 2013/08 enabled nationwide scaling up of the health services provided to Syrians in only 11 provinces (AFAD, 2013). As per Article 1 of Temporary Protection Regulation adopted on 22.10.2014, Syrians that have arrived to Turkey as of 28 April 2011, were granted temporary protection by the government of Turkey (Republic of Turkey, 2014). As per Article 21 of the same Regulation, foreigners whose registration proceedings are not completed can only benefit emergency health services and services for the prevention of communicable diseases and outbreaks.

Turkey has been serving a very good example for Universal Health Coverage (UHC) which is set by United Nations as part of Sustainable Development Goals for all Member Countries to achieve by 2030. The UHC includes access to affordable, safe and quality vaccine and medicine as well as health services by ensuring financial risk protection.

With free-of-charge health service and medication provision to all registered Syrians in Turkey, Turkey has played an important role to prove to the rest of the World that UHC is not only possible for citizens but also for refugees.

With the Temporary Protection Regulation, Ministry of Health is assigned as the responsible authority for the provision of health services to people under temporary protection.

Under the management and control of Ministry of Health, major health services that are provided to Syrians under temporary protection in Turkey now include emergency health service provision to injured Syrians entering from the border; primary and secondary health service provision to Syrians in temporary sheltering centres; primary and preventive health service provision at migrant health centres, family health centres and community health centres for outside-camp population; secondary level service provision at private hospitals; voluntary health service provision at facilities of nongovernmental organizations; tertiary health service provision at University Hospitals; secondary health service provision at public hospitals for patients referred from temporary sheltering centres and patients living outside camp settings.

As part of the transition period, new establishments and structures have been introduced to health service provision scheme which include Migrant Health Centres that were not initially planned or functional in the design of health service provision. The centres were mainly the result of communication difficulties encountered at service provision as well as the burden on already understaffed health facilities. These centres provide an opportunity of employment for Syrian health personnel that received and successfully completed theoretical and practical adaptation training to Turkish Health System.

In order to ensure quality of services provided by Syrian health professionals, the Ministry of Health established various STEPS for validation of certificates provided by applicants, interview of eligible candidates and one week theoretical and 6 weeks practical training facilitated by World Health Organization at Migrant Health Training Centres which are located in 7 Provinces (Ankara, Istanbul, İzmir, Hatay, Gaziantep, Mersin, Şanlıurfa).

2.7. Refugees in Turkey in Figures with a focus on Syrians

Due to its location in the middle of Europe and Asia, connecting two continents, Turkey has been an arrival point of refugees for centuries. Currently, Turkey is hosting refugees from various countries.

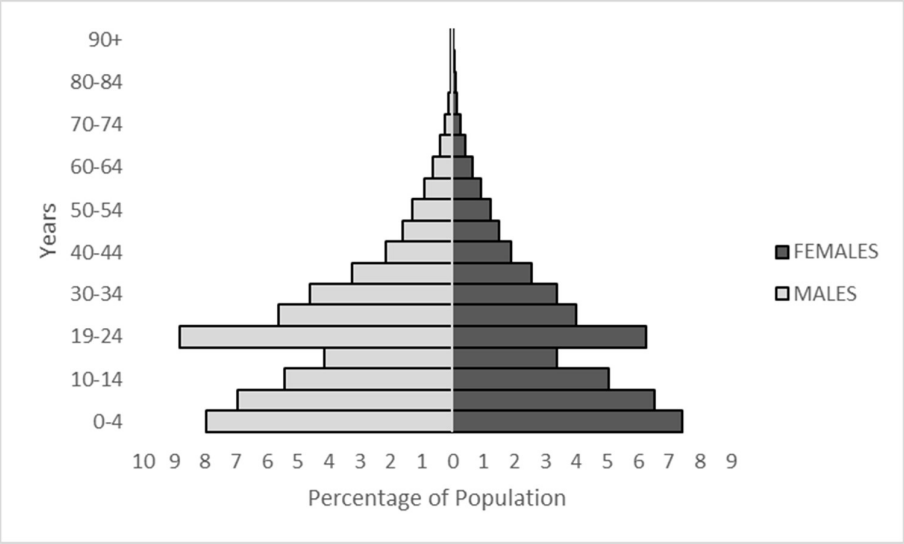
According to United Nations High commissionaire for Refugees (UNHCR, 2019b), Turkey is the top refugee hosting country with 3.7 million registered refugees which is followed by Pakistan with 1.4 million (United Nations, 2019).

Directorate General for Migration Management (DGMM) is the governmental regulatory authority for migration related issues in Turkey. DGMM keeps records of all migration related movements for at least the last decade. Data obtained from DGMM show that refugee related figures have been on the rise especially in the last decade.

In this scope, residence permit granted to foreigners in Turkey increased from 178,964 in 2005 to 1,067,731in 2019 (DGMM, 2019b). Irregular migration recorded in Turkey has increased from 57,428 in 2005 to 347,815 in 2019 (DGMM, 2019c). The number of international protection applicants shows the same increasing trend with 8,932 in 2010 to 11,453 in 2019 (DGMM, 2019d).

Syrians in Turkey are granted temporary protection by the Government of Turkey. According to temporary protection statistics of DGMM (2019a), number of temporary protection increased from 14,237 in 2012 to 3,676,288 in 2019. Only 1.7% of Syrians in Turkey are living inside camps. The rest are living among host community. Top 10 provinces hosting Syrians include, from highest to lowest, Istanbul with 549,405 Syrians, Gaziantep 451,466, Hatay 440 563, Şanlıurfa 428,929, Adana 239,518, Mersin 204,291, Bursa 177,229, İzmir 146,818 and Kilis 116,749 Syrians.

Figure 2.3: Population Pyramid for Syrians under Temporary Protection in Turkey as of 16 October 2019



According to DGMM statistic on Syrians under temporary protection (DGMM, 2019a) 0-4 year old comprise the biggest group with 15.4% among the Syrian population which is followed by 19-24 year old with 15.1%. 61.9% of the Syrians in Turkey are under 25 years old.

Data suggest that majority of the Syrians are either children under five year old or young population which require special attention and planning based on various needs from immunization to follow up, education, employment, etc.

54.2% of Syrians in Turkey are composed of males, while 45.8% is female. 42.8% of females are at reproductive age (18-49). Special reproductive health needs of the females at reproductive health should be considered while designing the health service provision.

In addition to obstetric risks such as haemorrhage and eclampsia, noncommunicable diseases also affect the health of the mother and the baby (Hussein, 2016).

Females at reproductive age, in particular pregnant women, should be monitored carefully for noncommunicable diseases. It is challenging health systems to monitor or follow up pregnant women during or after migration.

There are four main theories describing the fertility behaviour among migrants. The theories can be listed as generalization (socialization), adaptation, selectivity and disruption.

The generalization (socialization) theory first examines the fertility behaviour of urban and rural populations where rural populations tend to have higher fertility rate than urban. The theory suggests that adaptation of fertility behaviour among rural population migrating to urban settings would take time and elapse of one generation (Kulu, 2005).

Adaptation theory is based on gradual adaptation of rural-urban migrants to norms of the hosting community and suggests gradual adaptation of the migrants to the fertility rate of the environment that they are living at.

Selectivity theory mainly highlights the selective migration behaviour among migrants and the criteria used for migration decision. It suggests that socio-economic characteristics are important players in migration destination and the migrants who already have the tendency to have low fertility rate would opt to migrate to urban settings.

Disruption hypothesis on the other hand, focuses on the migration process rather than the setting in the migration origin or destination. It implies that the migration movement is a difficult process and the migrants experiencing the process may have lower fertility rate compared to people living in the destination urban setting or long-term rural-urban migrants.

Fertility rate of Syrians in Turkey has been surveyed with the 2018 Turkish Demographic and Health Survey. Survey results show that fertility rate among Syrians is 5.3 (TDHS, 2018) which is compatible with socialization theory.

CHAPTER 3. METHODS

This thesis simply aims to compare the results of two household surveys conducted among Syrians in turkey and Turkish population to examine the noncommunicable disease risk factor status using the same standard STEPS questionnaire, methodology and variables of World Health Organization.

WHO STEPwise approach to Noncommunicable disease risk factor surveillance (STEPS) methodology is designed to enable countries to establish end strengthen their surveillance system on NCDs by collecting core high quality data that can inform health systems.

The approach has three STEPS assessment, composed of questionnaire based assessment defined as STEP 1; simple physical measurements defined as STEP 2; and biochemical measurement defined as STEP 3.

All three STEPS have core, expandable and optional modules designed by WHO for the ease of implementing country. The Questionnaire include questions aiming to give basic information on the NCD profile rather than providing the overall picture.

Against this backdrop, Turkey has so far implemented two STEPS Surveys. The first Survey, named as Health Status Survey of Syrian Refugees in Turkey "Noncommunicable Disease Risk Factors Surveillance among Syrian Refugees Living in Turkey" (Balcılar, 2016), was implemented in 2015 to collect NCDs risk factor information from Syrian Refugees living in Turkey. Survey results were shared in 2016 by the implementing partners.

The second STEPS Survey, implemented by the Government of Turkey in collaboration with the World Health Organization Country Office in Turkey, is named as National Household Health Survey in Turkey: Prevalence of Noncommunicable Disease Risk Factors (WHO, 2018j). The Survey aimed to set the baseline for NCD risk factors among Turkish population.

This thesis will analyse NCD risk factors; “tobacco use”, “harmful use of alcohol”, “unhealthy diet”, “physical inactivity”, “body mass index” and “blood pressure”.

Logistic regression analysis is used to analyse the data from both Health Status Survey of Syrian Refugees in Turkey “Noncommunicable Disease Risk Factors Surveillance among Syrian Refugees Living in Turkey” (WHO, 2016) and National Household Health Survey in Turkey: Prevalence of Noncommunicable Disease Risk Factors (WHO, 2018j).

Logistic regression analysis is used as the predictive analysis in order to describe and explain the relationship between data. Dependent and independent variables are defined as part of the data interpretation process. Multiple independent variables are used to define the dependent variable. Logistic regression analysis is used to see to what extent the independent variable affect the dependent variable. The main aim of the analysis is to evaluate the contribution of each independent variables into dependent variable.

Binary logistic regression analysis is used in this scope. Variables are defined as “smoking tobacco or not”, “physically active or not”, “having healthy diet or not”, “having normal or over weight”, and “having raised blood pressure or not”.

In order to ensure representability of presented data, quality assurance is checked and elaborated thoroughly in Annex A. Annex B provides detailed information on the questions used as part of both surveys, and Annex C presents ethical committee approval.

3.1. Health Status Survey of Syrian Refugees in Turkey “Noncommunicable Disease Risk Factors among Syrian Refugees Living in Turkey”

Health Status Survey of Syrian Refugees in Turkey “Noncommunicable Disease Risk Factors among Syrian Refugees Living in Turkey” (hereinafter will be

referred as STEPS Syrians) was conducted in 2015 and published in 2016 under the leadership and coordination of "World Health Organization Country Office in Turkey", Prime Ministry Disaster and Emergency management Presidency, and the Ministry of Health Turkey.

The survey was designed to establish the baseline for Noncommunicable diseases and their risk factors among Syrians under temporary protection in Turkey to inform the health sector section of Regional Refugee Resilience and Response Plan (3RP) 2015-2016 as well as to feed the prevention and control of Noncommunicable diseases through continuation and improvement of health care services including provision of essential medication to Syrians in Turkey in 2016-2017.

Specific objectives of STEPS Syrians included;

1) determination of health status of Syrians in Turkey,
2) determination of behavioural risk factor prevalence for NCDs among Syrians in Turkey,
3) determination of biological risk factor prevalence among Syrians in Turkey,
4) determination of risk factor prevalence differences by gender, area of residence, city of origin, and age groups, and
5) determination of health care use among Syrians in Turkey including use of medicines and unmet needs.

18-69 year old Syrians were targeted with the Survey. Survey employed WHO's standard STEPwise approach to Noncommunicable diseases. Two consecutive STEPS of the three STEPS approach was used in the scope of the Survey.

STEP 1 included the standard questionnaire by WHO also named as "WHO STEPS Instrument for Chronic Disease Risk Factor Surveillance". The questionnaire was expanded to cover additional topics including health care use, self-perceived health and chronic conditions as well as two additional modules on dietary salt and health care.

STEP 2 required physical measurements defined in the scope of STEPS methodology with the employment of specific devices and measurements for control of overweight and obesity status of the respondents.

3.1.1. STEPS Syrians Survey Methodology

STEPS Syrians (Balcılar, 2016) defined survey population based on the calculations for in-camp and out-camp Syrian populations.

The study employed multistage random methodology based on the number of Syrians living outside camp settlements and simple random sampling methodology for definition of inside camp population.

10 provinces hosting the highest number of out-camp Syrian population were selected for implementation of the survey among out-camp population. The highest number of Syrian hosting provinces at the time of Survey were “Adana”, “Ankara”, “Gaziantep”, “Kahramanmaraş”, “Hatay”, “Mersin”, “Istanbul”, “Şanlıurfa”, “Kilis”, and “Osmaniye” in alphabetical order.

For in-camp surveys, temporary sheltering centres (also referred as Tent City) managed by the Prime Ministry Disaster and Emergency Management Presidency were included in the design. 10 temporary sheltering centres including “Altınözü 1 Tent City” and “Altınözü 2 Tent City from Hatay”, “Nizip 1 Tent City” and “Nizip 2 Container City from Gaziantep”, “Suruç Tent City and Harran Container City from Şanlıurfa”, “Öncüpınar Container City from Kilis”, “Merkez Tent City from Kahramanmaraş”, “Cevdetiye Tent City from Osmaniye”, and “Sarıçam Tent City from Adana” were included in the survey population.

A total of 13 teams were established composing of 1 interviewer, 1 health professional and 2 interviewers. Distribution of teams and surveys by provinces are shown in below Table 3.1.

Table 3. 1. STEPS Syrians distribution of in and out camp surveys by provinces

Province	Number of Teams	Out- Camp Surveys	In-Camp Surveys
Adana	1	373	72
Ankara	1	445	
Gaziantep	2	746	144
Kahramanmaraş	1	373	72
Hatay	1	373	72
Mersin	1	445	
Istanbul	2	890	
Şanlıurfa	2	746	144
Kilis	1	373	72
Osmaniye	1	373	72
TOTAL	**13**	**5137**	**648**

STEP 1 included standard STEPS questionnaire. The questionnaire was composed of multiple sections including survey information, demographic information and behavioural factors affecting health.

STEP 2 included physical measurements including blood pressure, height and weight, waist and hip circumference, and heart rate.

All analysis presented in this thesis include weighted % distribution of respondents together with the unweighted number of respondents.

To find out tobacco status of the respondents, the questionnaire included questions on current smoking status, daily smoking, smoking start age, types of tobacco products, and smoking cessation status.

To find out harmful alcohol consumption status of the respondents, the questionnaire included questions on ever alcohol consumption, consumption within last 12 months, consumption within last 30 days, and episodic drinking.

To find out healthy nutrition status, the questionnaire included questions on fruit consumption, vegetable consumption, and number of fruit and vegetable servings consumed in a typical week.

To find out physical activity level, the questionnaire included questions on work, transportation and leisure time activity habits. For weekly activity calculation, every activity minute is multiplied by either 8 or 4. Vigorous physical activity as part of work or recreational activity is multiplied by 8. Cycling and walking minute is multiplied by 4. Moderate physical activity as part of work and recreational activity is also multiplied by 4.

Following algorithm is followed in line with the "STEPS Surveillance Manual" (WHO, 2017):

"*Throughout a week, including activity for work, during transport and leisure time, adults should do at least; 150 minutes of moderate-intensity physical activity" or "75 minutes of vigorous-intensity physical activity" or "an equivalent combination of moderate- and vigorous-intensity physical activity achieving at least 600 MET-minutes."*

Body mass index analysis is done based on the physical height and weight measurements of respondents. The calculation is done by dividing weight in kg to height in square meter.

For blood pressure analysis, blood pressure of each respondent was measured three times with intervals. All three readings are summed and divided into three to take the mean of the measurements.

Analysis methodology for high blood pressure takes into account "≥140 mmHg systolic blood pressure (SBP)" and "≥ 90mmHg diastolic blood pressure (DBP)".

Five risk factors are defined for combined risk factor analysis:

1. "Current daily smoking"
2. "Less than 5 servings of fruit or vegetable consumption in a week"
3. "Less than 150 minutes moderate activity as part of physical activity"
4. "Overweight or obesity"
5. "Raised blood pressure"

3.1.2. STEPS Syrians Survey Data Collection

13 Data Collection Teams were trained for three days on how to obtain consent, sampling methods, survey questionnaire and data collection skills required for the use of tablets during data collection.

Paper Assisted Personal Interview (PAPI) technique was used for data collection at the field. The teams were sent for pilot application of the questionnaire in Ankara upon the completion of the training. They were accompanied by two observers assigned by AFAD and two observers assigned by the Ministry of Health. Each team also had a team leader either selected among health professionals or interviewers. The interpreters were selected among Syrians living in Turkey.

Standard WHO STEPS Data collection instrument was expanded to cover the topics including health care use, self-perceived health and chronic conditions as well as two additional modules on dietary salt and health care. The Instrument was first translated into Turkish and Arabic and then back-translated and checked and validated by WHO experts.

Survey Data was collected between 7 and 25 December 2015 via 13 Data Collection Teams at 10 provinces; Adana, Ankara, Gaziantep, Hatay, Istanbul, Kahramanmaraş, Kilis, Mersin, Şanlıurfa, Osmaniye.

The teams visited selected households on the day of interview, explained the objective of the survey and obtained their consent before starting the application of the questionnaire. Only few non-response cases were encountered during data collection which was predicted included in the design of the sample.

The survey was applied to selected adults from each household aged 18-69 years upon receiving their consent for STEP 1 and STEP 2 component of the survey.

3.1.3. STEPS Syrians Survey Data Cleaning

All 13 teams conducted interviews using paper forms including province, day and unit number classifications. Paper collected data was then entered to the web based

system of AFAD. Upon completion of all interviews, the forms were shipped to AFAD center for verification of data errors.

Any data error or inconsistency was corrected based on the original paper forms. All data was checked using the standard data check code by WHO.

The targeted number of interviews were achieved with some minor deviations at province level due to nonresponse and recording errors. Final number of validated surveys completed by province is given below Table 3.2.

Table 3. 2. STEPS Syrians number of validated surveys by province

Province	Number of Completed Surveys
Adana	438
Ankara	447
Gaziantep	915
Kahramanmaraş	460
Hatay	864
Mersin	456
Istanbul	450
Şanlıurfa	457
Kilis	449
Osmaniye	895
TOTAL	**5831**

3.2 National Household Health Survey in Turkey "Prevalence of Noncommunicable Disease Risk Factors"

National Household Health Survey in Turkey "Prevalence of Noncommunicable Disease Risk Factors" (WHO, 2018j) (hereinafter will be referred as STEPS Turkey) was conducted in 2017 and published in 2018 under the leadership and coordination of World Health Organization Country Office in Turkey and the Ministry of Health Turkey.

STEPS Turkey was implemented using standard "STEPwise Approach to Chronic Diseases Instrument of the World Health Organization" by tailoring the instrument based on the local needs.

The survey aimed to set the baseline for prevalence of Noncommunicable diseases and their risk factors in Turkey to inform current and future health care design.

Specific objectives of STEPS Turkey included;

1) determination of frequency of behavioural NCD risk factors in general population aged 15 and above,
2) determination of frequency of behavioural NCD risk factors in 12 Nomenclature of Territorial Units for Statistics Level 1 (NUTS-1) regions,
3) determination of prevalence of biological NCD risk factors among general population aged 15 and above,
4) determination of differences in prevalence of NCD risk factors by gender, area of residence and age groups.

STEPS Turkey employed standard "WHO STEPwise approach to Chronic Disease Surveilance" method for data collection and analysis. The standard STEPwise approach has three STEPS. Each step has core, expandable and optional modules that can be tailored based on the need.

Against this backdrop, the Ministry of Health Turkey decided to apply all three STEPS of the instrument including the questionnaire "STEP 1", physical measurements "STEP 2", and biochemical measurements "STEP 3".

3.2.1. STEPS Turkey Survey Methodology

"Standard WHO Stepwise approach to Noncommunicable Diseases" was used for implementing STEPS Turkey in Turkey. All three STEPS of the approach were included for assessment.

Inclusion criteria to survey was designed as all selected household members above 15 years of age that are citizen of the Republic of Turkey, who give written consent to participate to the survey, who does not have any disability that may prevent

them from answering the questionnaire. Those who do not meet the abovementioned criteria were excluded from the survey sample.

Survey sample size was calculated based on the prevalence of overweight and obesity found by TURKSTAT with health survey 2014. The survey sample size was also designed to represent all 12 NUTS-1 regions in Turkey. Calculations resulted with 6915 individuals which further increased by 20% nonresponse rate and resulted with a total of 8644 individuals.

Sampling design is received from TURKSTAT since the Institute has the authority to access addresses of individuals living in Turkey through address based registration system. The Institute provided addresses of 8650 individuals based on the inclusion and exclusion criteria.

For identification of these addresses, probability-proportionate-to-size was used and 100 primary sampling units (PSU) were identified. 10 secondary sampling units (SSU) were included to each PSU. As the next step, 10 households were randomly selected from each SSU, and ultimately, one eligible individual was selected from each selected household.

“STEP 1” included standard STEPS questionnaire. The questionnaire was composed of multiple sections including survey information, demographic information and behavioural factors affecting health.

“STEP 2” included physical measurements including blood pressure, height and weight, waist and hip circumference, and heart rate.

“STEP 3” included biochemical measurements such as blood glucose, blood lipids, urinary sodium, etc. To ensure comparison with STEPS Syrian data, results of the “STEPS 3” have not been included in this thesis.

Also, as part of the survey, 15 years and above adults were included in the survey. However, to ensure comparability of the STEPS Turkey data with STEPS Syrian data, I have included 18 years and above and 69 years and younger respondents in the analysis.

All analysis presented in this thesis include weighted % distribution of respondents together with the unweighted number of respondents.

To find out tobacco status of the respondents, the questionnaire included questions on current smoking status, daily smoking, smoking start age, types of tobacco products, and smoking cessation status.

To find out harmful alcohol consumption status of the respondents, the questionnaire included questions on ever alcohol consumption, consumption within last 12 months, consumption within last 30 days, and episodic drinking.

To find out healthy nutrition status, the questionnaire included questions on fruit consumption, vegetable consumption, and number of fruit and vegetable servings consumed in a typical week.

To find out physical activity level, the questionnaire included questions on work, transportation and leisure time activity habits. For weekly activity calculation, every activity minute is multiplied by either 8 or 4. Vigorous physical activity as part of work or recreational activity is multiplied by 8. Cycling and walking minute is multiplied by 4. Moderate physical activity as part of work and recreational activity is also multiplied by 4.

"Following algorithm is followed in line with the STEPS Surveillance Manual (WHO, 2017)":

> "*Throughout a week, including activity for work, during transport and leisure time, adults should do at least "150 minutes of moderate-intensity physical activity or "75 minutes of vigorous-intensity physical activity" or "an equivalent combination of moderate- and vigorous-intensity physical activity achieving at least 600 MET-minutes."*

Body mass index analysis is done based on the physical height and weight measurements of respondents. The calculation is done by dividing weight in kg to height in square meter.

For blood pressure analysis, blood pressure of each respondent was measured three times with intervals. All three readings are summed and divided into three to take the mean of the measurements.

Analysis methodology for high blood pressure takes into account "≥140 mmHg systolic blood pressure (SBP)" and "≥ 90mmHg diastolic blood pressure (DBP)".

Five risk factors are defined for combined risk factor analysis:

1. "Current daily smoking"
2. "Less than 5 servings of fruit or vegetable consumption in a week"
3. "Less than 150 minutes moderate activity as part of physical activity"
4. "Overweight or obesity"
5. "Raised blood pressure"

3.2.2. STEPS Turkey Survey Data Collection

Thirty teams were established to cover all 8650 sample size from 79 provinces in Turkey. Each team was comprised of one person responsible for interviews, and one health specialist responsible for biochemical and physical measurements. The teams used CAPI for data collection and marked geographical coordinates of every visited households.

Teams were required to visit the selected household at least three times, and ask for an appointment with the eligible adult in the household within 10 days from the initial visit if the household gave written consent. For calculation of vigorous physical activity minutes are

Data collection started in April 2017, stopped during June due to Ramadan, and then continued until September 2017.

Before initiation of the survey data collection, all selected team members were invited for a capacity building training in Ankara which took place between 10-14 April 2017. The first two days of the training programme focused on developing interview skills of the interviewers as well as displaying how to use the medical

devices for health professionals. The last two day of the training were dedicated to piloting the survey in Ankara.

In the follow up of the training, all teams were deployed in survey provinces under the control and supervision of 15 regional supervisors and coordinators. Continuous data checks were conducted to ensure reliability of the collected data.

3.2.3. STEPS Turkey Survey Data Participation

CAPI was used as the data collection tool in the field. In order to minimize data entry error, collected data was checked by coordinators and supervisors. Initially 8650 households were selected with one eligible adult in the household. 2095 out of 8650 households visited were away or rejected to be part of the survey. Field teams managed to obtain information from 6555 individuals for selection of the eligible adult. Upon selection of eligible adult 502 of them rejected participation in STEPS 1 and 2, and 3253 of them rejected participation in STEPS 3.

CHAPTER 4. RESULTS

3.3. STEPS SYRIANS Survey Results

3.3.1. Demographic Characteristics of Respondents

Similar to the most recent temporary protection statistics received from Migration Management Directorate General of Ministry of Interior, majority of STEPS Syrian respondents were female (57.7%) while male respondents composed 42.3% of the respondents (Table 4.1.).

Table 4. 1. Gender Distribution of STEPS Syrian respondents

Gender	Weighted % Distribution	Unweighted Number of Respondents
Male	42.3	2435
Female	57.7	3325
Total	**100**	**5760**

Age distribution of respondents show that the majority of the respondents are young adults. 37.8 of the respondents were 18-29 year old, followed by 30-44 year old respondents with 35.7%. Only 6% of the survey respondents were 60-69 year age group, which show that majority of Syrians in Turkey, are composed of young population (Table 4.2.).

Table 4. 2. Distribution of STEPS Syrian respondents by age groups

Age Range	Weighted % Distribution	Unweighted Number of Respondents
18-29	37.8	2176
30-44	35.7	2057
45-59	20.6	1184
60-69	6.0	343
Total	**100**	**5760**

STEPS Syrian questionnaire included six options for marital status question. However, to ensure comparability with STEPS Turkey data, respondents of separated were included among divorced, and respondents of living together were included in married categories.

Marital status distribution of Syrians in Turkey show that most the of th Syrians are married (80.8%), which was followed by those never married with 13.6%, widowed with 5.4% and divorced 0.3% (Table 4.3.).

Table 4. 3 Distribution of STEPS Syrian respondents by marital status

Marital Status	Weighted % Distribution	Unweighted Number of Respondents
Never married	13.6	780
Married	80.8	4637
Divorced	0.3	30
Widowed	5.4	313
Total	**100.0**	**5760**

STEPS Syrian questionnaire included seven options for education status including no formal schooling, not completed primary school, completed primary school, completed secondary school, completed high school, completed university, and completed postgraduate school.

Above given options are categorized into four as “illiterate o literate but not completed primary school” as the first category; “completed primary school” as the

second category; “completed secondary or high school” as the third category; and “completed university or postgraduate school” as the fourth category.

According to this categorization, 47.7% of the Syrian respondents completed primary school, followed by 29.2% of the Syrians who were illiterate or not completed primary school. 22.4% of the Syrian respondents completed secondary or high school while only 0.7% of the Syrians were graduates of university or postgraduate degree (Table 4.4.).

Table 4. 4. Distribution of STEPS Syrians respondents by education status

Education Status	**Weighted % Distribution**	**Unweighted Number of Respondents**
Illiterate or literate but not completed Primary School	29.2	1679
Completed primary school	47.7	2742
Completed Secondary or High School	22.4	1292
Completed University, Master or Doctorate Degree	0.7	43
System missing	0.1	4
Total	**100**	**5760**

STEPS Syrian Questionnaire included 9 options for employment status of the respondents in the last 12 months. Options included civil servant, worker, artisan, unpaid worker, student, housewife, retired, unemployed (fit to work), unemployed (unfit to work) and refused. These options are categorized into four during analysis. Civil Servants are categorized as “governmental”, workers are categorized as “nongovernmental”, artisans are categorized as “self employed”, and all the other options are categorized under “unemployed including retired”.

According to analysis results, 74.9% of the Syrians respondents were unemployed including retired, followed by those working in nongovernmental jobs, followed by 20.9% of respondents that worked in nongovernmental jobs in the last 12

months. 2.4% of the respondents were working at governmental jobs, and only 1.8% of the respondents were self-employed (Table 4.5.).

Table 4. 5. Distribution of STEPS Syria respondents by employment status

Work in the last 12 months	Weighted % Distribution	Unweighted Number of Respondents
Governmental	2.4	138
Nongovernmental	20.9	1201
Self-employed	1.8	101
Unemployed including retired	74.9	4320
Total	**100**	**5760**

3.3.2. Tobacco Use

STEPS Syrian respondents were asked whether they were daily smokers. 31.4% of the respondents were recorded as daily smokers. Overall 56.7% of the male respondent were smokers while only 13% of the female respondents were stated being current smoker (Table 4.6.).

Distribution of current smokers by age groups show similar results. Majority of current smoker were from 45-59 age group, followed by 60-69 age group with 33.3% (Table 4.6).

Analysis for smoking status by marital status show that 37.5% of the never married respondents were current smokers, this group was followed by divorced with 36.8. The analysis also show that only 13.8% of the widowed respondents were current smokers (Table 4.6.).

Table 4. 6. Smoking status of STEPS Syrian respondents by gender, age and marital status

		Current Nonsmokers		Current Smokers	
		Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Gender	Male	43.3	1045	56.7	1370
	Female	87.0	2881	13.0	430
Age Range	18-29	72.4	1562	27.6	596
	30-44	67.1	1375	32.9	674
	45-59	64.6	760	35.4	416
	60-69	66.7	229	33.3	114
Marital Status	Never married	62.5	482	37.5	290
	Married	68.4	3157	31.6	1456
	Divorced	63.2	19	36.8	11
	Widowed	86.2	268	13.8	43
	Total	**100**	**3926**	**100**	**1800**

As part of the analysis, smoking status of STEPS Syrian respondents was also checked, and smoking status was found around 30% for all four categories. The highest smoking rate was among “completed secondary or high school” group with 32.2%, and the lowest was among those who were “illiterate or literate but not completed primary school” with 30.3% (Table 4.7.).

When we look at the smoking status of respondents by employment status, there is a significant difference between employment categories. More than half of the respondents who were self-employed or working in non-governmental area were current smokers. The lowest smoking rate was among those who were unpaid including retired with 24.7% (Table 4.7.).

Table 4. 7. Smoking status of STEPS Syrian respondents by education and employment status

	Current Non-Smokers		Current Smokers	
Education Status	Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
illiterate or literate but not completed primary school	69.2	1159	30.3	516
completed primary school	67.8	1848	31.3	878
completed secondary or high school	69.6	890	32.2	390
completed university, master or doctorate degree	65.8	27	30.6	14
Work in the last 12 months	**Current Non-Smokers**		**Current smokers**	
Governmental	83.9	115	16.1	22
Non-governmental	44.6	533	55.4	664
Self employed	44.5	44	55.5	55
Unpaid including retired	75.3	3234	24.7	1059

3.3.3. Harmful Use of Alcohol

Multiple questions were asked to STEPS Syrian respondents in order to understand their alcohol consumption level. Questions were focused on harmful use of alcohol with more details on episodic drinking.

WHO (2009) defines the scope of harmful use of alcohol as:

"The harmful use of alcohol encompasses several aspects of drinking such as the volume of alcohol drunk over time; the pattern of drinking that includes occasional or regular drinking to intoxication; the drinking context if it

increases the public health risks; and the quality or contamination of alcoholic beverages."

Respondents were asked whether they had ever drunken any alcoholic beverages, and the number of those saying "yes" was very small. Only 1.3% of the respondents stated ever-consuming alcohol. The same analysis showed that 3% of male respondents ever drank alcohol while this rate was only 0.1% for female respondents (Table 4.8.).

Table 4. 8. Ever alcohol consumption of STEPS Syrian respondents by gender

Ever Alcohol Consumption	**Weighted % Distribution**	**Unweighted Number of Respondents**
Ever consumed	1.3	76
Lifetime abstainer	98	5646
System Missing	0.7	38
Total	**100**	**5760**
Male	3	72
Female	0.1	4

According to survey results, ever use of alcohol does not differ significantly among respondents by age groups. However, even though overall rate is small, the highest rate is among 18-29 age group, while the lowest rate is among 60-69 age group (Table 4.9.).

Table 4. 9. Ever alcohol consumption of STEPS Syrian respondents by age groups

	Ever Used		**Never Used**	
Age Range	Weighted % Distribution	Number of Respondents	Weighted % Distribution	Number of Respondents
18-29	1.8	39	98.2	2125
30-44	1.1	23	98.9	2015
45-59	1	12	99	1168
60-69	0.6	2	99.4	338
Total	**1.3**	**76**	**98.7**	**5646**

Syrian respondents were also asked whether they consumed alcohol in the last 30 days, and if yes, whether it includes more than 6 drinks at a time. Table 4.10 gives mean number of occasions survey respondents consumed more than 6 drinks.

Accordingly, female respondents have less number of times than male, while 18-29 aged people have the highest consumption among age groups.

Those who were never married stated that they drank more than 6 drinks mean 7 times in the last 30 days. Those who were working in nongovernmental area stated having the highest consumption with mean 5.22 times, and similarly, those who completed primary school stated consuming the highest amount compared to other education categories with mean 6.67 times (Table 4.10.).

Table 4. 10. Mean number of times STEPS Syrian respondents consumed more than 6 drinks at a time in the last 30 days by gender, age range, marital, education and employment status

		Mean Number	Std. Deviation
Gender	Male	5.22	4.904
	Female	2	0
Age range	18-29	6.62	4920
	30-44	1.5	0.704
Marital status	Never married	7	4.338
	Married	1	0
Employment Status	Nongovernmental	5.22	4.904
	Self-employed	2	0
Work in the last 12 months	Illiterate or literate but not completed primary school	1	0
	Completed primary school	6.67	4.91
	Completed secondary or high school	2	0

3.3.4. Diet

According to WHO (2015) annual total number of deaths due to low fruit and vegetable consumption is 1.7 million. In that regard, survey participants were asked about their daily consumption of fruits and vegetables in a typical week.

As part of the analysis, “those who consume more than five servings of fruits and/or vegetables per day” are categorized as having a healthy diet. In that regard,

majority of the respondents were found to be having “less than 5 servings of fruits and/or vegetables per day”.

The rate of males having a healthy diet is slightly higher than females. In addition, analysis showed that people aged 60-69 were having less fruit and/or vegetable consumption compared to other age groups. If crosschecked with marital status, almost none of the widows were almost consuming no vegetable and/or fruits. And the highest consumption rate is among those who were never married (Table 4.11.).

Table 4. 11. Dietary status of STEPS Syrian respondents by gender, age range and marital status

		Having Healthy Diet		**Not having healthy Diet**	
		Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Gender	Male	4.8	101	95.2	2009
	Female	3.3	96	96.7	2838
Age Range	18-29	4.9	95	95.1	1840
	30-44	2.8	50	97.2	1747
	45-59	4.6	47	95.4	980
	60-69	1.8	5	98.2	280
Marital status	Never married	5.8	40	94.2	652
	Married	3.6	147	96.4	3909
	Divorced	0.0	0	100.0	25
	Widowed	3.7	10	96.3	261

Cross tables of dietary status with education and employment status of Syrian respondents clearly showed that those who were more educated consume more vegetables or fruits. The rate of healthy diet among University graduates was 9.7% while it was only 2.7% among those who were illiterate or not completed primary school (Table 4.12.).

Table 4.12. also shows the relation between heaving a healthy diet and employment status. Accordingly, those with no paid work including retired were consuming less vegetable and/or fruits than those with a wage earning employment.

Table 4. 12. Dietary status of STEPS Syrian respondents by education and employment status

	Having Healthy Diet		**Not Having Healthy Diet**	
Education Status	Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Illiterate or literate but not completed primary school	2.7	37	97.3	1355
Completed primary school	4.1	99	95.9	2314
Completed secondary or high school	4.8	57	95.2	1137
Completed university, master or doctorate degree	9.7	4	90.3	37
Work in the last 12 months				
Governmental	5.2	35	94.8	248
Non-governmental	5.6	107	94.4	906
Self employed	5.7	36	94.3	214
Unpaid including retired	3.4	424	96.6	2942

3.3.5. Physical activity

STEPS questionnaire focused on physical activity areas of respondents and asked questions regarding their physical activity levels in three domains; at “work”, for “transportation” and “leisure time” activities. In total, 16 questions were asked under physical activity, ranging from vigorous or moderate level physical activity at work, moderate intensity walking, moderate or vigorous intensity lifting or cycling.

Based on the answers received from the respondents, total physical activity was analysed based on following criteria from WHO STEPS Manual:

"*Throughout a week, including activity for work, during transport and leisure time, adults should do at least 150 minutes of moderate-intensity physical activity, or 75 minutes of vigorous-intensity physical activity, or an equivalent combination of moderate- and vigorous-intensity physical activity achieving at least 600 MET-minutes."*

Five different physical activity variables were created based on the above criteria and in line with the responses for moderate and vigorous intensity physical activity at work, moderate and vigorous intensity physical activity at leisure time and moderate physical activity for walking. In this scope, all hourly physical activities were converted into minutes to see total minute of vigorous or moderate physical activity.

There were significant number of system-missing cases for the variable on moderate intensity physical activity for walking which might be due to a lack of clarification on the question. While calculating, system-missing cases were included as physically inactive for this variable.

Those having 75 minutes and above vigorous intensity physical activity, or 150 minutes of moderate physical activity as part of any of the above given variables, are classified as physically active. Those with no physical activity for all of the above five variables are classified as physically inactive.

Table 4.13. shows cross tabulation of physically active and inactive respondents by their gender, age range and marital status. Accordingly, only 26% of female respondents were physically active while this rate went up to 42.3% for males. The analysis shows that physical activity decreases with the increasing age. When we look at the relation between physical activity and marital status, it is apparent that those who were never married or divorced were more active compared to those who were married or widowed (Table 4.13.).

Table 4. 13. Physical activity status of STEPS Syrian respondents by gender, age range and marital status

		Physically Active		Physically Inactive	
		Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Gender	Male	42.3	1007	57.7	1368
	Female	26.0	832	74.0	2360
Age Range	18-29	37.3	787	62.7	1319
	30-44	37.8	750	62.2	1231
	45-59	23.0	264	77.0	884
	60-69	11.4	38	88.6	294
Marital status	Never married	46.7	353	53.3	401
	Married	31.8	1427	68.2	3057
	Divorced	48.2	14	51.8	15
	Widowed	15.1	45	84.9	255

I have also analysed the physical activity status of Syrian respondents by their education and employment status. The analysis results show that physical activity is higher among those who completed secondary or high school, and lowest among those who were illiterate or not completed primary school (Table 4.14.).

The analysis showed significant relation between physical activity and employment status. Accordingly, 61.7% of those who were working in non-governmental area were physically active, while only 1/4th of those who were unpaid or retired were having enough total physical activity (Table 4.14.).

Table 4. 14. Physical activity status of STEPS Syrian respondents by education and employment status

	Physically Active		Physically Inactive	
Education Status	Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Illiterate or literate but not completed primary school	26.2	425	73.8	1199
Completed primary school	34.5	914	65.5	1736
Completed secondary or high school	38.6	484	61.4	766
Completed university, master or doctorate degree	35.7	14	64.3	25
Work in the last 12 months	Weighted % Distribution	Number of Respondents	Weighted % Distribution	Number of Respondents
Governmental	43.1	57	56.9	75
Non-governmental	61.7	723	38.3	446
Self employed	45.8	45	54.2	53
Unpaid including retired	24.3	1014	75.7	3154

3.3.6. Body Mass Index

As part of the survey, the teams measured height and weight of the respondents for calculation of their body mass index. WHO STEP approach defines BMI categories as following:

- " Underweight: BMI < 18.5 kg/m2"
- "Normal Weight: 18.5 ≤ BMI ≤ 24.9 kg/m2"
- "Overweight: BMI ≥ 25.0 kg/m2"
- "Obese: BMI ≥ 30.0 kg/m2"

In this thesis, I have calculated BMI of the respondents by simply dividing the weight by the square of the height and grouped the respondents with normal weight (BMI < 25) or overweight (BMI ≥ 25).

BMI analysis of the respondents showed that 67.8% of Syrian female respondents and 58.8% of male respondents were overweight. Cross tabulation with age range showed that overweight increases with age. When checked with marital status, the lowest rate of overweight was among those who were never married, and the rate increases respectively for married and divorced. Almost 4 out of 5 people who were widowed were measured as overweight (Table 4.15.).

Table 4. 15. BMI level of STEPS Syrian respondents by gender, age range and marital status

		BMI < 25		**BMI ≥ 25**	
		Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Gender	Male	41.2	996	58.8	1418
	Female	32.2	993	67.8	2085
Age Range	15-29	57.1	1144	42.9	858
	30-44	29.4	582	70.6	1396
	45-59	17.1	200	82.9	971
	60-69	18.6	63	81.4	278
Marital status	Never married	66.7	515	33.3	257
	Married	32.1	1406	67.9	2975
	Divorced	31.3	9	68.7	20
	Widowed	19.0	59	81.0	251

Education and employment analysis of STEPS Syrian respondents for body mass index show that BMI levels are higher among those with no formal schooling. Three out of four people with no formal schooling were found to be overweight (Table 4.16.).

The employment status analysis shows that being unemployed or retired increases the risk of overweight (Table 4.16.).

Table 4. 16. BMI level of STEPS Syrian respondents by education and employment status

Education Status	BMI < 25		BMI ≥ 25	
	Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Illiterate or literate but not completed primary school	27.8	450	72.2	1167
Completed primary school	38.4	1000	61.6	1599
Completed secondary or high school	42.5	523	57.5	709
Completed university, master or doctorate degree	34.1	14	65.9	27
Work in the last 12 months				
Governmental	42.9	58	57.1	77
Non-governmental	47.7	568	52.3	618
Self employed	43.4	43	56.6	56
Unpaid including retired	32.4	1314	67.6	2742

3.3.7. Blood Pressure

As part of STEP 2, "systolic blood pressure" (SBP) and "diastolic blood pressure" (DBP) of survey respondents were measured by a health professional in Survey teams with an aim to define the blood pressure levels of the respondents.

In this scope, three measurements were taken with 5-minute intervals while the respondent was resting. Average of all three calculations was taken for analysis and cut offs were defined in line with STEPS methodology for raised blood pressure:

> "SBP ≥ 140 and /or DBP ≥ 90 mmHg, or currently on medication for raised blood pressure".

When we look at blood pressure levels of survey respondents by gender, 31.1% of men and 26.2% of females seemed to be having raised blood pressure. The analysis also showed that blood pressure increases with age. While it was only 13.5% among

people aged 18—29 years old, more than half of 45—59 year old people were found to be having raised blood pressure, and the rate was highest among 60-69 year old group with 68.4% (Table 4.17.).

When crosschecked with marital status, those who were never married have the lowest rate of raised blood pressure with 14.8%, and it incrementally changes for divorced with 23.4%, married with 29.6% and widowed with 42.4% (Table 4.17.).

Table 4. 17. Blood pressure level of STEPS Syrian respondents by gender, age range and marital status

		Normal Blood Pressure		**Raised Blood Pressure**	
		Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Gender	Male	68.9	1661	31.1	749
	Female	73.8	2429	26.2	861
Age Range	18-29	86.5	1861	13.5	291
	30-44	76.0	1543	24.0	489
	45-59	49.2	578	50.8	596
	60-69	31.6	108	68.4	234
Marital status	Never married	85.2	654	14.8	114
	Married	70.4	3234	29.6	1358
	Divorced	76.6	12	23.4	7
	Widowed	57.6	179	42.4	131

Blood pressure levels of respondents by education showed that the highest rate of raised blood pressure rate was among those with no formal schooling followed with 36.6%, followed by those that completed university, master of doctorate degree with 29.5%. Therefore, we cannot say that there is a direct connection between blood pressure levels and level of education for Syrians under Temporary Protection in Turkey (Table 4.18.).

As in other variables, the highest rate of raised blood pressure was among those currently unemployed or retired with 30.2% (Table 4.18.).

Table 4. 18. Blood pressure measure of STEPS Syrian respondents by education and employment status

Education Status	Normal Blood Pressure		Raised Blood Pressure	
	Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Illiterate or literate but not completed primary school	63.4	1054	36.6	608
Completed primary school	74.7	2033	25.3	688
Completed secondary or high school	76.3	971	23.7	301
Completed university, master or doctorate degree	70.5	29	29.5	12
Work in the last 12 months				
Governmental	74.9	102	25.1	34
Non-governmental	77.7	922	22.3	264
Self employed	78.6	77	21.4	21
Unpaid including retired	69.8	2989	30.2	1291

3.3.8. Combined Risk Factors

In order to evaluate overall risk level of survey respondents, five NCD risk factors were identified:

- "Current daily smoking
- Consuming less than five servings of fruits and/or vegetables per day
- Less than 75 minutes of vigorous intensity physical activity or 150 minutes of moderate intensity physical activity in a typical week
- Having 25 and above body mass index
- Having 140 mmHg and above SBP or 90 and above mmHg DBP"

Cross tabulation of all five risks were done, and above-given five risk factors were grouped as low risk for people having 0—2 risk factors, and high risk for people having 3—5 risk factors.

Combined risk factor analysis of Survey respondents shows that 66.7% of males and 60.8% of females have three and more NCD risk factors. High risk has a strong incremental relation with age. Almost nine out of 10 people aged 60-69 have three and more NCD risk factors, while this rate is 43.2% for those aged 18-29. Marital status analysis shows that those who were never married have the lowest rate of high risk factors with 39.6%. Those that were divorced and married have similar rates of high risk for NCDs, respectively 65.2% and 66.5%. Widowed people almost twice more high risk rate compared to never married (Table 4.19.).

Table 4. 19 Combined risk factors for STEPS Syrian respondents by gender, age range and marital status

		% Distribution of Low Risk (0-2 risks)	% Distribution of High Risk (3-5 risks)	Unweighted total number of respondents
Gender	Male	33.3	66.7	2029
	Female	39.2	60.8	2600
Age Range	18-29	56.8	43.2	1716
	30-44	34.1	65.9	1661
	45-59	13.4	86.6	976
	60-69	8.7	91.3	276
Marital Status	Never married	60.4	39.6	655
	Married	33.5	66.5	3699
	Divorced	34.8	65.2	23
	Widowed	21.0	79.0	252
	Total	**36.6**	**63.4**	**4629**

Combined risk factor analysis by level of education shows that the highest rate for high risk for NCDs is among those with nor formal schooling. However, the second education level group with the highest rate of high risk is those completed university, master or doctorate degree, which clearly shows that level of education does not directly play an important role for having NCD risk factors among Syrians in Turkey (Table 4.20.).

Combined NCD risk factors by employment status shows that more than half of the people from all employment groups have high risk for NCDs. However, those

with no current employment have the highest rate of high risk for NCDs with 66.6% (Table 4.20.).

Table 4. 20. Combined risk factors for STEPS Syrian respondents by education and employment status

Education Status	% Distribution of Low Risk (0-2 risks)	% Distribution of High Risk (3-5 risks)	Unweighted total number of respondents
Illiterate or literate but not completed primary school	27	73	1298
Completed primary school	38.7	61.3	2201
Completed secondary or high school	43.6	56.4	1093
Completed university, master or doctorate degree	38.2	61.8	34
Total	**36.6**	**63.4**	**4626**
Work in the last 12 months			
Governmental	48	52	123
Non-governmental	46.1	53.9	999
Self employed	35.3	64.7	85
Unpaid including retired	33.4	66.6	3422
Total	**36.6**	**63.4**	**4629**

3.4. STEPS TURKEY Survey Results

3.4.1. Demographic Characteristics of Respondents

Gender distribution of STEPS Turkey survey shows that 50.1% of the respondents were men, and 49.9% of the respondents were female (Table 4.21.).

Table 4. 21. Gender Distribution of STEPS Turkey Respondents

Gender	Weighted % Distribution	Unweighted Number of Respondents
Male	50.1	2093
Female	49.9	3079
Total	**100**	**5172**

Eligibility criteria for survey participation was being 15 years and above, however, to ensure comparability with STEPS Syrian data, those under 18 and above 69 year were excluded from the analysis. As a result, only 5172 out of 6555 eligible respondents were included in the analysis.

In this regard, survey respondents were grouped by age, as; 18—29, 30—44, 45—59, 60—69, 70 and above. Highest representation was for 30—44 age group with 34.6%, followed by 18—29 age group with 29.9%, 45—59 age group with 24.8%, and 60—69 age group with 10.8% (Table 4.22.).

Table 4. 22. Distribution of STEPS Turkey Respondents by Age Groups

Age Range	Weighted % Distribution	Unweighted Number of Respondents
18-29	29.9	1010
30-44	34.6	1702
45-59	24.8	1616
60-69	10.8	844
Total	**100.0**	**5172**

Marital status of the respondents was asked as part of STEPS questionnaire. More than half (70.5%) of the respondents stated that they were married. Married respondents were followed by those who never married with 24.6%. a small proportionate of the respondents were widowed 2.9% or divorced 2.0% (Table 4.23.)

Table 4. 23. Distribution of STEPS Turkey Respondents by Marital Status

Marital Status	Weighted % Distribution	Unweighted Number of Respondents
Never married	24.6	835
Married	70.5	3843
Divorced	2.0	156
Widowed	2.9	338
Total	**100.0**	**5172**

Education status of the respondents was also asked as part of the survey. Survey questionnaire included nine options for the question on level of education. Options included;

1. “illiterate”,
2. “literate but not completed primary school”,
3. “completed primary school”,
4. “completed primary, secondary or vocational secondary school”,
5. “completed high school or vocational high school”,
6. “completed 2 or 3 year college”,
7. “4 year college or faculty completed”,
8. “Master degree (including 5 or 6 year faculties) completed”,
9. “PhD degree completed”.

These options were regrouped during the analysis into four categories. The first category included option 1 and 2 and labelled as “Illiterate or literate but not completed Primary School”, the second category only covered option 3 and labelled as “Completed primary school”, the third category included option 4 and 5 and labelled as “Completed Secondary or High School”, the fourth and the final category covered options 6, 7, 8, and 9, and labelled as “Completed University, Master or Doctorate Degree”.

As shown in Table 4.24. 50.1% of the respondents completed secondary or high school, which is followed by 24.6% of the respondents that completed primary school, 18.3% of the respondents completed University, Master or Doctorate Degree while 7% of the respondents were illiterate or literate but not completed primary school.

Table 4. 24. Distribution of STEPS Turkey Respondents by Education Status

Education Status	Weighted % Distribution	Unweighted Number of Respondents
Illiterate or literate but not completed Primary School	7	692
Completed primary school	24.6	1969
Completed Secondary or High School	50.1	1765
Completed University, Master or Doctorate Degree	18.3	746
Total	**100**	**5172**

STEPS Turkey respondents were also asked about their main work status in the last 12 months. The question included nine options:

1. "Government employee"
2. "Non-government employee"
3. "Self-employed"
4. "Non-paid"
5. "Student"
6. "Homemaker"
7. "Retired"
8. "Unemployed (able to work)"
9. "Unemployed (unable to work)"

Out of these nine options, I have created four categories for the analysis including; Governmental for option 1, Non-governmental for option 2, Self-employed for option 3, and Unpaid including retired for options 4, 5, 6, 7, 8 and 9.

Table 4.21. shows the distribution of STEPS Turkey respondents by their employment status. 60.6% of the respondents were unemployed or retired at the time of survey, followed by those working in non-governmental area with 26.2%. Those working as a government employee or self-employed have similar rates, respectively 6.8% and 6.4% (Table 4.25.).

Table 4. 25. Distribution of STEPS Turkey Respondents by Employment Status

Work in the last 12 months	Weighted % Distribution	Unweighted Number of Respondents
Governmental	6.8	294
Nongovernmental	26.2	1071
Self-employed	6.4	265
Unemployed including retired	60.6	3542
Total	**100**	**5172**

STEPS Turkey Survey aimed to generate evidence for NCD risk factor status for the whole of Turkey. The Survey also aimed to obtain regional level estimates for 12 NUTS-1 regions in Turkey. Nomenclature of Teritorial Units for Statistics (NUTS) is a geographical classification developed with an aim to collect comparable data from different regions. The classification enables countries to have subdivisions at different levels for statistical purposes. This classification is widely used by the European Union Countries to see the economic differences between subdivisions to plan the assistance.

NUTS classification has been in use since 2002 in Turkey. In this regard, three different levels are defined. This survey only uses data from level 1 units (Table 4.26.).

Table 4. 26. List of Units in NUTS Classification

NUTS-1 Regions		NUTS-2 Sub regions	NUTS-3 Provinces	
TR1	Istanbul	Istanbul	Istanbul	
TR2	Western Marmara	Tekirdağ Balıkesir	Tekirdağ Edirne	Kırklareli Balıkesir Çanakkale
TR3	Aegean	İzmir Aydın Mania	İzmir Aydın Denizli Muğla	Manisa Afyonkarahisar Kütahya Uşak
TR4	Eastern Marmara	Bursa Kocaeli	Bursa Eskişehir Bilecik Kocaeli	Sakarya Düzce Bolu Yalova
TR5	Western Anatolia	Ankara Konya	Ankara Konya Karaman	
TR6	Mediterranean	Antalya Adana Hatay	Antalya Isparta Burdur Adana	Mersin Hatay Kahramanmaraş Osmaniye
TR7	Central Anatolia	Kırıkkale Kayseri	Kırıkkle Aksaray Niğde Nevşehir	Kırşehir Kayseri Sivas Yozgat
TR8	Western Black Sea	Zonguldak Kastamonu Samsun	Zonguldak Karabük Bartın Kastamonu Çankırı	Sinop Samsun Tokat Çorum Amasya
TR9	Eastern Black Sea	Trabzon	Trabzon Ordu Giresun	Rize Artvin Gümüşhane

Table 4.26. List of Units in NUTS Classification (continued)

NUTS-1 Regions		NUTS-2 Sub regions	NUTS-3 Provinces	
TRA	North Eastern Anatolia	Erzurum Ağrı	Erzurum Erzincan Bayburt Ağrı	Kars Iğdır Ardahan
TRB	Central Eastern Anatolia	Malatya Van	Malatya Elazığ Bingöl Tunceli	Van Muş Bitlis Hakkari
TRC	South Eastern Anatolia	Gaziantep Şanlıurfa Mardin	Gaziantep Adıyaman Kilis Şanlıurfa Diyarbakır	Mardin Batman Şırnak Siirt

Table 4.27. shows the distribution of respondents by NUTS-1 regions with majority of them (19.3%) in TR1 region where Istanbul is listed.

Table 4. 27. Distribution of STEPS Turkey Respondents by NUTS-1 regions

NUTS-1 Region	Weighted % Distribution	Unweighted Number of Respondents
TR1	19.3	800
TR2	4.5	265
TR3	13.6	758
TR4	9.9	637
TR5	9.8	588
TR6	12.6	632
TR7	4.8	271
TR8	5.7	305
TR9	3.5	218
TRA	2.6	133
TRB	4.4	217
TRC	9.3	348
Total	**100**	**5172**

One more variable was created for the analysis of STEPS Turkey Survey results using data from 10 provinces selected for the implementation of STEPS Syrian

survey. Respondents were grouped by their provinces and the results were labelled as Syrian Survey provinces and other provinces.

Table 4.28. shows the distribution of STEPS Turkey respondents by Syrian Survey provinces. Almost 40% of the respondents were from the provinces where STEPS Syrian was implemented.

Table 4. 28. STEPS Turkey respondents by Syrian Survey provinces

	Weighted % Distribution	**Unweighted Number of Respondents**
Syrian Survey provinces	39.1	1833
Other provinces	60.9	3339
Total	**100**	**5172**

3.4.2. Tobacco Use

STEPS Turkey respondents were asked detailed questions on their smoking status ranging from the daily smoking to smoking start age, whether there has been any attempts to quit smoking, types of tobacco products in use, etc.

In this thesis, I have only used the question on daily smoking to define the smoking status of the survey respondents.

Table 4.29. shows us the smoking status of STEPS Turkey respondents by gender, age range and marital status. 46.7% of male and 21.8% of female respondents declare being current smokers during the survey.

When we crosschecked with age range, the highest consumption rate was among 30-44 year old respondents with 41.8%. Moreover, the lowest smoking rate was among 60-69 year old with 17.5%.

Smoking status by marital status shows that more than half of divorced people were current smokers. Divorced people were followed by those that never married with 38.6%, and married with 32.8%. The lowest smoking rate was among widowed people with 21.6% (Table 4.29.).

Table 4. 29. Smoking Status of STEPS Turkey respondents by gender, age range and marital status

		Current Nonsmokers		Current Smokers	
		Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Gender	Male	53.3	1155	46.7	938
	Female	78.2	2465	21.8	614
Age Range	18-29	66.8	693	33.2	317
	30-44	58.2	1072	41.8	630
	45-59	67.6	1148	32.4	468
	60-69	82.5	707	17.5	137
Marital Status	Never married	61.4	499	38.6	336
	Married	67.2	2757	32.8	1086
	Divorced	48.1	84	51.9	72
	Widowed	78.4	280	21.6	58
	Total	**100**	**3620**	**100**	**1552**

Cross tabulation of smoking status by level of education showed that the lowest smoking rate was among those with no formal schooling with 15.2%. 39.6% of those that completed secondary or high school were found to be current smokers (Table 4.30.).

When we look at the smoking status of respondents by their employment status, more than half of those working in non-governmental area and working as self-employed were current smokers, respectively 50.1% and 51.5%. The lowest smoking rate was among those that are not currently employed with 25.45 (Table 4.30.).

Table 4. 30. Smoking status of STEPS TURKEY respondents by education and employment status

	Current Non-Smokers		Current Smokers	
Education Status	Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
illiterate or literate but not completed primary school	84.8	588	15.2	104
completed primary school	71.4	1436	28.6	533
completed secondary or high school	60.4	1103	39.6	662
completed university, master or doctorate degree	65.2	493	34.8	253
Work in the last 12 months				
Governmental	64	186	36	108
Non-governmental	49.9	552	50.1	519
Self employed	48.5	137	51.5	128
Unpaid including retired	74.6	2745	25.4	797

Table 4.31 gives the smoking status of respondents by stratum. According to the Table, 36.4% of respondents from non-Syrian Survey provinces are current smokers. Smoking rate is 40.9% in TR2 region which is highest compared to other regions (Table 4.31.).

Table 4. 31. Smoking Status of Respondents by Syrian Stratum and NUTS-1 Regions

	Current Non-Smokers		Current Smokers	
Syrian Stratum	Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Syrian Provinces	69	1330	31	503
Other Provinces	63.6	2290	36.4	1049
NUTS-1 Regions				
TR1	67	575	33	225
TR2	59.1	168	40.9	97
TR3	65.4	512	34.6	246
TR4	58.5	412	41.5	225
TR5	60.9	387	39.1	201
TR6	69	468	31	164
TR7	66.7	201	33.3	70
TR8	69.4	222	30.6	83
TR9	64.9	158	35.1	60
TRA	63.6	92	36.4	41
TRB	69.1	155	30.9	62
TRC	71.5	270	28.5	78

3.4.3. Harmful Use of Alcohol

Multiple questions were asked to STEPS Syrian respondents in order to understand their alcohol consumption level. Questions were focused on harmful use of alcohol with more details on episodic drinking.

WHO (2009) defines the scope of harmful use of alcohol as:

"The harmful use of alcohol encompasses several aspects of drinking such as the volume of alcohol drunk over time; the pattern of drinking that includes occasional or regular drinking to intoxication; the drinking context if it increases the public health risks; and the quality or contamination of alcoholic beverages."

Respondents were asked whether they had ever drunken any alcoholic beverages, and the number of those saying "yes" was 17.5%. Almost 4 out of 5 people stated that they were lifetime abstainers. The same analysis showed that 27% of male drank alcohol while this rate was 7.8% for female respondents (Table 4.32.).

Table 4. 32. Ever alcohol consumption of STEPS Turkey respondents by gender

Ever Alcohol Consumption	Weighted % Distribution	Unweighted Number of Respondents
Ever consumed	17.5	748
Lifetime abstainer	82.5	4424
Total	**100**	**5712**
Male	27.0	564
Female	7.8	184

Table 4.33 shows ever alcohol consumption of STEPS Turkey respondents by age range with no particular difference among age groups. The highest rate for ever consumption was among 18-29 age group with 18.4%, and the lowest rate was among 60-69 age group with 14.4%. Even though the rates did not differ significantly, the rate decreased with the age (Table 4.33.).

Table 4. 33. Ever alcohol consumption of STEPS Turkey respondents by age range

	Ever Used		Never Used	
Age Range	Weighted % Distribution	Number of Respondents	Weighted % Distribution	Number of Respondents
18-29	18.4	177	81.6	833
30-44	18.3	249	81.7	1453
45-59	16.5	221	83.5	1395
60-69	14.4	101	85.6	743
Total	**17.4**	**748**	**82.6**	**4424**

STEPS Turkey respondents were also asked whether they consumed alcohol in the last 30 days, and if yes, whether it includes more than six drinks at a time. Table 4.34. gives mean number of occasions survey respondents consumed more than six drinks. Accordingly, females have more number of times than males, while people aged 60-69 have the highest consumption among age groups.

Those who were widowed stated that they drank more than 6 drinks mean 21 times in the last 30 days. Those who were not employed at the time of survey including retired stated having the highest consumption with mean 4.89 times, and those who completed secondary or high school stated having the highest number of occasion where they had more than 6 drinks in the last 30 days with 4.10 times (Table 4.34.).

Table 4. 34. Mean number of times STEPS Turkey respondents consumed more than six drinks at a time in the last 30 days by gender, age range, marital, education and employment status

		Mean Number	**Std. Deviation**
Gender	Male	3.55	5.42
	Female	4.44	7.963
Age range	18-29	3.84	5.842
	30-44	3.31	4.483
	45-59	3.01	5.163
	60-69	7.63	11.808
Marital status	Never married	4.1	6.004
	Married	2.9	4.66
	Divorced	2.46	2.985
	Widowed	21.08	13.443
Employment Status	Governmental	2.94	3.876
	Nongovernmental	3.13	4.261
	Self-employed	2.98	3.287
	Unpaid including retired	4.89	8.302
Work in the last 12 months	Illiterate or literate but not completed primary school	2.78	3.306
	Completed primary school	3.22	5.267
	Completed secondary or high school	4.1	6.65
	Completed university, Master or Doctorate Degree	3.1	4.493

3.4.4. Diet

According to WHO (2015) annual total number of deaths due to low fruit and vegetable consumption is 1.7 million. In that regard, survey participants were asked about their daily consumption of fruits and vegetables in a typical week.

As part of the analysis, those who consume "more than five servings of fruits and/or vegetables per day" are categorized as having a healthy diet. In that regard, majority of the respondents were found to be having "less than 5 servings of fruits and/or vegetables per day".

Table 4. 35. Dietary status of STEPS Turkey respondents by gender, age range and marital status

		Having Healthy Diet		**Not having healthy Diet**	
		Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Gender	Male	11.6	232	88.4	1741
	Female	11.9	370	88.1	2569
Age Range	18-29	10.1	85	89.9	851
	30-44	10.7	188	89.3	1438
	45-59	12.8	202	87.2	1335
	60-69	16.7	127	83.3	686
Marital status	Never married	10.4	73	89.6	718
	Married	12.1	462	87.9	3188
	Divorced	11.5	18	88.5	133
	Widowed	14.2	49	85.8	271

Table 4.35. shows the fruit and/or vegetable consumption of survey respondent per day. The rate of females having a healthy diet is slightly higher than males. Only 1 out of 10 people were having a healthy diet. Healthy eating seems increasing by age with the highest rate among 60-69 year old group. If crosschecked with marital status, the lowest rate is among those who never marrie followed by divorced and married.

The highest rate for healthy diet is among those who were widowed with 14.2% (Table 4.35.).

Cross tables of dietary status with education and employment status of STEPS Turkey respondents showed no significant relation between dietary habit and level of education. The rate of healthy diet among University graduates was 11.5% while it was only 12.2% among those who were illiterate or not completed primary school (Table 4.36.).

Table 4.36. also shows the relation between heaving a healthy diet and employment status. Accordingly, those working in nongovernmental jobs were having the lowest rate of healthy diet with 9.7%. The rate was highest among those working in governmental jobs with 15.6% (table 4.36.).

Table 4. 36. Dietary status of STEPS Turkey respondents by education and employment status

	Having Healthy Diet		**Not Having Healthy Diet**	
Education Status	Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Illiterate or literate but not completed primary school	12.2	80	87.8	544
Completed primary school	11.7	231	88.3	1668
Completed secondary or high school	11.8	209	88.2	1451
Completed university, master or doctorate degree	11.5	82	88.5	647
Work in the last 12 months				
Governmental	15.6	35	84.4	248
Non-governmental	9.7	107	90.3	906
Self employed	11	36	89	214
Unpaid including retired	12.3	424	87.7	2942

Healthy eating habits of STEPS Turkey respondents were also analysed by Syrian Stratum and NUTS-1 regions. Respondents from STEPS Syrian Survey provinces have slightly higher healthy diet rates (Table 4.37.).

When checked by NUTS-1 regions, TR-6 region has the highest healthy eating rate with 32.7%, while this rate is 0.0% for TRA region (Table 4.37.).

Table 4. 37. Dietary status of STEPS Turkey respondents by Syrian stratum and NUTS-1 regions

	Having Healthy Diet		**Not Having Healthy Diet**	
Syrian Stratum	Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Syrian Provinces	13	247	87	1417
Other Provinces	11	355	89	2893
NUTS-1 Regions				
TR1	2.5	23	97.5	739
TR2	6.5	15	93.5	244
TR3	12.5	102	87.5	650
TR4	6.6	37	93.4	599
TR5	8.3	51	91.7	537
TR6	32.7	242	67.3	384
TR7	17.6	39	82.4	202
TR8	17.7	38	82.3	265
TR9	10.2	24	89.8	192
TRA	0	0	100	130
TRB	5.9	9	94.1	195
TRC	13.2	22	86.8	173

3.4.5. Physical activity

STEPS questionnaire focused on physical activity areas of respondents and asked questions regarding their physical activity levels in three domains; at “work”, for “transportation” and “leisure time” activities. In total, 16 questions were asked

under physical activity, ranging from vigorous or moderate level physical activity at work, moderate intensity walking, moderate or vigorous intensity lifting or cycling.

Based on the answers received from the respondents, total physical activity was analysed based on following criteria from WHO STEPS Manual:

> "*Throughout a week, including activity for work, during transport and leisure time, adults should do at least 150 minutes of moderate-intensity physical activity, or 75 minutes of vigorous-intensity physical activity, or an equivalent combination of moderate- and vigorous-intensity physical activity achieving at least 600 MET-minutes."*

Five different physical activity variables were created based on the above criteria and in line with the responses for moderate and vigorous intensity physical activity at work, moderate and vigorous intensity physical activity at leisure time and moderate physical activity for walking. In this scope, all hourly physical activities were converted into minutes to see total minute of vigorous or moderate physical activity.

There were significant number of system-missing cases for the variable on moderate intensity physical activity for walking which might be due to a lack of clarification on the question. While calculating, system-missing cases were included as physically inactive for this variable.

Those having 75 minutes and above vigorous intensity physical activity, or 150 minutes of moderate physical activity as part of any of the above given variables, are classified as physically active. Those with no physical activity for all of the above five variables are classified as physically inactive.

Table 4.38. shows cross tabulation of physically active and inactive respondents by their gender, age range and marital status. Accordingly, only 6.6% of females were physically active while this rate went up to 11.8% for males. The analysis shows that physical activity decreases with the increasing age. When we look at the relation between physical activity and marital status, those who were never married have the highest rate for physical activity with 11.5%, while divorced have the lowest rate of physical activity with 7.1% (Table 4.38.).

Table 4. 38. Physical activity status of STEPS Turkey respondents by gender, age range and marital status

		Physically Active		Physically Inactive	
		Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Gender	Male	11.8	227	88.2	1851
	Female	6.6	186	93.4	2876
Age Range	18-29	11.0	95	89.0	907
	30-44	9.2	146	90.8	1545
	45-59	8.3	120	91.7	1487
	60-69	6.8	52	93.2	788
Marital status	Never married	11.5	83	88.5	746
	Married	8.8	302	91.2	3517
	Divorced	7.1	14	92.9	141
	Widowed	3.5	14	96.5	323

I have also analysed the physical activity status of STEPS Turkey respondents by their education and employment status. The analysis results show that physical activity is higher among those who completed secondary or high school, and lowest among those who were illiterate or not completed primary school (Table 4.39.).

The analysis showed no significant relation between physical activity and employment status. Accordingly, 13.8% of those who were working in non-governmental area were physically active, while only 5.2% of those working in governmental jobs were having enough total physical activity (Table 4.39.).

Table 4. 39. Physical activity status of STEPS Turkey respondents by education and employment status

	Physically Active		Physically Inactive	
Education Status	Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Illiterate or literate but not completed primary school	5.6	38	94.4	649
Completed primary school	8	150	92	1809
Completed secondary or high school	11	174	89	1577
Completed university, master or doctorate degree	7.5	51	92.5	692
Work in the last 12 months				
Governmental	5.2	15	94.8	275
Non-governmental	13.8	127	86.2	937
Self employed	9.1	21	90.9	244
Unpaid including retired	7.8	250	92.2	3271

Physical activity level analysis of STEPS Turkey respondents by STEPS Syrian survey provinces showed that only 7.1% of respondents living at STEPS Syrian Survey provinces were physically active, while this rate was 10.6% for other provinces (Table 4.40.).

Analysis for physical activity of the respondents by NUTS-1 regions shows that the highest physical activity rate was found that 1/5th of respondents from TR4 region were physically active. The lowest physical activity rate was found in TR2 region (Table 4.40.).

Table 4. 40. Physical activity status of STEPS Turkey respondents by Syrian Stratum and NUTS-1 regions

	Physically Active		Physically Inactive	
Syrian Stratum	Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Syrian Provinces	7.1	96	92.9	1718
Other Provinces	10.6	317	89.4	3009
NUTS-1 Regions				
TR1	8	49	92	747
TR2	2.9	7	97.1	258
TR3	6.3	43	93.7	714
TR4	19.5	103	80.5	534
TR5	8.9	44	91.1	543
TR6	7.6	33	92.4	593
TR7	4.5	18	95.5	249
TR8	16.8	36	83.2	268
TR9	7.5	14	92.5	204
TRA	3.1	7	96.9	126
TRB	16	29	84	185
TRC	7.9	30	92.1	306

3.4.6. Body Mass Index

As part of the survey, the teams measured height and weight of the respondents for calculation of their body mass index. WHO "STEP Surveillance Manual" defines BMI categories as following (WHO, 2017):

- " Underweight: BMI < 18.5 kg/m2"
- "Normal Weight: 18.5 ≤ BMI ≤ 24.9 kg/m2"
- "Overweight: BMI ≥ 25.0 kg/m2"
- "Obese: BMI ≥ 30.0 kg/m2"

In this thesis, I have calculated BMI of the respondents by simply dividing the weight by the square of the height and grouped the respondents with normal weight (BMI < 25) or overweight (BMI ≥ 25).

BMI analysis of the respondents showed that 66.3% of female and 64.5% of male respondents were overweight. Cross tabulation with age range showed that overweight increases with age. When checked with marital status, the lowest rate of overweight was among those who were never married, and the rate increases respectively for married and divorced. Almost 9 out of 10 people who were widowed were measured as overweight (Table 4.41.).

Table 4. 41. BMI level of STEPS Turkey respondents by gender, age range and marital status

		BMI < 25		**BMI ≥ 25**	
		Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Gender	Male	35.5	604	64.5	1359
	Female	33.7	726	66.3	2199
Age Range	15-29	62.2	544	37.8	383
	30-44	31.2	473	68.8	1136
	45-59	16.7	215	83.3	1326
	60-69	12.0	98	88.0	713
Marital status	Never married	61.9	444	38.1	331
	Married	26.0	806	74.0	2839
	Divorced	42.0	46	58.0	101
	Widowed	10.7	34	89.3	287

Education and employment analysis of STEPS Syrian respondents for body mass index show that overweight rates were decreasing among respondents by level of education. 4 out of 5 respondents with no formal schooling were found to be overweight, while this rate went down to 54.3% among university graduates (Table 4.42.).

The employment status analysis shows that the highest rate for overweight was among self-employed respondents with 72.2%, and the lowest rate was among those working in governmental jobs with 60.4% (Table 4.42.).

Table 4. 42. BMI level of STEPS Turkey respondents by education and employment status

	BMI < 25		BMI ≥ 25	
Education Status	Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Illiterate or literate but not completed primary school	17.2	100	82.8	572
Completed primary school	18.8	314	81.2	1576
Completed secondary or high school	41	613	59	1021
Completed university, master or doctorate degree	45.7	303	54.3	389
Work in the last 12 months				
Governmental	39.6	100	60.4	175
Non-governmental	37.5	353	62.5	647
Self employed	27.8	64	72.2	182
Unpaid including retired	33.5	813	66.5	2554

Syrian stratum analysis of STEPS Turkey respondents for their body mass index shows that respondents living in Syrian Survey provinces have lower obesity rate active compared to other provinces (Table 4.43.).

BMI levels of respondents by NUTS-1 region shows that the highest rate for normal weight was for TR1 region with 40% (Table 4.43).

Table 4. 43. BMI levels of STEPS Turkey respondents by Syrian Stratum and NUTS-1 regions

	BMI < 25		BMI ≥ 25	
Syrian Stratum	Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Syrian Provinces	37.5	539	62.5	1226
Other Provinces	32.7	791	67.3	2332
NUTS-1 Regions				
TR1	40	249	60	513
TR2	32.7	56	67.3	163
TR3	32.5	185	67.5	558
TR4	36.4	159	63.6	400
TR5	32.9	167	67.1	396
TR6	32.8	147	67.2	470
TR7	35.6	63	64.4	197
TR8	29.3	54	70.7	208
TR9	27.7	54	72.3	163
TRA	25.9	27	74.1	105
TRB	34.7	64	65.3	149
TRC	37.5	105	62.5	236

3.4.7. Blood Pressure

As part of STEP 2, "systolic blood pressure" (SBP) and "diastolic blood pressure" (DBP) of survey respondents were measured by a health professional in Survey teams with an aim to define the blood pressure levels of the respondents.

In this scope, three measurements were taken with 5-minute intervals while the respondent was resting. Average of all three calculations was taken for analysis and cut offs were defined in line with STEPS methodology for raised blood pressure:

> "SBP ≥ 140 and /or DBP ≥ 90 mmHg, or currently on medication for raised blood pressure".

When we look at blood pressure levels of survey respondents by gender, 24.8% of men and 26.6% of females seemed to be having raised blood pressure. The analysis

also showed that blood pressure increases with age. While it was only 11.8% among people aged 18—29 years old, this rate tripled among those aged 45—59 year, and the rate was highest among 60-69 year old group with 59.5% (Table 4.44.).

When crosschecked with marital status, those who were never married have the lowest rate of raised blood pressure with 13.0%, and it incrementally changes for married with 28.7%, divorced with 32.8% and widowed with 54.8% (Table 4.17.).

Table 4. 44. Blood pressure level of STEPS Turkey respondents by gender, age range and marital status

		Normal Blood Pressure		**Raised Blood Pressure**	
		Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Gender	Male	75.2	1374	24.8	586
	Female	73.4	2016	26.6	951
Age Range	18-29	88.2	843	11.8	102
	30-44	83.2	1345	16.8	282
	45-59	60.1	895	39.9	649
	60-69	40.5	307	59.5	504
Marital status	Never married	87.0	661	13.0	113
	Married	71.3	2493	28.7	1190
	Divorced	67.2	99	32.8	49
	Widowed	45.2	137	54.8	185

Blood pressure levels of respondents by education showed that the highest rate of raised blood pressure rate was among those with no formal schooling with 49%. The rate decreases with the increasing level of education. Only 18.1% of University graduates have raised blood pressure (Table 4.45.).

As in other variables, the highest rate of raised blood pressure was among those currently unemployed or retired with 29.8% (Table 4.45.).

Table 4. 45. Blood pressure measure of STEPS Turkey respondents by education and employment status

	Normal Blood Pressure		Raised Blood Pressure	
Education Status	Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Illiterate or literate but not completed primary school	51	323	49	355
Completed primary school	65.2	1183	34.8	716
Completed secondary or high school	79.4	1304	20.6	345
Completed university, master or doctorate degree	81.9	580	18.1	121
Work in the last 12 months				
Governmental	77.7	222	22.3	54
Non-governmental	82.9	799	17.1	205
Self employed	74.5	180	25.5	65
Unpaid including retired	70.2	2189	29.8	1213

Blood pressure measurement analysis of the respondents shows that those living in other provinces have lower rate of raised blood pressure compared to Syrian survey provinces (Table 4.46.).

Cross tabulation with NUTS-1 regions shows that the highest rate for raised blood pressure was in TR8 region, and the lowest rate was in TR5 region.

Table 4. 46. Blood pressure levels of STEPS Turkey respondents by Syrian Stratum and NUTS-1 Regions

	Normal Blood Pressure		Raised Blood Pressure	
Syrian Stratum	Weighted % Distribution	Unweighted Number of Respondents	Weighted % Distribution	Unweighted Number of Respondents
Syrian Provinces	76	1308	24	473
Other Provinces	73.1	2082	26.9	1064
NUTS-1 Regions				
TR1	79.8	586	20.2	183
TR2	67.7	132	32.3	90
TR3	68.5	473	31.5	276
TR4	79.3	399	20.7	163
TR5	80.8	438	19.2	132
TR6	77.4	439	22.6	181
TR7	72.6	173	27.4	91
TR8	59.1	137	40.9	127
TR9	66.7	138	33.3	79
TRA	76.3	96	23.7	36
TRB	79.3	156	20.7	57
TRC	67.3	223	32.7	122

3.4.8. Combined Risk Factors

In order to evaluate overall risk level of survey respondents, five NCD risk factors were identified:

- "Current daily smoking"
- "Consuming less than five servings of fruits and/or vegetables per day"
- "Less than 75 minutes of vigorous intensity physical activity or 150 minutes of moderate intensity physical activity in a typical week"
- "Having 25 and above body mass index"
- "Having 140 mmHg and above SBP or 90 and above mmHg DBP"

Cross tabulations of all five risks were done, and above-given five risk factors were grouped as low risk for people having 0-2 risk factors, and high risk for people having 3-5 risk factors.

Combined risk factor analysis of Survey respondents shows that 76.9% of male and 70% of female repondents have three and more NCD risk factors. High risk has a strong incremental relation with age. Almost nine out of 10 people aged 60-69 have three and more NCD risk factors, while this rate is 52.9% for those aged 18-29. Marital status analysis shows that those who were never married have the lowest rate of high risk factors with 56.6%. Those that were married or divorced have similar rates of high risk for NCDs, respectively 78.3% and 79.4%. 87.2% of widowed have high risk of NCD risk factors (Table 4.47.).

Table 4. 47. Combined risk factors for STEPS Turkey respondents by gender, age range and marital status

		% Distribution of Low Risk (0-2 risks)	% Distribution of High Risk (3-5 risks)	Unweighted total number of respondents
Gender	Male	23.1	76.9	2303
	Female	30	70	2387
Age Range	18-29	47.1	52.9	1340
	30-44	22.9	77.1	1629
	45-59	15.1	84.9	1188
	60-69	11.8	88.2	533
Marital Status	Never married	43.4	56.6	1121
	Married	21.7	78.3	3327
	Divorced	20.6	79.4	102
	Widowed	12.8	87.2	141
	Total	**26.6**	**73.4**	**4691**

Combined risk factor analysis by level of education shows that the highest rate for high risk for NCDs is among those with no formal schooling. High risk decreases with the increase of level of education. The lowest rate of high risk is those completed university, master or doctorate degree with 68.1% (Table 4.48.).

Combined NCD risk factors by employment status shows that more than half of the people from all employment groups have high risk for NCDs. However, those that were self-employed have the highest rate of high risk for NCDs with 83.4% (Table 4.48.).

Table 4. 48. Combined risk factors for STEPS Turkey respondents by education and employment status

Education Status	**% Distribution of Low Risk (0-2 risks)**	**% Distribution of High Risk (3-5 risks)**	**Unweighted total number of respondents**
Illiterate or literate but not completed primary school	15.1	84.9	325
Completed primary school	17.8	82.2	1202
Completed secondary or high school	30.7	69.3	2284
Completed university, master or doctorate degree	31.9	68.1	880
Total	**26.6**	**73.4**	**4691**
Work in the last 12 months			
Governmental	26.7	73.3	318
Non-governmental	27.2	72.8	1214
Self employed	16.6	83.4	295
Unpaid including retired	27.3	72.7	2863
Total	**26.6**	**73.4**	**4690**

Combined risk factor analysis of STEPS Turkey respondents by Syrian stratum shows that those living in Syrian STEPS Survey provinces higher low risk compared to other provinces (Table 4.49.).

NUTS-1 region cross tabulation shows that the highest rate for high risk is for TR2 region with 83.9%, and the lowest rate for high risk is for TR6 region with 65%.

Results of TR1 region is very similar to overall survey results with 27.2% low risk and 72.8% high risk (Table 4.49.).

Table 4. 49. Combined risk factors for STEPS Turkey respondents by Syrian stratum and NUTS-1 regions

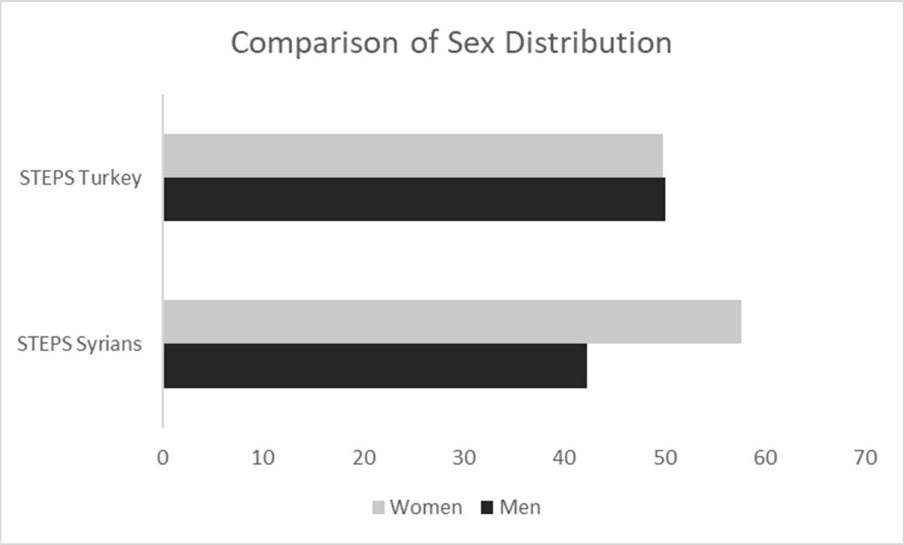
Syrian Stratum	% Distribution of Low Risk (0-2 risks)	% Distribution of High Risk (3-5 risks)	Unweighted total number of respondents
Syrian Provinces	29.5	70.5	1771
Other Provinces	24.7	75.3	2918
NUTS-1 Regions			
TR1	27.2	72.8	929
TR2	16.1	83.9	193
TR3	24	76	704
TR4	31.5	68.5	435
TR5	25	75	503
TR6	35	65	634
TR7	25.7	74.3	226
TR8	25.1	74.9	247
TR9	18.4	81.6	185
TRA	17.3	82.7	133
TRB	31	69	216
TRC	22.4	77.6	286

3.5. Comparison of STEPS Syrian and STEPS Turkey Results

4.3.1. Demographic Characteristics

Figure 4.1. shows the gender distribution of STEPS Syria and STEPS Turkey respondents. Male and female population distribution among STEPS Turkey respondents were almost equal, while female population outnumbered male in STEPS Syria.

Figure 4.1. Compared gender distribution of STEPS Syrians and STEPS Turkey respondents



When we look at age distribution of the two surveys, 18-29 age group has the highest rate for STEPS Syrians, while the highest rate for age distribution is 30-44 age group among STEPS Turkey respondents. Both group has the smallest percentage for 60-69 age group (Table 4.50.).

Table 4. 50. Compared age distribution of STEPS Syrians and STEPS Turkey survey respondents

Age Range	**STEPS Syrians** Weighted % Distribution	**STEPS Turkey** Weighted % Distribution
18-29	37.8	29.9
30-44	35.7	34.6
45-59	20.6	24.8
60-69	6	10.8
Total	**100**	**100**

Marital status distribution of two groups is differing in percentages, but the highest and the lowest groups are similar. The highest rate for marital status among both survey groups is married, while the lowest rate for both groups is divorced (Table 4.51.).

Table 4. 51. Compared marital status distribution of STEPS Syrians and STEPS Turkey respondents

Marital Status	STEPS Syrians Weighted % Distribution	STEPS Turkey Weighted % Distribution
Never married	13.6	24.6
Married	80.8	70.5
Divorced	0.3	2
Widowed	5.4	2.9
Total	**100**	**100**

Education status distribution of the two groups varies significantly. The highest rate for education among STEPS Syrian respondents is 47.7% for those completed primary school, but it is 50.1% for those completing secondary or high school among STEPS Turkey respondents. Almost one out of every five STEPS Turkey respondents were university graduates, while this group represented only 0.7% of STEPS Syrian respondents. 29.2% of STEPS Syrians respondents had no formal schooling, while it represented only 7% of STEPS Turkey respondents (Table 4.52.).

Table 4. 52. Compared education status distribution of STEPS Syrians and STEPS Turkey respondents

Education Status	STEPS Syrians Weighted % Distribution	STEPS Turkey Weighted % Distribution
Illiterate or literate but not completed Primary School	29.2	7
Completed primary school	47.7	24.6
Completed Secondary or High School	22.4	50.1
Completed University, Master or Doctorate Degree	0.7	18.3
System missing	0.1	0
Total	**100**	**100**

Employment status comparison of both survey respondents also shows similar results. The highest rate for both groups is comprised of those currently unemployed including retired, followed by those working in nongovernmental jobs (Table 4.53.).

The lowest rate for both survey groups is represented by those who were self-employed with 1.8% for STEPS Syrians, and 6.4% for STEPS Turkey respondents (Table 4.53.).

Table 4. 53. Compared employment status distribution of STEPS Syrians and STEPS Turkey respondents

Work in the last 12 months	**STEPS Syrians** Weighted % Distribution	**STEPS Turkey** Weighted % Distribution
Governmental	2.4	6.8
Nongovernmental	20.9	26.2
Self-employed	1.8	6.4
Unemployed including retired	74.9	60.6
Total	**100**	**100**

4.3.2. Tobacco Use

Gender distribution comparison of current daily smokers also shows similarities for survey respondents. Even though the rates differ for both surveys, male respondents smoke four times more than females among Syrian respondents, and more than two times among STEPS Turkey respondents (Table 4.54.).

However, Age distribution of the respondents for current daily smoking shows differences. The highest consumption rate is among 45-59 age group for STEPS Syrians respondents, but 30-44 age group for STEPS Turkey respondents. Lowest consumption rate is among the youngest group (18-29 years) for Syrians, and the oldest group (60-69 years) for STEPS Turkey respondents (Table 4.54.).

The highest smoking rate was among never married respondents for STEPS Syrians, but divorced for STEPS Turkey. Lowest rate or daily smoking is among widowed respondents for both survey groups (Table 4.54.).

Table 4. 54. Compared smoking status distribution of STEPS Syrians and STEPS Turkey respondents by gender, age range and marital status

		STEPS Syrians Weighted % Distribution	**STEPS Turkey** Weighted % Distribution
Gender	Male	56.7	46.7
	Female	13	21.8
Age Range	18-29	27.6	33.2
	30-44	32.9	41.8
	45-59	35.4	32.4
	60-69	33.3	17.5
Marital Status	Never married	37.5	38.6
	Married	31.6	32.8
	Divorced	36.8	51.9
	Widowed	13.8	21.6
Total		**100**	**100**

For both survey respondents the highest rate for daily smoking is among those who completed secondary or high school and the lowest rate is among those with no formal schooling (Table 4.55.).

More than half of respondents working in non-governmental jobs or as self-employed are smokers for both surveys. The lowest smoking rate for STEPS Syrians is among those working in governmental jobs, while it is for those who are unemployed among STEPS Turkey respondents (Table 4.56.).

Table 4. 55. Compared smoking status distribution of STEPS Syrians and STEPS Turkey respondents by education and employment status

Education Status	**STEPS Syrians** Weighted % Distribution	**STEPS Turkey** Weighted % Distribution
illiterate or literate but not completed primary school	30.3	15.2
completed primary school	31.3	28.6
completed secondary or high school	32.2	39.6
completed university, master or doctorate degree	30.6	34.8
Work in the last 12 months		
Governmental	16.1	36
Non-governmental	55.4	50.1
Self employed	55.5	51.5
Unpaid including retired	24.7	25.4
Total	**100**	**100**

4.3.3. Harmful Use of Alcohol

Comparison of alcohol consumption among survey respondents shows that 98% of STEPS Syrian respondents and 82.5% of STEPS Turkey respondents were lifetime abstainers (Table 4.56.).

Of those who ever consumed alcohol in their lifetime, 3% were male and 0.1% were female for STEPS Syrians respondents, while this rate went up to 27% for male and 7.8% for female among STEPS Turkey respondents (Table 4.56.).

Table 4. 56. Compared ever alcohol consumption of STEPS Syrians and STEPS Turkey respondents

Ever Alcohol Consumption	**STEPS Syrians** Weighted % Distribution	**STEPS Turkey** Weighted % Distribution
Ever consumed	1.3	17.5
Lifetime abstainer	98	82.5
System Missing	0.7	0
Total	**100**	**100**
Male	3	27
Female	0.1	7.8

Even though the rates differ, age distribution of those who ever drank alcohol shows that ever alcohol consumption decreases by age for both survey respondents (Table 4.57.).

Table 4. 57. Compared ever alcohol consumption among STEPS Syrians and STEPS Turkey respondents by age

Age Range	**STEPS Syrians** Weighted % Distribution	**STEPS Turkey** Weighted % Distribution
18-29	1.8	18.4
30-44	1.1	18.3
45-59	1	16.5
60-69	0.6	14.4
Total	**1.3**	**17.4**

Respondents are also compared regarding their mean number of alcohol consumption including more than six drinks at a time in the last 30 days. Results show that male respondents had more times of drinks among STEPS Syrian respondents, while it was higher among female for STEPS Turkey respondents (Table 4.58.).

Highest consumption for STEPS Syrians respondents was among 18-29 age group, while it was among 60-69 age group for STEPS Turkey (Table 4.58.).

Marital status analysis also shows differences between survey groups. Highest consumption for STEPS Syrians respondents were among those that never married, while it was among widowed for STEPS Turkey (Table 4.58.).

Alcohol consumption in the last 30 days by employment status shows that those working in nongovernmental jobs had the highest consumption among STEPS Syrian respondents, and those that were unemployed including retired had the highest consumption among STEPS Turkey respondents (Table 4.58.).

Education status analysis also shows different results for two survey groups. Highest consumption was among those who completed primary school for STEPS

Syrians respondents, while it were among those completing secondary or high school among STEPS Turkey respondents (Table 4.58.).

Table 4. 58. Compared mean number of times STEPS Syrians and STEPS Turkey respondents consumed more than six drinks at a time in the last 30 days by gender, age range, marital, education and employment status

		STEPS Syrians		STEPS Turkey	
		Mean Number	**Std. Deviation**	**Mean Number**	**Std. Deviation**
Gender	Male	5.22	4.904	3.55	5.42
	Female	2	0	4.44	7.963
Age range	18-29	6.62	4.92	3.84	5.842
	30-44	1.5	0.704	3.31	4.483
	45-59	0	0	3.01	5.163
	60-69	0	0	7.63	11.808
Marital status	Never married	7	4.338	4.1	6.004
	Married	1	0	2.9	4.66
	Divorced	0	0	2.46	2.985
	Widowed	0	0	21.08	13.443
Work in the last 12 months	Governmental	0	0	2.94	3.876
	Nongovernmental	5.22	4.904	3.13	4.261
	Self-employed	2	0	2.98	3.287
	Unpaid including retired	0	0	4.89	8.302
Education Status	Illiterate or literate but not completed primary school	1	0	2.78	3.306
	Completed primary school	6.67	4.91	3.22	5.267
	Completed secondary or high school	2	0	4.1	6.65
	Completed university, Master or Doctorate Degree	0	0	3.1	4.493

4.3.4. Diet

Participants are compared regarding their consumption of at least five servings of fruits or vegetable in a typical week and both survey respondents were found to be having less than recommended amount of fruits and/or vegetable consumption. This rate is 95.2% of male and 96.7% of female for STEPS Syrian respondents, and 88.4% of male and 88.1% of female for STEPS Turkey respondents (Table 4.59.).

The highest rate for unhealthy diet is among 60-69 age group for STEPS Syrian respondents, while it is among 18-29 age group for STEPS Turkey respondents (Table 4.59.).

100% of widowed respondents stated having an unhealthy diet among STEPS Syrians respondents, however the highest rate for STEPS Turkey respondents is among those who never married (Table 4.59.).

Table 4. 59. Compared distribution of STEPS Syrians and STEPS Turkey respondents consuming less than five servings of fruits and/vegetables per day by gender, age range and marital status

		STEPS Syrians Weighted % Distribution	**STEPS Turkey** Weighted % Distribution
Gender	Male	95.2	88.4
	Female	96.7	88.1
Age Range	18-29	95.1	89.9
	30-44	97.2	89.3
	45-59	95.4	87.2
	60-69	98.2	83.3
Marital status	Never married	94.2	89.6
	Married	96.4	87.9
	Divorced	100	88.5
	Widowed	96.3	85.8

Education status comparison shows that healthy eating habits increases by level of education among STEPS Turkey respondents, but have no significant relation with the level of education for STEPS Turkey respondents. University graduates have the highest rate for unhealthy diet among STEPS Turkey respondents (Table 4.60.).

Those who were unemployed have the highest rate for unhealthy diet among STEPS Syrians respondents, and those working at non-governmental jobs have the highest rate among STEPS Turkey respondents (Table 4.60.).

Table 4. 60. Compared distribution of STEPS Syrians and STEPS Turkey respondents consuming less than five servings of fruits and/vegetables per day by education and employment status

	STEPS Syrians	**STEPS Turkey**
Education Status	Weighted % Distribution	Weighted % Distribution
Illiterate or literate but not completed primary school	97.3	87.8
Completed primary school	95.9	88.3
Completed secondary or high school	95.2	88.2
Completed university, master or doctorate degree	90.3	88.5
Work in the last 12 months		
Governmental	94.8	84.4
Non-governmental	94.4	90.3
Self employed	94.3	89
Unpaid including retired	96.6	87.7

4.3.5. Physical Activity

Respondents are compared for their total physical activity by their demographic characteristics. Female population have a higher rate for physical inactivity for both STEPS Syrians and STEPS Turkey survey groups (Table 4.61.).

When we look at the age distribution of physical inactivity, we clearly see that it increases with age for both survey groups (Table 4.61.).

For both STEP Syrians and STEPS Turkey respondents, the highest rate for physical inactivity belongs to widowed respondents. However, the lowest rate shows differences between the two groups. Divorced respondents of STEPS Turkey has the lowest rate, while those who never married among STEPS Turkey respondents have the lowest rate for physical inactivity (Table 4.61.).

Table 4. 61. Compared distribution of STEPS Syrians and STEP Turkey respondents that were physically inactive by gender, age range and marital status

		STEPS Syrians Weighted % Distribution	**STEPS Turkey** Weighted % Distribution
Gender	Male	57.7	88.2
	Female	74	93.4
Age Range	18-29	62.7	89
	30-44	62.2	90.8
	45-59	77	91.7
	60-69	88.6	93.2
Marital status	Never married	53.3	88.5
	Married	68.2	91.2
	Divorced	51.8	92.9
	Widowed	84.9	96.5

Physical inactivity has no significant relation to the level of education for both STEPS Syrians and STEPS Turkey respondents. The lowest rate for physical activity was among those completed secondary or high school among STEPS Syrian and STEPS Turkey respondents (Table 4.62.).

For both groups, the lowest rate of physical inactivity was recorded among those working at non-governmental jobs. The highest rate for physical activity is among unemployed including retired respondents of STEPS Syrians, and for those working at governmental jobs for STEPS Turkey respondents (Table 4.62.).

Table 4. 62. Compared distribution of STEPS Syrians and STEP Turkey respondents that were physically inactive by education employment status

	STEPS Syrian	**STEPS Turkey**
Education Status	Weighted % Distribution	Weighted % Distribution
Illiterate or literate but not completed primary school	73.8	94.4
Completed primary school	65.5	92
Completed secondary or high school	61.4	89
Completed university, master or doctorate degree	64.3	92.5
Work in the last 12 months		
Governmental	56.9	94.8
Non-governmental	38.3	86.2
Self employed	54.2	90.9
Unpaid including retired	75.7	92.2

4.3.6. Body Mass Index

Body mass index trend of STEPS Syrians and STEPS Turkey respondents is quite similar, 67.8% of female 58.8% of male for STEPS Syrians and 66.3% of female and 64.5% of male for STEPS Turkey respondents have 25 or above body mass index (Table 4.63.).

For both survey groups, the rate of overweight increases by age (Table 4.63.).

The lowest rate for overweight is among never married, and the highest rate for overweight is among widowed respondents for both survey groups (Table 4.63.).

Table 4. 63. Compared distribution of STEPS Syrians and STEPS Turkey respondents with BMI ≥ 25 by gender, age range, and marital status

		STEPS Syrians Weighted % Distribution	**STEPS Turkey** Weighted % Distribution
Gender	Male	58.8	64.5
	Female	67.8	66.3
Age Range	15-29	42.9	37.8
	30-44	70.6	68.8
	45-59	82.9	83.3
	60-69	81.4	88.0
Marital status	Never married	33.3	38.1
	Married	67.9	74.0
	Divorced	68.7	58.0
	Widowed	81.0	89.3

Body mass index by education status shows that the rate of overweight decreases with the level of education among STEPS Turkey respondents (Table 4.64.). However, this pattern is not observed with STEPS Syrians respondents. The lowest rate for obesity is among those completing secondary or high school. The highest rate for obesity is among those with no formal schooling for both survey groups (Table 4.64.).

The rate of overweight respondents by their employment in the last 12 months also differs between two survey groups. Those having nongovernmental jobs have the lowest rate among STEPS Syrian respondents, while the lowest rate for STEPS Turkey respondents was recorded among those working at governmental jobs (Table 4.64.).

Table 4. 64. Compared distribution of STEPS Syrians and STEPS Turkey respondents with BMI ≥ 25 by education and employment status

	STEPS Syrians	**STEPS Turkey**
Education Status	Weighted % Distribution	Weighted % Distribution
Illiterate or literate but not completed primary school	72.2	82.8
Completed primary school	61.6	81.2
Completed secondary or high school	57.5	59
Completed university, master or doctorate degree	65.9	54.3
Work in the last 12 months		
Governmental	57.1	60.4
Non-governmental	52.3	62.5
Self employed	56.6	72.2
Unpaid including retired	67.6	66.5

4.3.7. Blood Pressure

Comparison of blood pressure among STEPS Syrians and STEPS Turkey respondents shows that males have higher rate for raised blood pressure for STEPS Syrian respondents, while female respondents of STEPS Turkey has higher rate for raised blood pressure (Table 4.65.).

For both survey groups, the rate of raised blood pressure increases with age. The lowest rate was recorded among 18-29 age group, and the highest was recorded among 60-69 age group (Table 4.65.).

The rate of raised blood pressure is lowest never married respondents, and highest among widowed respondents for both survey groups (Table 4.65.).

Table 4. 65. Compared distribution of STEPS Syrians and STEPS Turkey respondents with raised blood pressure by gender, age range and marital status

		STEPS Syrians Weighted % Distribution	**STEPS Turkey** Weighted % Distribution
Gender	Male	31.1	24.8
	Female	26.2	26.6
Age Range	18-29	13.5	11.8
	30-44	24.0	16.8
	45-59	50.8	39.9
	60-69	68.4	59.5
Marital status	Never married	14.8	13.0
	Married	29.6	28.7
	Divorced	23.4	32.8
	Widowed	42.4	54.8

Blood pressure comparison of two survey groups by level of education shows differences. The rate of raised blood pressure decreases with education among STEPS Turkey respondents. However, the lowest rate for raised blood pressure was recorded among those completing secondary or high school among STEPS Syrians respondents (Table 4.66.).

The highest rate for raised blood pressure was recorded among unemployed including retired respondents for both survey groups (Table 4.66). On the other hand, the lowest rate for raised blood pressure is among self-employed for STEPS Syrians respondents and those working at nongovernmental jobs for STEPS Turkey respondents (Table 4.66.).

Table 4. 66. Compared distribution of STEPS Syrians and STEPS Turkey respondents with raised blood pressure by education and employment status

	STEPS Syrians	**STEPS Turkey**
Education Status	Weighted % Distribution	Weighted % Distribution
Illiterate or literate but not completed primary school	36.6	49
Completed primary school	25.3	34.8
Completed secondary or high school	23.7	20.6
Completed university, master or doctorate degree	29.5	18.1
Work in the last 12 months		
Governmental	25.1	22.3
Non-governmental	22.3	17.1
Self employed	21.4	25.5
Unpaid including retired	30.2	29.8

4.3.8. Combined Risk Factors

Comparison of combined risk factors shows that more than half of both STEPS Syrians and STEPS Turkey respondents have high risk for Noncommunicable diseases. Male have higher rates of high risk for NCDs in both groups (Table 4.67.).

For both groups, the rate of high risk decreases with age. In addition, cross tabulation of combined risk factors by marital status gives similar results for both groups. The lowest rate for high risk is among those never married, and the highest rate is among widowed respondents (Table 4.67.).

Table 4. 67. Comparison of combined risk factors for STEPS Syrians and STEPS Turkey respondents by gender, age range and marital status

		STEPS Syrians		STEPS Turkey	
		% Distribution of Low Risk (0-2 risks)	% Distribution of High Risk (3-5 risks)	% Distribution of Low Risk (0-2 risks)	% Distribution of High Risk (3-5 risks)
Gender	Male	33.3	66.7	23.1	76.9
	Female	39.2	60.8	30	70
Age Range	18-29	56.8	43.2	47.1	52.9
	30-44	34.1	65.9	22.9	77.1
	45-59	13.4	86.6	15.1	84.9
	60-69	8.7	91.3	11.8	88.2
Marital Status	Never married	60.4	39.6	43.4	56.6
	Married	33.5	66.5	21.7	78.3
	Divorced	34.8	65.2	20.6	79.4
	Widowed	21	79	12.8	87.2
Total		**36.6**	**63.4**	**26.6**	**73.4**

Comparison of combined risk factors for NCDs by education status shows the rate of high risk decreases with the level of education for STEPS Turkey respondents. Similarly, STEPS Syrian respondents have decreasing high risk for NCDs if compared among those with no formal schooling, completing primary school and completing secondary or high school with the exception of respondents that were university graduates (Table 4.68.).

The pattern for combined NCD risk factors between the two groups is completely different. The lowest rate for high risk is among those currently unemployed including retired among STEPS Turkey respondents, while this group has the highest rate for high risk among STEPS Syrians respondents (Table 4.68.).

Table 4. 68. Comparison of combined risk factors for STEPS Syrians and STEPS Turkey respondents by education and employment status

Education Status	STEPS Syrians		STEPS Turkey	
	% Distribution of Low Risk (0-2 risks)	% Distribution of High Risk (3-5 risks)	% Distribution of Low Risk (0-2 risks)	% Distribution of High Risk (3-5 risks)
Illiterate or literate but not completed primary school	27	73	15.1	84.9
Completed primary school	38.7	61.3	17.8	82.2
Completed secondary or high school	43.6	56.4	30.7	69.3
Completed university, master or doctorate degree	38.2	61.8	31.9	68.1
Work in the last 12 months				
Governmental	48	52	26.7	73.3
Non-governmental	46.1	53.9	27.2	72.8
Self employed	35.3	64.7	16.6	83.4
Unpaid including retired	33.4	66.6	27.3	72.7
Total	**36.6**	**63.4**	**26.6**	**73.4**

3.6. Logistic Regression Analysis

Binary logistic regression analysis on the probability of developing NCDs was executed with an effort to understand the correlation between dependent variable defined as having high risk of NCD risk factors, and independent variables defined as gender, age range, marital status, education status and employment status.

Logistic regression analysis among STEPS Syrian respondents suggests that males have 1.8 times more risk of developing NCDs compared to females (Table 4.69). The results are statistically significant ($p < 0.05$).

Logistic regression analysis clearly shows that as age increases the risk of developing NCDs also increases. 60-69 years old respondents have 8.4 times higher likelihood of developing NCDs compared to 18-29 years old respondents (Table 4.69.). However, 60-69 years old group represents only 6% of the respondents, while 18-29 comprises 37.8% of the respondents (Table 4.2.).

Never married respondents have higher tendency for NCDs compared to respectively married, divorced and widowed. The results are statistically significant only for divorced respondents (Table 4.69.).

Table 4. 69. Logistic regression analysis on the probability of developing Noncommunicable diseases among STEPS Syrian respondents

			95% C.I. for EXP(B)	
	Sig.	Exp(B)	Lower	Upper
Gender				
Male	0.000	1.843	1.563	2.173
Female		1		
Age Range				
18-29		1		
30-44	0.000	2.22	1.906	2.585
45-59	0.000	6.401	5.125	7.994
60-69	0.000	8.444	5.415	13.166
Marital Status	0.049			
Never married		1		
Married	0.105	0.872	0.739	1.029
Divorced	0.006	0.757	0.621	0.923
Widowed	0.353	0.684	0.308	1.523
Education Status				
Illiterate or literate but not completed primary school		1		
Completed primary school	0.000	1.524	1.249	1.859
Completed secondary or high school	0.101	2.148	0.861	5.361
Completed university, master or doctorate degree	0.000	2.228	1.513	3.28
Work in the last 12 months				
Governmental		1		
Non-governmental	0.482	0.857	0.558	1.316
Self employed	0.652	1.155	0.618	2.159
Unpaid including retired	0.022	1.613	1.071	2.427

Nagelkerke R Square 0.208

The analysis suggests that as the level of education increases, the likelihood of developing NCDs also increases among STEPS Syrian respondents. Even though they comprise only 0.7% of the respondents (Table 4.4.), University graduates have 2.2

times higher odds of developing NCDs compared to respondents with no formal education (Table 4.69.)

Those working in governmental jobs were defined as the reference group for logistic regression analysis of employment status. The evidence indicates that those working in nongovernmental jobs have lower odds compared to those working in governmental jobs, and they comprise of 20.9% of the respondents (Table 4.5.). Those working as self-employed and currently unemployed including retired have higher odds compared to those working in governmental jobs (Table 4.69.). However, the distribution of those working as self-employed among Syrian respondents were very small with only 1.8%, while currently unemployed respondents comprises 74.9% of the respondents (Table 4.5.).

The likelihood of developing NCDs among STEPS Turkey respondents was also analysed as part of the binary logistic regression analysis. The analysis indicates that males have 1.7 times higher odds of developing NCDs compared to females (table 4.70.).

It is significantly evident from the logistic regression analysis that the likelihood of developing NCDs increases with age. 30-44 years old respondent has 2.5 times higher odds, 45-59 years old respondents have 3.9 times higher odds, and 60-69 years old respondents have 4.7 times higher odds of developing NCDs compared to 18-29 years old respondents (Table 4.70.). 60-69 years old respondents comprises 10.8%, and 18-29 years old comprises 29.9% of the respondents (Table 4.22.).

Never married respondents have higher risk of developing NCDs compared to married, widowed and divorced respondents (Table 4.70.). The results are statistically significant only for divorced ($p < 0.05$), and they comprise only 2% of the respondents (Table 4.23.).

As observed with Syrian respondents, the probability of developing NCDs increases as the level of education increases. Accordingly, odds ratio of primary school graduates is 1.2 times; secondary or high school graduates is 1.4 times; and university graduates is 1.5 times higher than odds of those with no formal schooling (Table 4.70.).

Employment status of the respondents was also evaluated as part of the analysis. Those working in governmental jobs as civil servants are found to have the lowest tendency to develop Noncommunicable diseases compared to other employment groups. The highest odds of developing NCDs was calculated for those working as self-employed with 1.4 times higher risk compared to governmental servants (Table 4.70.).

Table 4. 70. Logistic regression analysis on the probability of developing Noncommunicable diseases among STEPS Turkey respondents

			95% C.I. for EXP(B)	
	Sig.	Exp(B)	Lower	Upper
Gender				
Male	0.000	1.678	1.421	1.983
Female		1		
Age Range	0.000			
18-29		1		
30-44	0.000	2.558	2.096	3.122
45-59	0.000	3.97	3.132	5.033
60-69	0.000	4.756	3.394	6.666
Marital Status	0.037			
Never married		1		
Married	0.315	0.835	0.588	1.187
Divorced	0.022	0.668	0.474	0.943
Widowed	0.049	0.688	0.474	0.998
Education Status	0.115			
Illiterate or literate but not completed primary school		1		
Completed primary school	0.035	1.236	1.016	1.504
Completed secondary or high school	0.149	1.481	0.869	2.524
Completed university, master or doctorate degree	0.113	1.576	0.898	2.768
Work in the last 12 months	0.201			
Governmental		1		
Non-governmental	0.518	1.110	0.810	1.521
Self employed	0.063	1.495	0.978	2.286
Unpaid including retired	0.209	1.221	0.895	1.666
Nagelkerke R Square	0.144			

CHAPTER 5. DISCUSSION

This thesis aimed to explore NCD risk factor status of Syrian refugees registered in Turkey and Turkish host community. The effort included definition of common and varying risk factors followed by policy recommendations for prevention of these risk factors.

As part of this study, "smoking status", "dietary habits", "physical activity levels", "body mass index" and "blood pressure" of the respondents were analysed with an effort to provide insight into behavioural and biochemical NCD risk factors of both Syrian refugees registered in Turkey and Turkish host community.

Data was used from Health Status Survey of Syrian Refugees in Turkey "Noncommunicable Disease Risk Factors Surveillance among Syrian Refugees Living in Turkey" conducted in 2015 and published in 2016 (Balcılar, 2016), and National Household Health Survey in Turkey "Prevalence of Noncommunicable Disease Risk Factors" conducted in 2017 and published in 2018 (WHO, 2018j).

Multivariate analysis and binary logistic regression analysis were used to analyse the data from both surveys.

The study revealed that 31.2% of Syrian refugees were current smokers. The rate of current smokers in Syria is defined as 24.7% (Idris et. Al., 2018), which is significantly lower than the rate for Syrians in Turkey. This is in line with the study of Jawad, Khader and Millett (2016) suggesting that refugees smoke more than the non-refugee population.

Dietary habits of the respondents was also checked and it was found that 96.1% of the respondents consume "less than 5 servings of fruit per day". 67% were physically inactive, and in parallel 63.8% had BMI $\geq$ 25. According to 2016 diabetes country profiles of WHO, 55% of Syrians were overweight (2016), which is 8.8% less than the study finding. Higher rates of obesity among Syrian refugees in Turkey is in line with the study of Mulugeta et al. (2017), indicating that overweight and obesity is higher in refugee populations. Obesity was found to be increasing with age among Syrian refugees in line with the study of Eryurt and Menet (2019).

Blood pressure measure analysis showed that 28.3% of the Syrians had raised blood pressure. 2014 NCD profile of Syria published by WHO (2016) estimated raised blood pressure among Syrians was estimated as 24.9%. the rate of raised blood pressure among Syrian refugees is higher by 3.4%.

"Current tobacco use", "unhealthy diet", "physical inactivity", "overweight" and "raised blood pressure" were defined as risk factors for NCDs and grouped as "low risk (0-2 risks)", and "high risk (3-5 risks)". Binary logistic regression analysis was used to evaluate the risk status of the respondents. The study found that more than half of Syrian refugees registered in Turkey have high risk for NCDs. Male population have higher rates of high risk for NCDs compared to female. Never married respondents have the lowest rate for high risk of NCDs, while widowed have the highest rate for NCD risk factors. Combined risk factor analysis showed no meaningful relation between NCD risk factors and the level of education among Syrian refugees registered in Turkey. The analysis also showed that those currently unemployed including retired people have the highest rate for high risk of NCDs.

Turkish host community was also analysed in the scope of NCD risk factors as part of this thesis. Evidence indicated that 34.3% of the respondents were daily smokers which is similar to the findings of Global Adult Tobacco Survey (GATS) (2016) revealing that the current smoking rate is 31.6%.

88.3% consumed "less than five servings of fruits and/or vegetables per day". 90.8% of the respondents were found to be physically inactive, and in parallel 65.4% of the respondents were overweight. Bağrıaçık et al. (2009) found the rate of obesity in Turkey as 69.1% in 2009, which is similar to the finding of the thesis analysis.

Blood pressure measures of the respondents were also analysed as part of this study, and it was found that 25.7% of the respondents had raised blood pressure. This rate is in line with the trend found by Sengul et al. (2013) as 31.6% in 2003, and 30.3% in 2012.

The analysis showed that 73.4% of Turkish host community have three or more risks for Noncommunicable diseases. Overall males have a higher rate of high risk for

NCDs compared to females. Significant evidence indicates NCD risk increases with age. More than half of all respondents have high risk for NCDs based on their marital status. 87.2% of widowed respondents among Turkish host community have high risk for NCD risk factors. Combined risk factor analysis showed that the rate of high risk for NCDs decreases with the increase in the level of education.

Overall comparison of the risk factors between the two study groups showed that Turkish host population had higher rates for current smoking (34.3% versus 31.2%), physical inactivity (90.8% versus 67%), and overweight (65.4% versus 63.8%); whereas Syrians in Turkey had higher rates for consuming less vegetables and fruits than WHO recommendation (96.1% versus 88.3%), and raised blood pressure (28.3% versus 25.7%). Combined risk factor analysis indicated that 63.4% of the Syrians had more than two risks for NCDs, whereas this rate rose up to 73.4% for Turkish host population.

5.1. Proposed intervention areas for NCD prevention among Syrian refugees registered in Turkey

The analysis showed that more than 50% of the Syrians have high risk for NCDs. Tackling with NCDs among this group can be challenging considering that they had been living in another country for many years before their displacement to Turkey. Health system of Syria should be carefully examined to understand the health seeking behaviour and health literacy among this group before starting to health service planning.

Due to prolonged humanitarian crisis in Syria, health service delivery is done by many actors including public, private and UN agencies as well as NGOs with mainly using short term funding. The lack of sustainable funding and capacity in health systems causes disruption in NCD care. Tackling with NCDs require ongoing, sustainable, well-established monitoring and information systems for proper follow up of the patients and for prevention through the careful monitoring of existing risk factors. Given the challenges in Syria, it might be difficult to sustain health information systems for monitoring of NCDs.

Against this backdrop, Syrians in Turkey should be approached carefully for monitoring and prevention of NCDs considering the economic burden of these diseases keeping in mind the duration of stay and the likelihood of no return to country of origin.

Due to the chronic nature of Noncommunicable diseases, referral pathways should be established clearly for the Syrian considering the potential cultural and language barriers.

In this scope, Turkish Government has taken major steps with the establishment of Migrant Health Centers (MHC). “Syrians under temporary protection in Turkey” are referred to the MHCs to receive language and culture barrier-free health services provided by Syrian health professionals who received theoretical and practical adaptation trainings for Turkish Health System under the coordination of Ministry of Health and WHO at Migrant Health Training Centers (MHTC).

MHCs are designed similar to Family Health Centers (FHC) in Turkey to provide health services to an average of 4000 people. For areas with a bigger population and located away from public hospitals and closer to Syrian sheltering centres with a population above 20000 people, Strengthened Migrant Health Centers are established (SMHC).

These centers are providing services under the umbrella of Community Health Centers and funded by SIHHAT Project. The Project is developed in the scope of EU-Turkey migrant deal in 2016. As part of NCD control and prevention among Syrians in Turkey, capacity building among health professionals in this centre can be considered.

Access to health services should be studied in the light of health equity and equality. Refugees coming from besieged areas in Syria, might not have access to health services before their arrival to Turkey. Majority of them might also have cultural and language barriers in accessing services. In this regard, equal and equitable service provision to refugees must be ensured keeping in mind any potential social tension between the host community and the refugees.

Affordability of the services must also be ensured considering refugee populations might be disadvantaged with their level of income.

Turkey has started implementing strict policies to control the movement of refugees within the country for easy monitoring of this group. This policy must be revised with an aim to improve tracking of refugee movements to ensure ongoing data collection for prevention of NCDs given the high economic burden of NCD treatment (Kontsevaya et al., 2018).

However, NCD prevention cannot be only ensured with the efforts of Ministry of Health. It requires engagement of the "whole of government" and "whole of society". Data sharing between different actors is essential to trigger coordination and contribution.

Awareness raising is the key to the prevention of NCDs. Health mediators concept developed by UNFPA for dissemination of good practices among this relatively isolated group can also be used also for awareness raising on prevention of NCDs.

5.2. Proposed intervention areas for NCD prevention among Turkish host community

Analysis results showed that 73.4% of the Turkish respondents have three or more risk factors for NCDs. Noncommunicable Diseases Country Profiles released by WHO (WHO, 2018h) show that in 2016, 89% of total deaths in Turkey were due to NCDs.

Against this backdrop, immediate action must be taken to tackle with NCDs and to eliminate existing modifiable risk factors.

As part of its Health Transformation Programme (HTP), Family Medicine System was initiated in 2005 and extended to the whole of country in 2010. This system contributed to reducing maternal and infant mortality with the execution of strong monitoring systems for prenatal and postnatal period. Similar systems must be

established for monitoring of NCD risk factors among the population to ensure prevention of NCDs.

In addition to Family Health Centres, Turkey recently established Healthy Living Centres (HLC) to encourage healthy nutrition, regular cancer screening, monitoring of blood pressure and BMI. These centres have been providing free of charge obesity counselling, cancer screening and encouraging physical activity.

Primary Healthcare is the first step for prevention and early detection of NCDs. In this regard, Healthy Living Centres and Family Health Centres play a crucial role in prevention and tackling with NCDs.

These Centres should also play an important role in gate keeping for NCDs considering the cost of treatment at secondary and tertiary care.

Analysis results revealed that 9 out of 10 people in Turkey were physically inactive. This rate is alarming considering the relation of physical inactivity with overweight and obesity and cardiovascular diseases. Healthy living centres should be used as a mean to incentivize physical activity.

Interagency collaboration is also crucial while tackling with NCDs, and municipalities play an important role to build the necessary spaces for physical activity. Walking and cycling areas must be enlarged as part of this initiative.

5.3. Proposed intervention areas for common risk factors between both population

NCD risk factor analysis between Syrian refugees in Turkey and Turkish host population provided similar results and therefore proposed interventions cover both groups.

Turkey's effort to tackle with NCDs is commendable. Regulative arrangements follow the recommendations of WHO. NCD Progress Monitor (WHO, 2017) indicated that Turkey successfully established national NCD targets, collected mortality data, implemented all MPOWER measures as part of tobacco demand control measures, applied excise taxes to reduce harmful use of alcohol, established unhealthy diet

reduction measures, and implemented awareness campaigns for physical activity. MPOWER measures include “Monitoring tobacco use and prevention policies”, “Protecting people from tobacco use”, “Offering help to quit tobacco use”, “Warning about the dangers of tobacco”, Enforcing bans on tobacco advertising, promotion and sponsorship”, “Raising taxes on tobacco”.

However, the results revealed that there are gaps in ownership and implementation of these policies and regulations.

In this regard, enforcement of tobacco control policies must be strengthened with a focus on inspection and smoking cessation campaigns must be implemented to ensure increased rates for smoking cessation.

Public awareness campaigns must be implemented to encourage healthy eating habits. Physical activity must be focused for both Turkish and Syrian groups keeping in mind the cultural differences.

Strong monitoring mechanisms must be established for monitoring body mass index to obesity. Strong evidence indicates that unhealthy eating habits, physical inactivity and lifestyle have rapid effect on overweight and obesity which consequently results with an increase in NCDs in Arabic Countries (Musaiger et al. 2012).

Turkey has been successfully implementing Universal Health Coverage for its citizens, and this right has been extended to anyone registered under General Insurance System regardless of their identity. This practice is crucial in ensuring equal and equitable access to health services and must be maintained by the Government of Turkey with no exception among its residents.

5.4. Contribution to Literature

This thesis aimed to explore NCD risk factor status of Syrian refugees and the Turkish population. However, the need for further studies, showing the similarities and disparities between the two groups, remain crucial.

This study is unique in the sense that it presents comparative analysis of the effect of NCD risk factors among Turkish host community and Syrians in Turkey using multivariate analysis methods.

Even though the same STEPS methodology was employed for both survey groups, the analysis results were affected with different age intervals established as the eligibility criteria. STEPS Syrians only included respondents between 15—69 years old, whereas STEPS Turkish included 15 years and above respondents.

Differences were also observed with the education level and marital status categories used for STEPS Syrians and STEPS Turkey respondents. There were seven categories for education status of STEPS Syrian respondents, while categories for STEPS Turkey respondents were up to nine. STEPS Syrians education level categories were 1) "no formal schooling", 2) "literate but not completed primary school", 3) "completed primary school", 4) completed secondary school, 5) "completed high school, 6) "completed university, 7) "completed post-graduate". Education level categories for STEPS Turkey included 1) "illiterate", 2) "literate but no formal schooling", 3) "completed primary school", 4) "completed secondary or vocational secondary school", 5) "completed high school or vocational high school", 6) "completed 2 or 3 year college", 7) "4 year college or faculty completed, 8) "Master degree completed", 9) "PhD completed".

Similarly, differences were observed with the marital status categories. STEPS Turkey questionnaire included only four categories for marital status; 1) "never married", 2) "married", 3) "divorced", 4) "widowed". However, STEPS Syrian included two additional categories as "separated" and living together. During the analysis, "separated" respondents were added to "divorced", and respondents "living together" were added to married.

While planning further studies, comparability of the databases must be considered at all the planning phases including questionnaire design.

While STEPS methodology and the survey have been implemented in more than 100 countries, this thesis used the data of STEPS Survey implemented among Syrian refugees which was the first of its kind.

Against this backdrop, I hope that this study would contribute to the literature and inform health policies for NCD prevention and early detection of cases.

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ANNEX A. DATA QUALITY OF STEPS SYRIANS AND STEPS TURKEY SURVEYS

The quality of a survey data is crucial for accuracy, reliability and validity of results. In every data collection, the quality of the result depends on the quality of input by respondents as well as quality of the instruments in use.

Standard STEPS methodology is effective in assuring quality of the data collection instruments but the input from the respondents is still beyond the control of this thesis.

In this regard, data quality of STEPS Syrian Survey is analysed in this annex to provide an insight into any potential question that might arise about the specific sub-population represented by those captured by the matching methodology. Age distribution of Survey respondents are compared with the DGMM data published for 2015 in below Table A.1. (DGMM, 2016)

Table A. 1. Age Distribution Comparison of STEPS Syrian Survey with 2015 Annual Migration Report by DGMM

Age Range	2015 Annual Migration Report by DGMM	STEPS Syrians
18-29*	41.84	37.80
30-44	35.83	35.70
45-59	15.82	20.60
60-69**	6.51	6.00

* DGMM data starts from 19 year old
** DGMM data includes 69+ year old population

As a quality control check, Table 4.71 compares the age distribution of 5760 STEPS Syrian respondents between 18-69 year old with the age distribution data of Syrian refugees under temporary protection in Turkey published by Directorate General for Migration Management as part of 2015 Annual Migration Report.

The main limitation of the comparison was limited access to DGMM data which starts from 19 year old Syrians and ends as 69+ year old, and therefore does not completely overlap with STEPS Syrian data which only covers 18-69 year old Syrians.

The comparison shows that even though there are slight differences in each age range which mainly stem from limited access to 2015 registration data, the age distribution of those identified as part of the Survey are very similar to the registration data acquired from DGMM.

The same analysis comparison was repeated for age distribution of STEPS Turkey respondents versus 2017 address based registration system data received from TurkStat. The most major difference is observed in 18-29 age group with 5% difference, which might be caused due to coverage of TurkStat data (TurkStat, 2020) which is limited to 20-29 age group. The rest of the age groups shoe maximum 2.1% difference (see Table A.2.).

Table A. 2. Age distribution comparison of STEPS Turkey data with address based registration data from TurkStat

Age Range	STEPS Turkey	TurkStat 2017
18-29	29.9	24.9*
30-44	34.6	36.6
45-59	24.8	26.9
60-69	10.8	11.6
Total	**100**	**100**

* TurkStat data only includes 20-29 year old group since data is presented for 5 years age range

Number of missing cases are also included in the data quality assurance process for both dependent and independent variable used in this thesis. Table A.3. presents details of missing cases for both STEPS Syrian and STEPS Turkey surveys. Overall, the percentage of missing cases are below 1% for five out of ten variables for STEPS Syrians Survey, and seven out of ten variables for STEPS Turkey Survey. The highest number of missing cases are observed for unhealthy diet for STEPS Syrian survey (12.4%) and BMI (5.5%) for STEPS Turkey respondents.

Table A. 3. Number and distribution of missing cases by dependent and independent variables

Name of Variable	STEPS Syrians			STEPS Turkey		
	# of missing cases	% of missing cases	Total # of cases	# of missing cases	% of missing cases	Total # of cases
Gender	0	0.0	5760	0	0.0	5172
Age	0	0.0	5760	0	0.0	5172
Marital Status	0	0.0	5760	0	0.0	5172
Education	0	0.0	5760	0	0.0	5172
Employment	130	2.3	5760	0	0.0	5172
Tobacco	34	0.6	5760	0	0.0	5172
Physical Activity	193	3.4	5760	32	0.6	5172
BMI	268	4.7	5760	284	5.5	5172
Unhealthy Diet	716	12.4	5760	260	5.0	5172
Raised Blood Pressure	60	1.0	5760	245	4.7	5172

ANNEX B. QUESTIONS USED DURING ANALYSIS

STEP 1: BEHAVIORAL FACTORS AFFECTING HEALTH		
Gender (Record Male / Female as observed) *Select Male / Female as observed.*	Male 1 Female 2	C1
What is your date of birth? Don't Know 77 77 7777 *Enter date of birth of participant. If unknown, select "don't know". Interviewer Note: If age is told directly then birth date will be calculated and entered*	⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋⌊_⌋ dd mm year If known, Go to C4	C2
How old are you? *If the age is unknown, help participant estimate their age by interviewing them about their recollection of widely known major events.*	Years ⌊_⌋⌊_⌋	C3
What is the highest level of education you have completed? *If a person attended a few months of the first year of secondary school but did not complete the year, select "primary school completed". If a person only attended a few years of primary school, select "less than primary school".* *Select appropriate response.* *The last completed school will be asked. if f a person has not completed a school then if he/she is illiterate or not will be asked*	Illiterate 1 Literate, but not completed formal school 2 Primary school completed 3 Primary, secondary or vocational secondary school completed 4 High school or vocational high school completed 5 2 or 3 year college completed 6 4 year college or faculty completed 7 Master degree (Including 5 or 6 year faculties) completed 8 PhD degree completed 9	C5
What is your marital status? *Select the appropriate response.*	Single 1 Married 2 Divorced 3 Widowed 4	C7
Which of the following best describes your main work status over the past 12 months? *(USE SHOWCARD)*	Government employee 1 Non-government employee 2 Self-employed 3	C8

The purpose of this question is to help answer other questions such as whether people in different kinds of occupations may be confronted with different risk factors. *Select appropriate response.*	Non-paid 4 Student 5 Homemaker 6 Retired 7 Unemployed (able to work) 8 Unemployed (unable to work) 9 Refused 88	
Do you currently smoke any tobacco products such as cigarettes, hand–rolled cigarettes, pipes, cigars and water pipes/shisha? *(USE SHOWCARD)* *Ask the participant to think of any tobacco products he/she is smoking currently.*	Yes 1 No 2 If No, go to T8	T1
Do you currently smoke tobacco products daily? *This question is only for current smokers of tobacco products.*	Yes 1 No 2	T2
Have you **ever** consumed any alcohol such as beer, wine, raki, vodka, gin or spirits? *(USE SHOWCARD OR SHOW EXAMPLES)* *Ask the participant to think of any drinks that contain alcohol, with the exception of alcohol-based medication that is taken due to health reasons.*	Yes 1 No 2	A1
Have you consumed any alcohol within the **past 30 days**? *Select the appropriate response. Even if the participant has only consumed a few sips of alcohol in the past 30 days, the response should be "Yes".*	Yes 1 No 2	A5
During the past 30 days, how many times did you have **six or more** standard drinks in a single drinking occasion? *Ask the participant to think of the past 30 days only, and to report the number of occasions when he/she had six or more standard drinks.*	Number of times Don't Know 77 └─┴─┘	A9
In a typical week, on how many days do you **eat fruit**? *(USE SHOWCARD)* *Ask the participant to think of any fruit on the showcard. A typical week means a "normal" week when the diet is not affected by cultural, religious, or other events. Ask the participant to not report an average over a period*	Number of days Don't Know 77 └─┴─┘ If Zero days, go to D3	D1
How many **servings** of fruit do you eat on **one** of those days? *(USE SHOWCARD)* *Ask the participant to think of one day he/she can recall easily. Refer to the showcard for serving sizes.*	Number of servings Don't Know 77 └─┴─┘	D2
In a typical week, on how many days do you **eat vegetables**?	Number of days Don't Know 77	D3

(USE SHOWCARD) *Ask the participant to think of any vegetable on the showcard. A typical week means a "normal" week when the diet is not affected by cultural, religious, or other events. Ask the participant to not report an average over a period.*	⌊_⌊_⌋ If Zero days, go to D5	
How many servings of vegetables do you eat on one of those days? *(USE SHOWCARD)* *Ask the participant to think of one day he/she can recall easily. Refer to the showcard for serving sizes.*	Number of servings Don't Know 77 ⌊_⌊_⌋	D4
Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like [carrying or lifting heavy loads, digging or construction work] for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE SHOWCARD)* *Ask the participant to think about vigorous-intensity activities at work only. Activities are regarded as vigorous intensity if they cause large increases in breathing and/or heart rate.*	Yes 1 No 2 If No, go to P4	P1
In a typical week, on how many days do you do vigorous-intensity activities as part of your work? *"Typical week" means a week when the participant is engaged in his/her usual activities. Valid responses range from 1-7.*	Number of days ⌊_⌋	P2
How much time do you spend doing vigorous-intensity activities at work on a typical day? *Ask the participant to think of a typical day he/she can recall easily in which he/she engaged in vigorous-intensity activities at work. The participant should only consider those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify.*	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	P3 (a-b)
Does your work involve moderate-intensity activity that causes small increases in breathing or heart rate such as brisk walking [or carrying light loads] for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE SHOWCARD)* *Ask the participant to think about moderate-intensity activities at work only. Activities are regarded as moderate intensity if they cause small increases in breathing and/or heart rate.*	Yes 1 No 2 If No, go to P7	P4
In a typical week, on how many days do you do moderate-intensity activities as part of your work? *"Typical week" means a week when the participant is engaged in his/her usual activities. Valid responses range from 1-7.*	Number of days ⌊_⌋	P5
How much time do you spend doing moderate-intensity activities at work on a typical day? *Ask the participant to think of a typical day he/she can recall easily in which he/she engaged in moderate-intensity activities at work.*	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	P6 (a-b)

The participant should only consider those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify.		
Do you walk or use a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from places? *Select the appropriate response.*	Yes 1 No 2 If No, go to P10	P7
In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places? *"Typical week" means a week when the participant is engaged in his/her usual activities. Valid responses range from 1-7.*	Number of days └─┘	P8
How much time do you spend walking or bicycling for travel on a typical day? *Ask the participant to think of a typical day he/she can recall easily in which he/she engaged in transport-related activities. The participant should only consider those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify.*	Hours : minutes └─┴─┘ : └─┴─┘ hrs mins	P9 (a-b)
Do you do any vigorous-intensity sports, fitness or recreational (leisure) activities that cause large increases in breathing or heart rate like [running or football] for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE SHOWCARD)* *Ask the participant to think about recreational vigorous-intensity activities only. Activities are regarded as vigorous intensity if they cause large increases in breathing and/or heart rate.*	Yes 1 No 2 If No, go to P13	P10
In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (leisure) activities? *"Typical week" means a week when the participant is engaged in his/her usual activities. Valid responses range from 1-7.*	Number of days └─┘	P11
How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day? *Ask the participant to think of a typical day he/she can recall easily in which he/she engaged in recreational vigorous-intensity activities. The participant should only consider those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify.*	Hours : minutes └─┴─┘ : └─┴─┘ hrs mins	P12 (a-b)
Do you do any moderate-intensity sports, fitness or recreational (leisure) activities that cause a small increase in breathing or heart rate such as brisk walking, [cycling, swimming, and volleyball] for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE SHOWCARD)* *Ask the participant to think about recreational moderate-intensity activities only. Activities are regarded as moderate intensity if they cause small increases in breathing and/or heart rate.*	Yes 1 No 2 If No, go to P16	P13

In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (leisure) activities? *"Typical week" means a week when the participant is engaged in his/her usual activities. Valid responses range from 1-7.*	Number of days └─┘	P14
How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical day? *Ask the participant to think of a typical day he/she can recall easily in which he/she engaged in recreational moderate-intensity activities. The participant should only consider those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify.*	Hours : minutes └─┴─┘ : └─┴─┘ hrs mins	P15 (a-b)
How much time do you usually spend sitting or reclining on a typical day? *Ask the participant to consider total time spent sitting at work, in an office, reading, watching television, using a computer, doing hand craft like knitting, resting etc. The participant should not include time spent sleeping.*	Hours : minutes └─┴─┘ : └─┴─┘ hrs mins	P16 (a-b)
In the past two weeks, have you taken any drugs (medication) for raised blood pressure prescribed by a doctor or other health worker? *Ask the participant to only consider drugs for raised blood pressure prescribed by a doctor or other health worker.*	Yes 1 No 2	H3
STEP 2 PHYSICAL MEASUREMENTS		
Blood Pressure		
Reading 1 Record first measurement after the participant has rested for 15 minutes. Wait 3 minutes before taking second measurement.	Systolic (mmHg) └─┴─┴─┘ Diastolic (mmHg) └─┴─┴─┘	M4a M4b
Reading 2 Record second measurement. Ask the participant to rest for another 3 minutes before taking the third measurement.	Systolic (mmHg) └─┴─┴─┘ Diastolic (mmHg) └─┴─┴─┘	M5a M5b
Reading 3 Record third measurement.	Systolic (mmHg) └─┴─┴─┘ Diastolic (mmHg) └─┴─┴─┘	M6a M6b
During the past two weeks, have you been treated for raised blood pressure with drugs (medication) prescribed by a doctor or other health worker? *Select appropriate response.*	Yes 1 No 2	M7
Height and Weight		
For women: Are you pregnant?	Yes 1 If Yes, go to M16	M8

Pregnant women skip over height, weight, waist and hip measurements.	No 2	
Height *Record participant's height in cm with one decimal point.*	in Centimetres (cm) ⌊_⌊_⌊_⌋ . ⌊_⌋	M11
Weight *If too large for scale 666.6* *Record participant's weight in kg with one decimal point.*	in Kilograms (kg) ⌊_⌊_⌊_⌋ . ⌊_⌋	M12