ADDRESSING HEALTH CHALLENGES IN TÜRKİYE

Strategies for Reducing the Burden of Non-Communicable Diseases

Türkiye is experiencing a growing public health challenge due to the rising burden of non-communicable diseases (NCDs) such as ischemic heart disease, stroke, and diabetes. NCDs constitute the leading cause of mortality and place a significant strain on the healthcare system and economy. The high prevalence of risk factors and existing gaps in health system further exacerbate this trend.

This policy brief outlines strategic recommendations to enhance NCD prevention and management in Türkiye, focusing on two key areas: **mitigating risk factors** and **strengthening the healthcare system**. Implementing these measures is critical to reducing the long-term health and economic burden of NCDs.

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INTRODUCTION

What is the issue?

Türkiye, as an upper-middle income country, is facing a growing public health crisis due to non-communicable diseases (NCDs) (Tokgozoglu et al., 2021). In 2021, NCDs accounted for **89% of all deaths** in Türkiye and approximately **one-fifth of deaths** occur in people under the age of 70 (Breda et al., 2021). Beyond the striking health impacts, NCDs also have **high economic costs** that go beyond direct health care costs, as they reduce productivity at the macroeconomic level by creating disruptions to full workforce participation, thus affecting individuals, their caregivers and the state (Kontsevaya et al., 2018). The high-risk factors and increasing prevalence of NCDs in Türkiye suggest that the costs of these diseases will become an even greater socioeconomic burden for the country if action is not taken quickly.

Health System of Türkiye

The Turkish healthcare system has undergone significant improvements since the implementation of the **Health Transformation Program.** These improvements include the expansion of universal health coverage and public and private health sectors, as well as the provision of relatively affordable services (Furtak-Niczyporuk, 2024).

Despite these, critical challenges remain, such as a shortage of medical personnel, long waiting times, limited healthcare services in rural areas, and an insufficient holistic approach (Furtak-Niczyporuk, 2024; Yildirim, 2023). In addition, the health system faces problems such as fragmented management, poor coordination among stakeholders, and lack of functional health information systems, which affects the management of NCDs (Kilic et al., 2015).

> *Health Transformation Program*
>
> *The Health Transformation Program (HTP) in Türkiye is a comprehensive healthcare reform initiative launched in 2003 (World Bank, 2018).*

The rates of physicians and nurses per population in Türkiye has increased between 2000 and 2019. However, despite efforts to increase the health workforce, Türkiye is among the countries with the **lowest ratio of nurses and physicians** in the WHO European Region (Polin et al., 2022).

Health System Metrics

TR: 21.7 physicians per 10.000
EU: 37.6 physicians per 10.000
(WHO, 2024a)

TR: 29.9 hospital beds per 10.000
EU: 53.3 hospital beds per 10.000
(World Bank, 2025a)

TR: 34.8 nurses&midwives per 10.000
EU: 93.0 nurses&midwives per 10.000
(WHO, 2024a)

Expenditure on Health Services

According to WHO's Global Health Expenditure database, **Türkiye's current health spending in 2022 was 3.7%** of gross domestic product (GDP) (GHED, 2025). This rate **remained below** the European Union (EU) 2022 average of **10.4%** (Eurostat, 2024). This lower investment limits the availability of resources such as screening programs, specialized care, and preventive services.

Burden of Disease in Türkiye

Although the emergence of COVID-19 may have caused a temporary change in the burden of disease, NCDs have consistently been the **leading causes of death** in Türkiye between 2011 and 2021 (IHME, 2024). According to the latest WHO data from 2019, the probability of premature death for a person living in Türkiye due to major NCDs (e.g. CVDs, cancer, diabetes) is around **15.6%** (WHO, 2021).

Among NCDs, circulatory system diseases account for the highest proportion of mortality, responsible for 33.4% of all deaths in 2023 (Turkish Statistical Institute, 2024). Within this category, **ischemic heart disease (42.4%)**, other heart diseases (24.1%) and **cerebrovascular diseases, including stroke (18.6%)** were the most prominent contributors (Turkish Statistical Institute, 2024). In addition, the number of adults living with cardiovascular system diseases in Türkiye is projected to increase to 4.2 million by the end of 2025 and 5.4 million by the end of 2035, reflecting a 26.0% and 58.1% growth in prevalence compared to 2016 (Balbay et al., 2018).

Considering all the data obtained from Global Burden of Disease Project and Turkish Statistical Institute, along with the interconnected nature of ischemic heart disease, stroke, and diabetes mellitus, targeted interventions for this disease group appear essential. Given their significant contribution to the overall NCD burden in Türkiye, addressing these conditions should be a public health priority.

Image Source: Canva

APPROACH AND RESULTS

Objective and Method

This policy brief aims to address the most common NCDs in Türkiye and their risk factors, providing evidence-based recommendations for their prevention and management.
Data for this policy is drawn from the Global Burden of Disease Project, the Turkish Statistical Institute, World Bank and World Health Organization. The policy recommendations presented in this brief are mostly based on evidence from systematic reviews. Databases such as Google Scholar, PubMed, Lancet, BMC Public Health and Cochrane Library were used to gather evidence for the recommendations.

Limitations

- Most studies were conducted in high-income countries which limits generalizability
- Short follow-up periods in many studies, making it unclear whether intervention effects are sustained long-term
- Lack of focus on equity, with insufficient data on gender, socioeconomic status, and ethnic differences
- Limited research specifically focusing on Türkiye which makes it difficult to assess the effectiveness of interventions in the local context

Key Findings

Ischemic Heart Disease

Cardiovascular diseases (CVD) account for **almost half (47%) of all deaths** in Türkiye and have become one of the **leading causes of death** in the country (Kayikcioğlu and Oto, 2020). Among CVDs, ischemic heart disease (IHD) is a major issue. It was estimated to affect 2.5 million adults in 2016 and is projected to rise to 5.4 million by 2035 (Balbay et al., 2018). Although a decreasing mortality trend was observed among individuals over the age of 65 between 2015 and 2019, an **overall increasing trend** was emphasized, especially among women, between 2009 and 2019 (Yalim et al., 2022). While improvements in medical management and reductions in certain risk factors have contributed to this decline in mortality, adverse trends in obesity and diabetes have counteracted these gains, further exacerbating the burden of IHD (Unal et al., 2013). Additionally, the economic burden of cardiovascular diseases, including IHD, was estimated at **US$10.2 billion in 2016**, and projections show that this **could double by 2035** (Balbay et al., 2018). Given its increasing prevalence and economic burden, IHD remains a critical public health problem for Türkiye and needs to be addressed.

Obesity, diabetes, smoking, high blood pressure, and physical inactivity are common modifiable risk factors that contribute to the development and progression of IHD. These variables not only raise the risk of IHD but also worsen its severity over time (Conkbayir et al., 2020; Kızılaslan and Samancı Tekin, 2024).

Stroke

Stroke is one of the leading causes of death and disability in Türkiye, and its incidence is increasing as the population ages and risk factors increase (Ozturk et al., 2015; Topçuoğlu, 2023). In 2019, stroke accounted for **22.2% of all cardiovascular deaths** and was the **second leading cause of death** after coronary syndromes in cardiovascular deaths. It ranked as the third most common cause of mortality in women and the fourth most common in men (Topcuoglu and Ozdemir, 2023). That year, the estimated incidence of stroke in Türkiye was 125.345 cases, with a prevalence of 1.3%. Ischemic stroke (IS) was the most common type, accounting for 65.1% of all strokes, followed by intracerebral hemorrhage (ICH) at 24% and subarachnoid hemorrhage (SAH) at 10.9%. It was observed that the incidence of stroke was particularly significant in the young population, with **17.4% of cases** occurring in individuals **under the age of 50**. Mortality remained high, with 48,947 stroke-related deaths in 2019, contributing to **more than 993.000 years of healthy life lost** due to stroke-related death and disability (Topçuoğlu, 2023). Stroke mortality in Türkiye rose by **56%** between 2002 and 2017, underscoring the disease's increasing burden (Topcuoglu and Ozdemir, 2023). While the overall stroke burden in the country aligns with global trends, younger age groups appear to be more affected compared to many other nations (Topçuoğlu, 2023).

The most important modifiable risk factors for stroke include high blood pressure and tobacco use (WHO, 2005). Other modifiable risk factors include poor diet, physical inactivity, and obesity (NHLBI, 2023).

Diabetes

Between 2011 and 2021, the burden of diabetes **increased by 51.4%**, making it a major cause of death and disability in Türkiye and a developing public health issue (IHME, 2024). In 2021, diabetes-related mortality was 28.2 per 100.000 in females, while it was 20.2 per 100.000 in males (WHO, 2025b). Diabetes has become much more common in recent years, with its incidence reaching **14.5%** in 2021, while 41.8% of cases remain undiagnosed (IDF, 2021; Satman et al., 2022). According to projections, **it will keep rising** and reach **19.1% by 2045** (Satman et al., 2022).

The risk of developing diabetes is significantly influenced by modifiable lifestyle factors, including abdominal obesity, smoking, lack of physical activity, excessive alcohol consumption

poor dietary habits, and hypertension. These factors not only increase susceptibility to the disease but also contribute to its progression (Nabila et al., 2023).

Prevalence of Risk Factors

The WHO states that focused interventions that address important risk factors are the most efficient way to prevent and manage NCDs (WHO, 2024b). WHO and the Turkish Ministry of Health carried out a comprehensive nationwide household survey in 2017 in recognition of the significance of understanding these risks. Focusing on adults aged 15+ in Türkiye, this study aimed to assess the prevalence of major risk factors and provide evidence-based insights to inform national NCD prevention strategies (WHO, 2022).

Key findings from the study:

Smoking: 31.5% (men: 43.4%; women:19.7%)

Alcohol use: 8%

Unhealthy diet: 87.8% (<5 servings of fruit and/or vegetables per day

Physical inactivity: 33.1% of men and 53.9% of women

Overweight: 64.4%

Increased blood sugar: 1 in 10

Increased blood pressure: 27.7%

> ***(WHO, 2022)***
>
> - ***51.2%*** *of the respondents had* ***three or more risk factors*** *for NCDs*
> - *Only* ***1.3%*** *of the population studied* ***had none*** *of the five risk factors*

With **more than half of the population exhibiting multiple risk factors**, these results underscore the critical need for targeted interventions to reduce these risks and strengthen NCD prevention and management.

What has been done to prevent and manage NCDS?

Multiple Lifestyle Interventions

Structured lifestyle interventions, such as dietary changes, regular exercise, weight control, smoking cessation, and reduced alcohol consumption, are widely recognized as successful methods for preventing and managing cardiovascular and metabolic disorders (Shrestha et al., 2025). Randomized controlled trials show that such interventions are successful in lowering the risk of type 2 diabetes and improving cardiovascular health, particularly in those at higher risk (Rintamäki et al., 2021; Tuomilehto et al., 2001).

The current evidence is strongest for universal **school-based interventions** that target several risk factors and show that they can improve adolescents' tobacco use, alcohol use, and physical activity (MacArthur et al., 2018).

Smoking Cessation

Quitting smoking plays an important role in reducing the risk of cardiovascular diseases and other chronic conditions. A meta-analysis concluded that quitting smoking considerably **lowered the risk of ischemic heart disease and stroke in just five years** (Gallucci et al., 2020). In addition, smoking cessation has been associated with reduced cardiovascular mortality and a lower incidence of hypertension and type 2 diabetes (Okorare et al., 2023).

Effective strategies to quit smoking include counseling, nicotine replacement therapy, group therapy, prescription medications, doctor advice, and laws such as clean indoor air standards and price increases. A **10% price increase** resulted in a **3-5% increase in cessation rates**. Comprehensive **clean indoor regulations** resulted in a **12–38% increase in quit rates** (Lemmens et al., 2008). Additionally, another systematic review found that adjunctive counselling by a non-physician healthcare professional increased smoking cessation rates in primary care (Lindson et al., 2021).

Lowering Blood Pressure

Many types of cardiovascular disease are considerably less likely to occur when blood pressure is lowered. A systematic review found that a 10 mm Hg reduction in systolic blood pressure decreases the risk of major cardiovascular disease events by 20%, coronary heart disease by 17%, stroke by 27%, heart failure by 28%, and **overall mortality by 13%**. (Ettehad et al., 2016). Similarly, another review discovered that lowering diastolic blood pressure from 90 mm Hg to an average of 4.7 mm Hg can reduce the risk of **ischemic heart disease by 20%** and **stroke by 32%** (Law et al., 2003). It was also found that even a modest decrease of 5 mm Hg in systolic blood pressure reduced the risk of developing **diabetes by 11%** (Nazarzadeh et al., 2021).

A number of blood pressure management techniques have been found to be successful in achieving these benefits. Some of the most effective interventions have been noted to be patient education, improved clinical information exchange and self-management, such as providing home blood pressure monitoring kits (Walsh et al., 2008).

Furthermore, a systematic review discovered that adhering to the **Dietary Approaches to Stop Hypertension (DASH)** is one of the most effective approaches to lower blood pressure (Fu et al., 2020).

Promoting a healthy diet, physical activity and optimal weight

A healthy diet and maintaining ideal weight are very important to reduce the global burden of type 2 diabetes and cardiovascular diseases (Lavie et al., 2018; Micha et al., 2017). Regular physical activity has also been shown to lower the risk of these NCDs while improving overall health outcomes (Reiner et al., 2013). Findings from the Tehran Lipid and Glucose Study indicate that increasing physical activity is associated with significant changes in cardiovascular and metabolic risk factors, such as body mass index, waist circumference, blood pressure, and lipid profiles (Sheikholeslami et al., 2018).

Community-based weight loss programs have demonstrated efficacy in achieving clinically significant decreases in blood pressure, especially in those with increased cardiovascular and metabolic risk (Morris et al., 2021).

Interventions that promote healthy eating such as physician advice, **individual counseling**, and **workplace or school-based initiatives** have been found to be effective in encouraging healthier dietary habits (Chaudhary et al., 2020; Jepson et al., 2010).

Environmental approaches such as **urban design** and land use policies, have also been identified as effective ways to promote physical activity (Heath et al., 2006).

Strengthening Healthcare

The primary health care (PHC) approach is crucial for effectively addressing NCDs, according to growing evidence (Demaio et al., 2014). **PHC-based strategies** not only improve access to healthcare but also enhance equity and contribute to better health outcomes at a lower cost (Haque et al., 2020).

Key strategies to strengthen primary healthcare services for NCD prevention and management include **task shifting**, healthcare provider **training**, and the expansion of community-based services (Mash et al., 2024).

Image Source: Canva

Additionally, **early diagnosis** and **timely intervention** are important in reducing the impact of NCDs as they enable better disease management and improved patient outcomes (Silina and Kalda, 2018).

Regular screening and **monitoring** have an important role in the early diagnosis and effective management of these diseases as they help prevent complications and reduce the healthcare burden (Facciolà et al., 2021).

POLICY RECOMMENDATIONS

Since ischemic heart disease, stroke and diabetes have common risk factors, it would be more effective and efficient to address them within a single policy framework rather than addressing them separately. In addition, these diseases often coexist. Therefore, common policy recommendations have been presented to ensure more efficient use of resources and broad-based impacts.

Evidence-Based Policy Recommendations for the Prevention and Management of NCDs to the Turkish Ministry of Health:

1. Recommendations Targeting Risk Factors

Recommendation 1.1: Establish school-based interventions targeting multiple risk behaviors such as smoking/alcohol use, unhealthy diet and sedentary lifestyle as a national program to raise individuals with high awareness of NCDs and to positively affect habits from an early age. These programs can be included in education by integrating them into physical education classes and adding them to the curriculum as a complementary course.

Recommendation 1.2: Set up multidisciplinary teams within Family Health Centers (FHCs) consisting of physicians, dietitians, nurses, and physiotherapists to provide personalized lifestyle counseling and follow-up services to high-risk individuals such as those with obesity, prediabetes, and high blood pressure.

Recommendation 1.3: Offer telehealth services for follow-ups to reduce the burden of in-person visits and make lifestyle counseling more accessible.

Recommendation 1.4: Strictly enforce a 100% smoke-free policy in all indoor public places and workplaces, with substantial penalties for violations. Additionally, extend smoking restrictions to certain outdoor public spaces such as bus stops, playgrounds, and the outdoor seating areas of restaurants and cafés to further reduce secondhand smoke exposure. This can be done by creating designated smoking areas and using warning signs.

Recommendation 1.5: Train nurses and pharmacists to provide smoking cessation counseling and provide this service free of charge.

POLICY RECOMMENDATIONS

Recommendation 1.6: Launch a national hypertension screening program to identify undiagnosed cases and ensure regular follow-up for diagnosed individuals. Ensure routine blood pressure measurements for all individuals aged 18 and older at FHCs.

Recommendation 1.7: Promote the Dietary Approaches to Stop Hypertension (DASH) diet through nationwide nutrition education campaigns in schools, workplaces, and healthcare facilities and raise awareness about the health risks of high salt intake.

Recommendation 1.8: Collaborate with food manufacturers to implement mandatory sodium reduction policies to address high consumption of dietary sodium intake.

Recommendation 1.9: Expand community-based weight loss programs in FHCs and public health centers, led by dietitians to support individuals in achieving and maintaining a healthy weight.

Recommendation 1.10: Partner with municipalities to enhance urban infrastructure that encourages physical activity, such as cycling lanes, pedestrian-friendly streets, and open-access sports facilities.

2. Recommendations Targeting Health System

Recommendation 2.1: Expand the workforce in FHCs by integrating specially trained and community health workers into NCD management teams, allowing task-sharing to improve patient care and reduce the burden on doctors to provide a more comprehensive care for patients.

Recommendation 2.2: Facilitate and encourage collaboration and multidisciplinary approaches among physicians, dietitians, and other health professionals to ensure patients receive more comprehensive care.

Recommendation 2.3: To enhance early diagnosis and treatment adherence, implement automated screening and monitoring systems. These systems should proactively schedule appointments for at-risk groups every six months, with reminders delivered via SMS or automated phone calls.

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