

Research Article / Araştırma

Türkiye's global burden of disease and health policy priorities

Türkiye'nin küresel hastalık yükü ve sağlık politikası öncelikleri

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ABSTRACT

Purpose: This study was conducted to reveal Türkiye's current situation and make policy recommendations within the scope of the global disease burden 2019 report. **Materials and Methods:** The data of the study were obtained from the Ministry of Health 2022 health statistics yearbook and IHME 2019 global disease burden report. Within the scope of YLL, YLD, DALY and HALE data, international comparisons were made with age, gender, time, causes and risk factors within the scope of 2002-2019 in Türkiye and policy recommendations were made. **Results:** Ischemic heart disease, stroke, respiratory tract cancer and diseases are in an upward trend in the disease burden of Türkiye. There have been positive developments regarding maternal and child health. The most important risk factors are; It has been observed that there is tobacco use, high fasting blood sugar and blood pressure, and obesity. **Conclusion:** Türkiye has indicators at the level of middle-upper income country group in terms of disease burden. Although there are positive developments regarding maternal and child health, Türkiye has an increasing tendency to face a heavy burden of chronic diseases after middle age. This situation indicates that the management of health services becomes more difficult, health expenditures increase and an unhealthy aging society. It is recommended that protective, preventive and health-promoting policies be implemented widely and effectively by balancing the capacity of treatment services.

ÖZ

Amaç: Küresel hastalık yükü 2019 raporu kapsamında Türkiye'nin mevcut durumunu ortaya koymak ve politika önerilerinde bulunmak amacıyla bu çalışma yapılmıştır. **Materyal ve Metot:** Çalışmanın verileri Sağlık Bakanlığı 2022 yılı sağlık istatistikleri yıllık ve IHME 2019 küresel hastalık yükü raporundan temin edilmiştir. YLL, YLD, DALY ve HALE verileri kapsamında Türkiye özelinde 2002-2019 yılları kapsamında yaş, cinsiyet, zaman, nedenler ve risk faktörleri ile uluslararası düzeyde kıyaslama yapılmış ve politika önerilerinde bulunulmuştur. **Bulgular:** Türkiye hastalık yükünde iskemik kalp hastalığı, inme, solunum yolu kanser ve hastalıkları yükseliş trendindedir. Anne ve çocuk sağlığı ile ilgili olumlu gelişmeler yaşanmıştır. En önemli risk faktörleri; tütün kullanımı, açlık kan şekeri ve kan basıncı yüksekliği ile obezite olduğu görülmüştür. **Sonuç:** Türkiye hastalık yükü bakımından orta-üst gelir ülke grubu düzeyinde göstergelere sahiptir. Ana çocuk sağlığı ile ilgili olumlu gelişmeler olsa da Türkiye orta yaşta sonra ağır bir kronik hastalık yükü ile karşı karşıya kalma eğilimi gittikçe artmaktadır. Bu durum sağlık hizmetlerinin yönetiminin güçleşmesine, sağlık harcamalarının artmasına ve sağlıksız yaşlanan bir topluma işaret eder. Tedavi hizmetlerinin kapasitesi dengelenerek acilen koruyucu, önleyici ve sağlığı geliştirici politikaların yaygın ve etkin olarak hayata geçirilmesi önerilmektedir.

Key Words:
Global Burden of Disease, Health Policy, Health System

Anahtar Kelimeler:
Küresel Hastalık Yükü, Sağlık Politikası, Sağlık Sistemi

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INTRODUCTION

Disease burden is a concept that measures the impact of diseases existing in a society on health. It is based on measuring factors such as death, disability and loss of quality of life caused by diseases. It contributes to effective resource allocation and shaping of health policies by providing information about the prevalence and severity of diseases, especially in public health studies (Ergen, 2023).

In the 1990s, the World Health Organization (WHO) and the World Bank wanted to evaluate health status not only according to mortality rates but also according to quality of life, and published the first global burden

of disease study in 1990. In the research, the worldwide Disability Adjusted Life Years (DALY) distribution of 107 diseases and 10 risk factors was calculated. Subsequently, global, national and regional disease burden surveys have been conducted regularly by WHO, countries and various organizations.

In the report published in 1996 "Global Burden of Disease Study"; Death and disability resulting from diseases and injuries have been discussed comprehensively, and the risk factors that cause this have been tried to be determined (Murray and Lopez, 1996). Murray and Lopez's aim is; The life span that is expected to be spent in a completely ideal way; to provide a standardization

to calculate the rate of deviation from optimality due to death, disease and injury (Murray, 1997). Evaluating the years that were not lived and passed with disability with such a criterion; It provides more objective comparison between regions and countries and facilitates cost analysis when deciding on protection, prevention and treatment methods (Erbaydar, 2009; Karşıdağ et al., 2000).

WHO published a new study within the framework of these standards in 2000, causing it to be recognized and adopted by wider circles. 4 years after this study, the first disease burden study in Türkiye was published (Zaku, 2020). WHO, in its disease burden research; It has been shown that if working conditions are unhealthy and not at the desired level, occupational diseases and injuries increase, and accordingly, the total disease burden increases by 1.6% (IHME, 2019).

Various methods are used to measure disease burden. One of these is the life years lost (YLD) method, which calculates the burden of premature death and disability caused by a disease. Another method is the years of life lost (YLL) method and measures the burden of premature death caused by a disease. In addition, health-related quality of life scales and economic analyzes are also used to calculate the disease burden (Ergen, 2023).

DALY is calculated as the sum of YLL and YLD. It is a measure developed to evaluate how diseases and disabilities affect individuals' quality of life and the impact of deaths on society. DALY is expressed as the "lost year" caused by a health problem in society. Lost years are calculated as "years of lost life" resulting from deaths and "years of lost healthy life" resulting from disabilities (WHO, 2010).

Another criterion is called Quality-Adjusted Life Years (QALY). QALY is used to evaluate health status by combining life expectancy with decline in quality of life. QALY is considered an important metric for evaluating the effectiveness and cost-effectiveness analysis of health interventions (Drummond et al., 2015).

The Institute for Health Metrics and Evaluation (IHME) defines the criteria used when calculating the burden of disease as follows:

Healthy Life Expectancy (HALE): HALE: It refers to the years that we can expect a person of a certain age to live a healthy life, taking into account the mortality rate and disability (IHME, 2018).

Disability Adjusted Life Years (DALY): The sum of years lost due to premature death and years spent with disability (IHME, 2018)

Years of Life Lost (YLL) YLL: Refers to the years lost due to premature death (IHME, 2019).

Years Lost due to Disability (YLD) YLD: It refers to the years spent with short or long-term loss of health (disability) (IHME, 2018). It is calculated as $DALY = YLL + YLD$.

Determining and monitoring the burden of disease is important for the sustainability of the health system, especially predicting future health needs, planning health resources, shaping health policies, evaluating the effectiveness of health interventions and improving the quality of health services (WHO, 2003).

In terms of health policies, determining the disease burden provides an important source of information for the planning and management of health services. Using disease burden data, decision-makers and policymakers can create strategies to improve public health, prevent disease, and improve health care. Policies focusing on areas such as reducing the disease burden, early diagnosis, treatment and prevention of diseases can improve the health status of the society. As a result, disease burden is considered an important indicator of health systems, and health policies can be guided by determining the prevalence and severity of diseases and their root causes through disease burden studies.

By IHME in 2019; The global disease burden report, which was conducted to measure the health profile and changes in the health profile at national and global levels by evaluating 286 causes of death, 369 diseases and injuries and 87 risk factors for 204 countries, has been published. The purpose of this study; The aim is to evaluate this report from Türkiye's perspective and make recommendations for health policies.

MATERIAL AND METHOD

The data of the study were obtained from the 2022 health statistics yearbook of the Turkish Ministry of Health and the IHME 2019 global disease burden report. Since the data is publicly available and does not contain personal information, no permission was required. On the tables and figures obtained from YLL, YLD, DALY and HALE data within the scope of the global burden of disease; In Türkiye, an international comparison was made with age, gender, time, causes and risk factors within the scope of 2002-2019. The findings obtained from the data and the use of the global burden of disease in terms of health policy were discussed within the scope of the literature, and conclusions and recommendations were made.

RESULTS

Years of Life Lost (YLL)

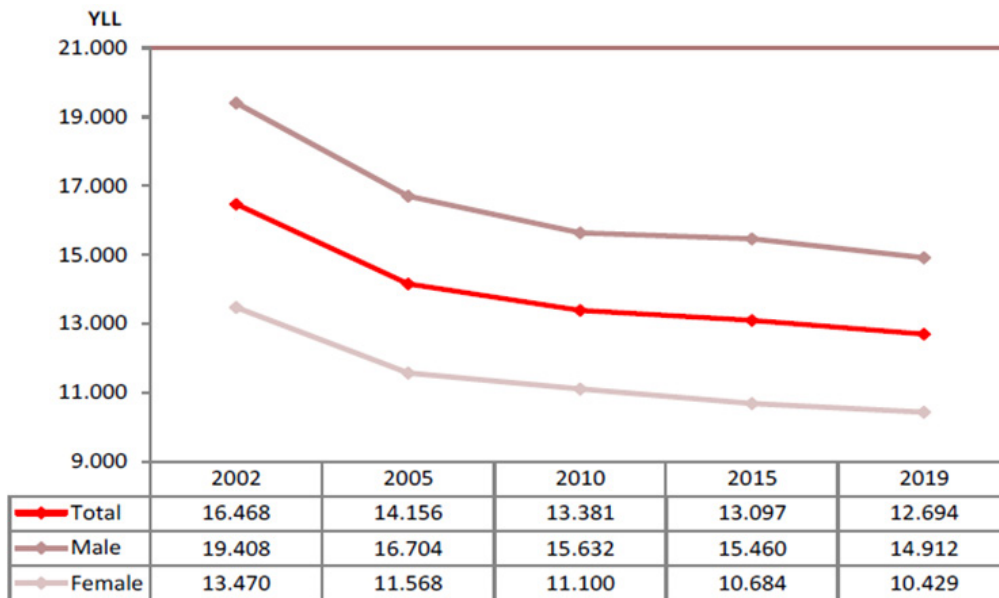
The number of YLLs per hundred thousand people in Türkiye by year and gender is shown in Figure 1. The

number of YLLs in men compared to women was on average 1.4 times higher in all the years mentioned. It is seen that there has been an improvement of approximately 25% in YLL since 2002. The ranking of the top 10 reasons for YLL in Türkiye in 2019 and their rate of change compared to 2002 are shown in Table 1. It is noteworthy that ischemic heart disease ranked first in both years and there was no improvement in this disease. However, more than 55% improvement has been achieved compared to 2002, especially in the causes of “neonatal diseases”, “congenital birth anomalies” and “lower respiratory tract infections”. Another noteworthy data is that YLL increases caused by “Stroke” and “trachea, bronchus and lung cancers” are very high and ranked second and third.

Years of Life with Disability (YLD):

The number of YLDs per hundred thousand people in Türkiye by year and gender is shown in Figure 2. In terms of this data, YLD numbers are approximately 20% higher in men than in women in every period. Contrary to YLL data, YLD data tends to increase continuously, albeit at a low rate, in Türkiye.

The ranking of the top 10 causes of YLD in Türkiye in 2019 and their changes compared to 2002 are given in Table 2. Low back pain ranked first in both years. The most striking data is the 171.31% increase in YLD due to “Diabetes”. Apart from this, an increase was observed in all causes of YLD.



Source: IHME, 2019 **Figure 1.** YLL per 100.000 Population by Years and Sex

Table 1. Change in 2019 Top 10 YLL Causes Compared to 2002, (%), Total

Rank	Cause	2002	2019	Change (%)
1	Ischemic heart disease	1770301	1788335	1,02
2	Stroke	474638	825066	73,83
3	Tracheal, bronchus, and lung cancer	325095	736936	126,68
4	Neonatal disorders	1974350	616006	-68,8
5	Chronic obstructive pulmonary disease	311174	478505	53,77
6	Congenital birth defects	984531	440984	-55,21
7	Diabetes mellitus	313821	372907	18,83
8	Chronic kidney disease	278198	357131	28,37
9	Road injuries	327791	352078	7,41
10	Lower respiratory infections	752228	303432	-59,66

Source: IHME, 2019

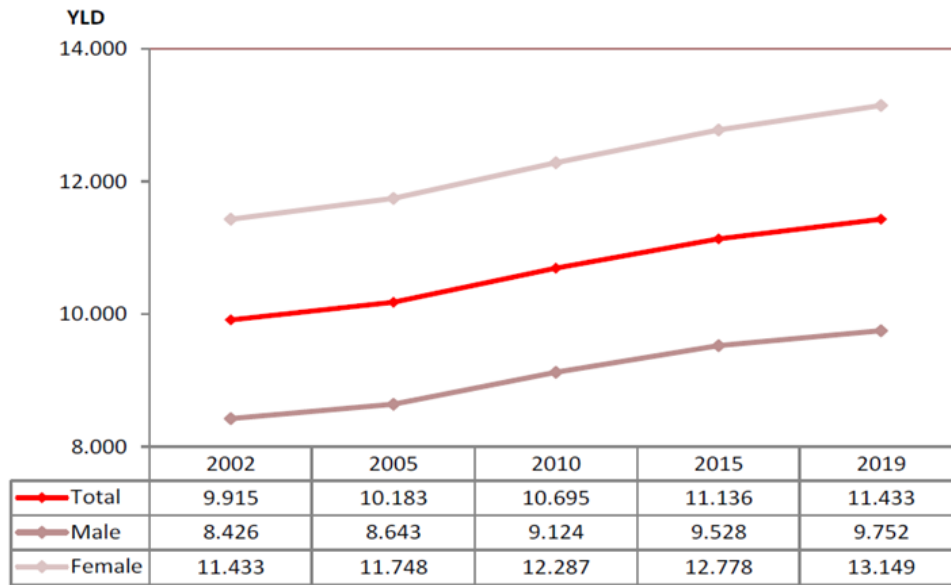


Figure 2. YLD per 100.000 Population by Years and Sex

Source: IHME, 2019

Table 2. Change in 2019 Top 10 YLD Causes Compared to 2002, (%), Total

Rank	Cause	2002	2019	Change (%)
1	Low back pain	714815	874588	22,35
2	Depressive disorders	515818	632644	22,65
3	Headache disorders	462765	588744	27,22
4	Gynecological diseases	406154	522324	28,6
5	Diabetes mellitus	164236	445593	171,31
6	Other musculoskeletal disorders	250226	424079	69,48
7	Anxiety disorders	305615	375857	22,98
8	Oral disorders	254500	354887	39,45
9	Age-related and other hearing loss	229099	318835	39,17
10	Neck pain	181549	267435	47,31

Source: IHME, 2019

Disability Adjusted Life Years (DALY)

Number of DALYs per 100,000 people by years and gender. Türkiye data between 2002 and 2019 is shown in Figure 3. While there was a significant improvement in DALY between 2002 and 2008, there was a steady and stable development from 2008 to 2019. As in YLL and YLD, DALY data has been higher in men in every period.

According to Table 3, which shows the change of the top 10 DALY causes in Türkiye in 2019 compared to 2002, “ischemic heart disease, stroke and low back pain” were in the top 3 places. There has been no improvement in ischemic heart disease since 2002. There was a very high increase of 126.80% in trachea,

bronchus and lung cancers. The only data that provides positive improvement is the 60.51% decrease in neonatal diseases.

The share of risk factors in DALYs in Türkiye between 2002 and 2019 is shown in Figure 4. The risk factor for malnutrition in the child and mother has been reduced by three times. However, the increase in risk factors such as tobacco use, high blood pressure, fasting blood sugar and body mass index is quite remarkable.

International comparison of YLL, YLD and DALY is shown in figure 5. Türkiye’s data is in a good position, especially compared to middle-upper income group countries and the WHO European region. It seems that

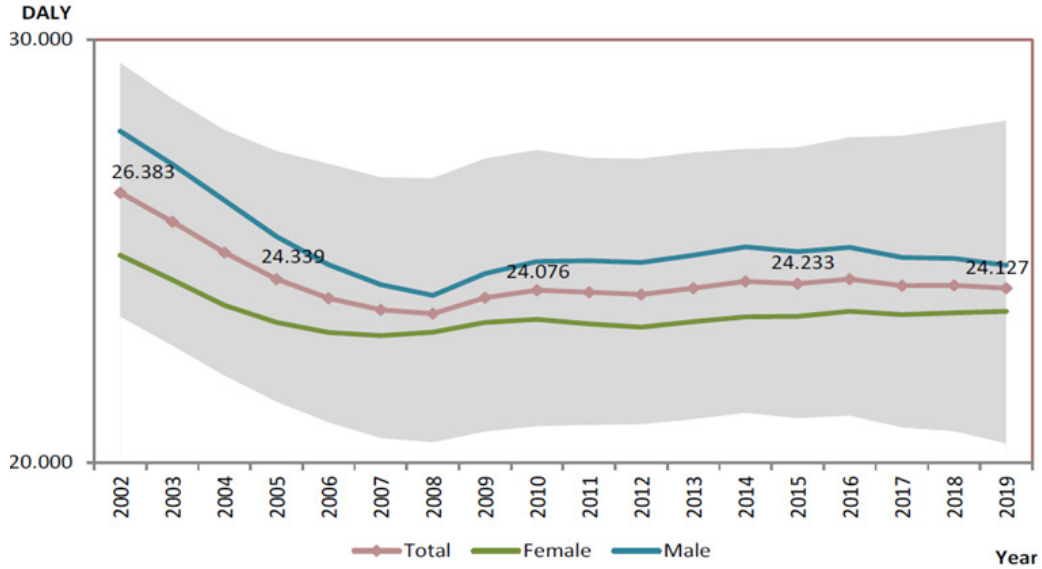


Figure 3. DALY per 100,000 Population by Years and Sex

Source: IHME, 2019

Table 3. Change in 2019 Top 10 DALY Causes Compared to 2002, (%), Total

Rank	Cause	2002	2019	Change (%)
1	Ischemic heart disease	1816681	1847044	1,67
2	Stroke	585368	993082	69,65
3	Low back pain	714815	874588	22,35
4	Neonatal disorders	2141881	845771	-60,51
5	Diabetes mellitus	478057	818499	71,21
6	Tracheal, bronchus, and lung cancer	327883	743637	126,8
7	Chronic obstructive pulmonary disease	457684	733647	60,3
8	Depressive disorders	515818	632644	22,65
9	Headache disorders	462765	588744	27,22
10	Gynecological diseases	406715	522877	28,56

Source: IHME, 2019

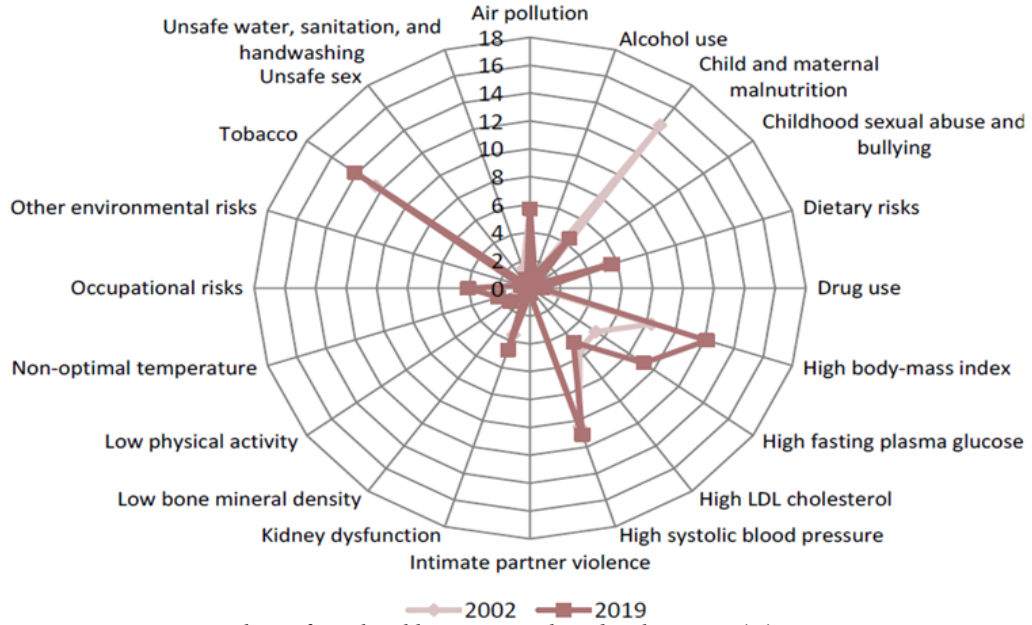
Türkiye should focus more on YLL data. While YLL data makes a significant difference in developed countries, YLD data is close to the World average in all groups.

According to Figure 6, which shows life expectancy at birth and life expectancy at age 65, Türkiye's data is very close to the WHO European region, with the middle-upper income group above the world average. However, in terms of both data, the EU has data below the OECD and high-income group countries.

CONCLUSION

- In Türkiye within the scope of the global burden of disease report:

- When we look at the top 3 reasons for YLL; ischemic heart disease, stroke, respiratory system cancers
- The first 3 reasons for YLD are; low back pain, depressive disorders, headache
- Top 3 DALY causes; ischemic heart disease, stroke, low back pain
- Looking at DALY international comparison; Türkiye's data remained below the World, EU and OECD average.
- Türkiye is one of the DALY risk factors; tobacco use, high body mass index and high blood pressure. In the case of YLD, high blood pressure is replaced by high fasting blood sugar.



Kaynak: IHME, 2019

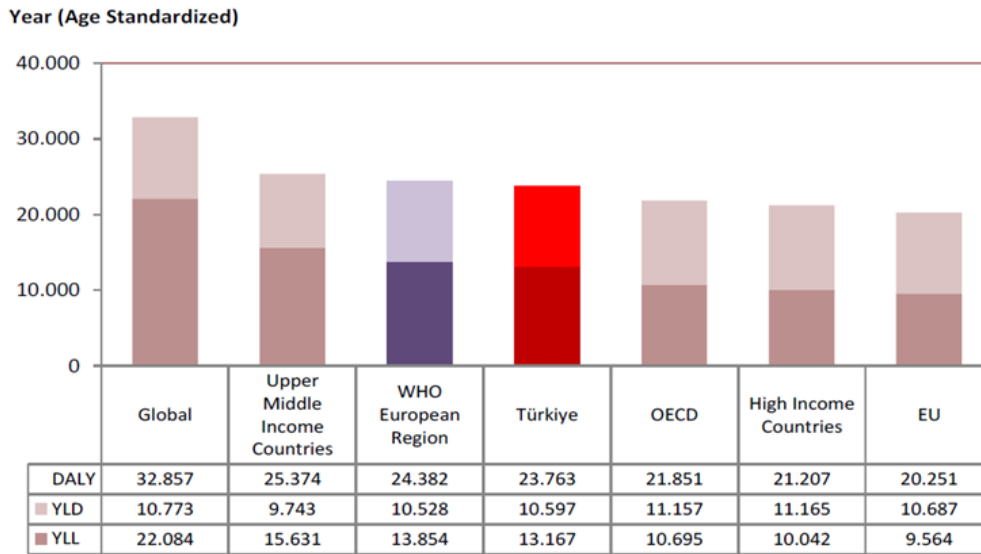


Figure 5. International Comparison of YLL, YLD and DALY per 100.000 Population, Age Standardized, 2019
Kaynak: IHME, 2019

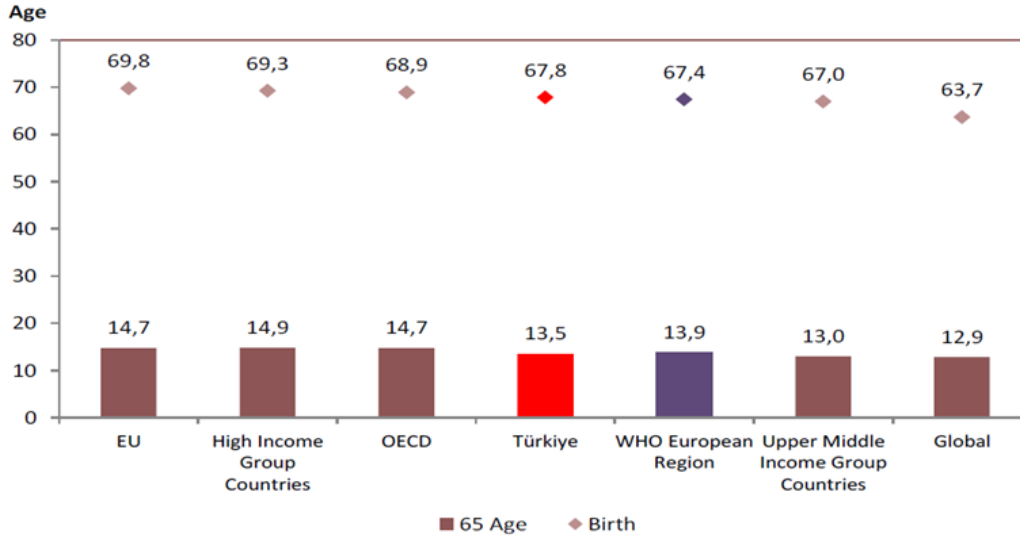


Figure 6. International Comparison of HALE at Birth and 65 Age, 2019

Kaynak: IHME, 2019; Ministry of Health Türkiye, 2022

• It has been observed that infectious diseases have a significant downward trend (50%). DALYs caused by diabetes increased by more than 80% between 2002 and 2019. DALYs from Alzheimer's disease more than doubled between 2002 and 2019.

Within the scope of the study, it is important to direct health policies especially towards risk factors. In general, the following suggestions should be prioritized:

- Preventive health practices,
- Educational activities starting at an early age,
- Campaigns to raise awareness and awareness,
- Legal regulations to be implemented to reduce or eliminate the use of addictive substances or to increase the age of starting to use such harmful substances,
- The probability of occurrence of social and cultural events and sports activities will be reduced through organizations that will spread them throughout the society.

Worldwide disease burden studies have determined disease burden rates in different countries. These studies use the concept of Disability-Adjusted Life Years (DALY), which expresses the sum of years lost due to death and disability (Years of Quality of Life Loss - YLL) and quality of life loss (Years of Life - YLD). Findings show that the most common diseases worldwide are heart diseases, cancer, respiratory infections and mental disorders (Vos et al., 2015).

Burden of disease studies also evaluate the impact of risk factors that lead to health problems. For example, risk

factors such as smoking, malnutrition, lack of physical activity, high blood pressure and obesity are important factors that increase the burden of disease. These findings highlight the importance of health policies focusing on preventive measures targeting risk factors (Lim et al., 2012).

The findings of disease burden studies conducted around the world contribute to the development of health policies and the effective use of resources. These studies provide guiding data in identifying priority health problems, planning health services and distributing health resources. Additionally, burden of disease research helps identify strategies to reduce health disparities and improve health outcomes (Murray et al., 2013).

The health policy framework within the scope of regional, national or global disease burden can be discussed under the following headings:

- Prioritizing and allocating resources
- Planning and organization of health services
- Disease prevention, disease prevention and monitoring strategies

Burden of disease research is an important research area for public health. Therefore, disease burden research is of great importance for the effective management of health systems and improving public health.

Another aim of this study is to raise awareness on the subject by providing information about the burden of disease and its importance in terms of country health policies and global disease burden research.

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